

# National Statistician's Committee for Advice on Standards for Economic Statistics

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Tab 1 Contents



# 2025 System of National Accounts

# **Draft for Global Consultation**

# Chapter 1: Introduction (revised content) (OLD Chapter 1: Introduction)

# A. Chapter Overview

- 1.1
   This chapter introduces the System of National Accounts (SNA). The next section (Section B) answers the question 'What is the SNA?' Section C summarizes the conceptual elements of the SNA. Section D discusses issues associated with gross and net measurement of certain aggregates such as domestic product. Section E describes the main identities that can be derived from the SNA. Section F summarizes the uses of the SNA. Section G describes the boundaries of the SNA. The SNA as a coordinating framework for statistics is described in Section H, and Section I discusses the links with business accounting. Section J outlines how the scope of the SNA can be expanded.
- **1.1**<u>1.2</u> The chapter concludes with a Readers Guide to the SNA (Section K), which should be particularly useful for readers who are less familiar with the structure of the SNA.

# B. What is the System of National Accounts?

- 1.21.3 The System of National Accounts (SNA) is the internationally agreed standard set of recommendations on how to compile measures of economic activity in accordance with strict accounting conventions based on economic principles. The recommendations are expressed in terms of a set of concepts, definitions, classifications and accounting rules that comprise the internationally agreed standard for measuring such items as gross domestic product (GDP), the most frequently quoted indicator of economic performance. The accounting framework of the SNA allows economic data to be compiled and presented in a format that is designed for purposes of economic analysis, decision-taking and policymaking. The accounts themselves present in a condensed way a great mass of detailed information, organized according to economic principles and perceptions, about the working of an economy. They provide a comprehensive and detailed record of the complex economic activities taking place within an economy and of the interaction between the different economic agents, and groups of agents, that takes place on markets or elsewhere. The framework of the SNA provides accounts that are:
  - a. comprehensive, in that all designated activities and the consequences for all agents in an economy are covered;
  - b. consistent, because identical values are used to establish the consequences of a single action on all parties concerned using the same accounting rules;
  - c. integrated, in that all the consequences of a single action by one agent are necessarily reflected in the resulting accounts, including the impact on measurement of wealth captured in balance sheets.
- 1.31.4 The accounts of the SNA provide more than a snapshot of the economy at a point in time, since in practice the accounts are compiled for a succession of time periods, thus providing a continuing flow of information that is indispensable for the monitoring, analysis and evaluation of the performance of an economy over time. The SNA provides information not only about economic activities taking place within a period but also about the levels of an economy's assets and liabilities, and thus the wealth of its inhabitants, at particular points of time. In addition, the SNA includes an external account that displays the links between an economy and the rest of the world.
- 1.5 Certain key aggregate statistics, such as GDP, that are widely used as indicators of economic activity at the level of the total economy, are defined within the SNA, but the calculation of such aggregates has long ceased to be the primary purpose for compiling the accounts. In order to understand the workings of the economy, it is essential to be able to observe and analyse the economic interactions taking place between different sectors of the economy. The SNA is designed to be implemented at different levels of aggregation: at the level of individual economic agents, or institutional units as they are called in the SNA; for groups of such

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units, or institutional sectors; or at the level of the total economy.

- 1.41.6 As well as providing information in nominal terms, the SNA enables the compilation of volume measures, which are measures that remove the impact of price changes by expressing data on goods and services in prices of a certain reference period. These measures are important in analyzing underlying economic activity. Complementing volume measures are measures of price change in the form of price indices, which are also an essential part of the SNA. These assist in the analysis of inflation, and can also be used to derive various 'real' measures in the SNA such as real income.
- 1.51.7 The SNA is designed for economic analysis, decision- taking and peacemakingpolicymaking, whatever the industrial structure or stage of economic development reached by a country. The basic concepts and definitions of the SNA depend upon economic reasoning and principles which should be universally valid and invariant to the particular economic circumstances in which they are applied. Similarly, the classifications and accounting rules are meant to be universally applicable. There is no justification, for example, for seeking to define parts of the SNA differently in less developed than in more developed economies than in low- inflation economies. Certain definitions, or accounting rules, specified in the SNA might become superfluous in certain circumstances (for example, if there were no inflation), but it is nevertheless necessary for a general system to include definitions and rules covering as wide a range of circumstances as possible.
- 1.61.8 Some countries may be able, at least initially, to calculate only a small number of accounts and tables for the total economy with little or no disaggregation into sectors, but a reduced set of accounts or tables does not constitute an alternative system. It is not appropriate to try to lay down general priorities for data collection when economic circumstances may vary considerably from one country to another. In practice, priorities can only be established country by country by economic analysts or policymakers familiar with the particular economic situation, needs and problems of the individual countries in question. It is not useful, for example, to try to specify general priorities for developing countries when they constitute a very heterogeneous group of countries at a world level. Data priorities may vary as much between one developing country and another as between a developing and a developed country or indeed between two developed countries.

# 1. The SNA and measures of well-being

- 1.9 The institutionalization of economic data in decision making through the accounting structures provided by the SNA has established credible, comparable and authoritative measures of economic activity suitable for all countries. One effect of this institutionalization has been the wide-spread use of national accounts measures of economic activity, in particular GDP, as indicators of the general performance of a country including its people's well-being and standard of living. This has occurred notwithstanding the routine advice of compilers of national accounts that GDP and similar measures of aggregate economic performance cannot and should not be considered a direct measure of well-being, economic or general.
- 1.10However, the SNA can contribute to an understanding of well-being, and the sustainability of well-being, in<br/>two important ways. First, other than GDP, there is a very wide range of data and aggregate measures<br/>contained within the SNA's sequence of economic accounts that can be used to inform discussion of well-<br/>being and sustainability. Furthermore, the national level information presented in the sequence of economic<br/>accounts can be supplemented with data on the distribution of these economic measures across groups of<br/>economic units. This is especially relevant for the distribution of income, consumption, saving and wealth<br/>across groups of households.
- 1.11 Second, the SNA can be adapted and extended to organize data on the environmental and social dimensions of well-being and sustainability. Examples of these accounting-based approaches cover topics such as environmental stocks and flows, unpaid household service work, health care expenditure, education and training.
- 1.12 Although the SNA can contribute significantly to the understanding of well-being and sustainability the SNA does not describe an overarching or inclusive framework for the integration of all aspects of well-being and sustainability. A comprehensive assessment of well-being and sustainability requires additional measures, for example, measures relating to safety and governance.

1.13 Chapter 2 provides further information on the important topic of the national accounts and measures of wellbeing and sustainability.

# C. The conceptual elements of the SNA

1.71.14 The SNA measures what takes place in the economy, between which agents, and for what purpose. At the heart of the SNA is the production of goods and services. These may be used for consumption in the period to which the accounts relate or may be accumulated for use in a later period. In simple terms, the amount of value added generated by production represents GDP. The income corresponding to GDP is distributed to the various agents or groups of agents as income and it is the process of distributing and redistributing income that allows one agent to consume the goods and services produced by another agent or to acquire goods and services for later consumption. The way in which the SNA captures this pattern of economic flows is to identify the activities concerned by recognizing the institutional units in the economy and by specifying the structure of accounts capturing the transactions relevant to one stage or another of the process by which goods and services are produced and ultimately consumed. These concepts are sketched below and developed further in chapter 2-3 and later chapters.

# 1. Activities and transactions

- 1.81.15 The SNA is designed to provide information about the behaviour of institutional units and the activities in which they engage, namely production, consumption and the accumulation of assets, in an analytically useful form. This is achieved by recording the exchange of goods, services and assets between institutional units in the form of transactions. At the same time, other transactions are recorded that represent the form of payment for the exchange which may be a good, service or asset of similar value but is often some form of financial claim including notes and coins.
- 1.91.16 Data on transactions provide the basic source material from which the values of the various elements in the accounts are built up or derived. The use of transactions data has important advantages. The first of these is that the prices at which goods and services are exchanged in transactions between buyers and sellers on markets provide the information needed for valuing, directly or indirectly, all the items in the accounts. Secondly, a transaction that takes place between two different institutional units has to be recorded for both parties to the transaction and therefore generally appears twice in a system of macroeconomic accounts. This enables important linkages to be established in the SNA. For example, output is obtained by summing the amounts sold, bartered or transferred to other units plus the amounts entered into, less the amounts withdrawn from, inventories. In effect, the value of output is obtained by recording the various uses of that output by means of data on transactions. In this way, flows of goods and services can be traced through the economic system from their producers to their eventual users. Some transactions are only internal bookkeeping transactions that are needed when a single unit engages in two activities, such as the production and consumption of the same good or service, but the great majority of transactions takes place between different units on markets.

### 2. The institutional sectors of the economy

- 1.101.17 Two main kinds of institutional units, or transactors, are distinguished in the SNA; households and legal entities. Legal entities are either entities created for purposes of production, mainly corporations and non-profit institutions (NPIs), or entities created by political processes, specifically government units. The defining characteristic of an institutional unit is that it is capable of owning goods and assets, incurring liabilities and engaging in economic activities and transactions with other units in its own right.
- 1.11<u>1.18</u>For the purposes of the SNA, institutional units that are resident in the economy are grouped together into five mutually exclusive sectors composed of the following types of units:
  - a. Non-financial corporations;
  - b. Financial corporations;

- c. Government units, including social security funds;
- d. NPIs serving households (NPISHs);
- e. Households.
- 1.12<u>1.19</u>The five sectors together make up the total economy. Each sector may be further divided into subsectors; for example, the non-financial and financial corporations sectors are divided to distinguish corporations subject to control by governments or foreign units from other corporations. The SNA makes provision for a complete set of flow accounts and balance sheets to be compiled for each sector, and subsector if desired, as well as for the total economy. The total number of accounts that may be compiled is therefore potentially quite large, depending upon the level of disaggregation that is required and feasible. Only by disaggregation into sectors and subsectors is it possible to observe the interactions between the different parts of the economy that need to be measured and analysed for purposes of policymaking.
- 1.13<u>1.20</u>Institutional units that are resident abroad form the rest of the world. The SNA does not require accounts to be compiled in respect of economic activities taking place in the rest of the world, but all transactions between resident and non-resident units have to be recorded in order to obtain a complete accounting for the economic behaviour of resident units. Transactions between residents and non- residents are grouped together in a single account, the rest of the world account.

#### 3. Accounts and their corresponding economic activities

1.14<u>1.21</u> This section gives a very brief summary of the <u>integrated framework of national</u> accounts of the SNA. It is impossible to do justice to the wealth of information contained in the SNA in a short section of this kind, and reference should be made to chapter <u>2-3</u> for a comprehensive overview.

#### The goods and services account

1.151.22 Fundamental to the SNA is the identity that goods and services produced in the economy must be consumed, used for capital formation or exported while all goods and services used within the economy must be produced in the economy or imported. From this, once suitable allowance is made for the effect on prices of taxes and subsidies on products, the goods and services account is derived and thence GDP.

#### The sequence of economic accounts

- 1.161.23 This basic identity is elaborated within the SNA into a sequence of interconnected flow accounts linked to different types of economic activity taking place within a given period of time, together with balance sheets that record the values of the stocks of assets and liabilities held by institutional units or sectors at the beginning and end of the period. Each flow relates to a particular kind of activity such as production, or the generation, distribution, redistribution or use of income. Each account shows the resources revenues available toof the institutional units and the uses made of these expenditures made resources. An account is balanced by introducing a balancing item defined residually as the difference between the total revenues recorded on one side of the account and the total uses expenditures recorded on the other side. The balancing item from one account is carried forward as the first item in the following account, on the opposite side, thereby making the set of accounts an articulated whole. The balancing items typically encapsulate the net result of the activities covered by the account in question and are therefore are economic constructs of considerable income and saving. There is also a strong link between the flow accounts and the balance sheets, as all the changes occurring over time that affect the assets or liabilities held by institutional units or sectors are systematically recorded in one or another of the flow accounts.
- 1.17<u>1.24</u>The set of accounts just described is referred to as the "sequence of <u>economic</u> accounts" but it should be noted that, although it is necessary to present the accounts in a particular order, the activities they describe

should not be interpreted as taking place sequentially in time. For example, incomes are generated continuously by processes of production, while expenditures on the outputs produced may also be taking place more or less simultaneously. An economy is a general equilibrium system in which interdependent economic activities involving countless transactions between different institutional units are carried out simultaneously. Feedbacks are continually taking place from one type of economic activity to another.

#### Current accounts

- 1.18<u>1.25</u> The current accounts record the production of goods and services, the generation of incomes by production, the subsequent distribution and redistribution of incomes among institutional units, and the use of incomes for purposes of consumption or saving.
- 1.191.26 The production account records the activity of producing goods and services as defined within the SNA. Its balancing item, gross value added, is defined as the value of output less the value of intermediate consumption and is a measure of the contribution to GDP made by an individual producer, industry or sector. Gross value added is the source from which the <u>carnedprimary</u> incomes of the SNA are generated, as recorded in the generation of earned income account, and is therefore carried forward into the primary distributionallocation of <u>carned</u> income account. Value added and GDP may also be measured net by deducting <del>consumption of fixed capital/depreciation</del>, a figure representing the decline in value during the period of the fixed capital used in a production process, and the depletion of natural resources used in the production process. See section D below for more discussion on gross versus net measurement.
- 1.201.27 A set of articulated accounts shows how incomes are:
  - a. Generated by production;
  - b. Distributed to institutional units with claims on the value added created by production;
  - c. Redistributed among institutional units, mainly by government units through social security contributions and benefits and taxes;
  - d. Used by households, government units, the central bank or non-profit institutions serving households (NPISHs) for purposes of final consumption or saving;
  - e. Available as saving for accumulating wealth.
- 1.21<u>1.28</u>The income accounts have considerable intrinsic economic interest in themselves. In particular, they are needed to explain the behaviour of institutional units as final consumers, that is, as users of the goods and services for the satisfaction of the individual and collective needs and wants of households and the community. The balancing item emerging from the complete set of income accounts is saving.
- $\frac{1.221.29}{1.29}$  As the balancing item, saving is carried forward into the capital account, the first in the sequence of accumulation of assets accounts.

#### Accumulation of assets accounts

- 1.23<u>1.30</u>The accumulation <u>of asset</u> accounts are those that record flows that affect the entries in the balance sheets at the <u>start and</u> end of the accounting period. There are four accumulation<u>of assets</u> accounts; the capital account, the financial account, the other change in the volume of assets <u>and liabilities</u> account and the revaluation account.
  - a. The capital account records acquisitions and disposals of non-financial assets as a result of transactions with other units, internal bookkeeping transactions linked to production (such as changes in inventories and eonsumption of fixed capital<u>depreciation</u>) and the redistribution of wealth by means of capital transfers.
  - b. The financial account records acquisitions and disposals of financial assets and liabilities, also through transactions.

1.3

- c. The other changes in the volume of assets <u>and liabilities</u> account records changes in the amounts of the assets and liabilities held by institutional units or sectors as a result of factors other than transactions; for example, destruction of fixed assets by natural disasters.
- d. The revaluation account records those changes in the values of assets and liabilities that result from changes in their prices.

1.24<u>1.31</u> The link between the accumulation of assets accounts and the current accounts is provided by the fact that, in general, saving must be used to acquire financial or non-financial assets of one kind or another, including cash. When saving is negative, the excess of consumption over disposable income must be financed by disposing of assets or incurring liabilities. The financial account shows the way in which funds are channelled from one group of units to another, especially through financial intermediaries. Access to finance is a prerequisite for engaging in many types of economic activities.

#### Balance sheets

1.251.32 The balance sheets show the values of the stocks of assets and liabilities held by institutional units or sectors at the beginning and end of an accounting period. As already noted, the values of the assets and liabilities held at any moment in time vary whenever any transactions, price changes or other changes affecting the volume of assets or liabilities held take place. These are all recorded in one or another of the accumulation of assets accounts so that the difference between the values in the opening and closing balance sheets is entirely accounted for within the SNA, provided that the assets and liabilities recorded in the balance sheets are valued consistently with the transactions and other changes.

### Other accounts of the SNAtables of the integrated framework of national accounts

1.261.33 The SNA is a rich and detailed economic accounting system that extends well beyond the sequence of <u>economic</u> accounts to encompass other accounts or tables that either contain information that cannot be included in the main accounts or present information in alternative ways, such as matrices, that may be more appropriate for certain types of analysis. It is not proposed to list all these various elements at this point, as they are described in chapter <u>3</u>2, but it is useful to draw attention to <u>fourtwo</u> specific elements which play a major role in the SNA.

#### Supply and use tables

1.27<u>1.34</u>In addition to the flow accounts and balance sheets described earlier, the <u>central\_frameworkintegrated</u> <u>framework</u> of the SNA also contains detailed supply and use tables in the form of matrices that record how supplies of different kinds of goods and services originate from domestic industries and imports and how those supplies are allocated between various intermediate or final uses, including exports. These tables involve the compilation of a set of integrated production and generation of <u>carned</u> income accounts for industries by drawing upon detailed data from industrial censuses or surveys. The supply and use tables provide an accounting framework within which the product flow method of compiling national accounts, whereby the total supplies and uses of individual types of goods and services have to be balanced with each other, can be systematically exploited. The supply and use tables also provide the basic information for the derivation of detailed input-output tables that may be used for purposes of economic analysis and projections. <u>Supply use tables are described in chapter 15</u>.

#### Accounts in volume terms

1.281.35 The SNA also provides specific guidance about the methodology to be used to compile an integrated set of price and volume indices for flows of goods and services, gross and net value added and GDP that are consistent with the concepts and accounting principles of the SNA. It is recommended that annual chain

indices should be used where possible.

1.36 Rates of inflation and economic growth appropriately measured by price and volume indices for the main aggregates of the SNA are key variables both for the evaluation of past economic performance and as targets for the formulation of economic policymaking. They are an essential part of the SNA when any amount of inflation appears and become increasingly important as inflation increases. The SNA also recognizes that the growth in the volume of GDP and the growth of an economy's real income are not the same because of trading gains or losses resulting from changes in international terms of trade. Accounts in volume terms are described in chapter 18.

# Labour market tables

1.37 In productivity studies, data on the labour inputs used by each industry in the process of production are indispensable. For this purpose, and also other purposes, total hours worked is the preferred measure of labour inputs. Labour inputs, or employment, can be measured in a number of ways. These measures are also highly relevant in their own right, and very useful for analysing trends and short-term developments in the labour market. The labour market tables, which are also part of the integrated framework of national accounts, provide a systematic overview of the various measures of employment, consistent with the SNA. Labour market tables are described in chapter 16.

# Capital services tables

1.291.38 Another important aspect of productivity studies, as well as an important factor of production, is capital services. Capital services are the sum of the return on capital for assets used in production and depreciation (or depletion in the case of natural resource). Tables on capital services, including information on capital stocks, which are the stocks of assets from which capital services are derived, are also part of the integrated framework of national accounts. Capital services are described in chapter 17,

# D. Gross and net measurement

- 1.39 The role and prominent use of GDP and other gross measures has been well established in the SNA sequence of economic accounts. However, net measures, where depreciation and depletion are deducted from the corresponding gross measures, can also be derived. Examples include net domestic product (NDP) and net national income (NNI). Historically, mainly due to difficulties in compiling estimates of depreciation, these net measures have either not been compiled or have been assigned a lesser status. However, with the increased focus on well-being and sustainability, it is increasingly recognized that net measures, which are more reflective of the actual costs borne in production, are conceptually superior to their gross counterparts. Furthermore, in recent years, there has been greater attention paid to improving measures of depreciation, including comparability across countries, through such initiatives as Measuring Capital OECD Manual 2009.
- 1.40 For these reasons, compilers of national accounts statistics are encouraged to give greater focus to the compilation of net measures. They are encouraged to present these measures alongside the traditional gross measures, not as a replacement for these measures but to complement them, in order to provide a valuable tool for analyzing issues relating to well-being and sustainability. The compilation of net income measures is particularly encouraged.

# E. The SNA main aggregates

 

 1.41
 A number of identities, which provide insight into particular aspects of the economy, can be derived from the sequence of economic accounts. This section summarizes the main ones. Further information on SNA identities is provided in the chapter 3, the chapters describing the various accounts that make up the sequence of economic accounts, and chapter 19.

- 1.42 As mentioned in paragraph 1.xx, the most important aggregate in the SNA relates to the domestic production of goods and services. Historically, GDP has been the key measure of domestic production; however as discussed above, NDP, which is equal to GDP less depreciation and depletion, is conceptually superior, and countries are encouraged to compile estimates of NDP to complement GDP.
- 1.43 GDP can be derived directly from the production account as the value of output less intermediate consumption plus any taxes less subsidies on products not included in the value of output. GDP represents the sum of the value added of all domestic producers. As explained in paragraphs 19.47, GDP can also be derived from expenditures in an economy, or from the generation of earned income.
- 1.44The concept of income is another important aspect of the SNA. As well as income earned from domestic<br/>production, an economy may also receive income from the rest of the world. On the other hand, some of the<br/>income earned from domestic production may be payable to the rest of the world. Hence, gross national<br/>income (GNI) equals GDP plus earned income receivable from the rest of the world less earned income<br/>payable to the rest of the world. Net National Income (NNI) is calculated using a similar formula to that used<br/>to calculate GNI, with NDP replacing GDP. In other words, NNI equals GNI less depreciation and depletion.<br/>GNI/NNI can be adjusted by adding current transfers receivable from abroad and deducting current transfers<br/>payable abroad to derive measures of gross and net national disposable income (GNDI/NNDI).
- 1.45 An economy's disposable income is used to fund its consumption. After adjusting for changes in pension entitlements, any amounts left over represent saving. Accordingly, gross national saving is equal to GNDI less final consumption, and net national saving is equal to NNDI less final consumption.
- 1.46 An economy's saving can be used to fund the acquisition of non-financial assets. What is left over is generally available to be lent in the form of the net acquisition of financial assets (i.e., the acquisition of financial assets less the incurrence of financial liabilities). If the value of an economy's acquisition of non-financial assets is greater than its saving, then the economy is a net borrower as the incurrence of financial liabilities must exceed the acquisition of financial assets to fund the acquisition of the non-financial assets. Thus, net lending/borrowing can be derived by deducting the acquisition less disposals of non-financial assets from saving, and adding capital transfers receivable less capital transfers payable from the rest of the world to saving. When net saving is used in the calculation, depreciation and depletion are added in as these are recorded as negative expenditures as they represent a source of funds for the acquisition of assets. Net lending/net borrowing can also be derived as the acquisition of financial assets less the incurrence of financial liabilities. The fact that net lending/borrowing can be derived in two ways is important in balancing the accounts, as described in chapter 19.
- 1.47Turning to balance sheets, the key identity is an economy's net worth, which is the value of its non-financial<br/>and financial assets less the value of its liabilities, noting that all liabilities recorded in the SNA are financial<br/>liabilities. The change in net worth between two points in time is equal to the sum of changes in net worth<br/>due to saving, changes in net worth due to capital transfers receivable from the rest of the world less capital<br/>transfers payable to the rest of the world, changes in net worth due to nominal holding gains and losses, and<br/>changes in net worth due to other changes in the volume of assets or liabilities during the period between the<br/>two points in time.

# **D.<u>F.</u>** Uses of the SNA

1.301.48 The main objective of the SNA is to provide a comprehensive conceptual and accounting framework that can be used to create a macroeconomic database suitable for analysing and evaluating the performance of an economy. The existence of such a database is a prerequisite for informed, rational policymaking and decision-taking. Some of the more specific uses of the SNA are described in the following sections.

# 1. Monitoring the behaviour of the economy

1.31<u>1.49</u>Certain key aggregates of the SNA, such as GDP and GDP per head of population, have acquired an identity of their own and are widely used by analysts, politicians, the press, the business community and the public at large as summary, global indicators of economic activity and welfare. Movements of such aggregates, and their associated price and volume measures, are used to evaluate the overall performance of the economy and

hence to judge the relative success or failure of economic policies pursued by governments. <u>Also, as</u> mentioned above, aggregates such as NDP and NNI can provide valuable insights into economic well-being and sustainability.

1.32<u>1.50</u>National accounts data provide information covering both different types of economic activities and the different sectors of the economy. It is possible to monitor the movements of major economic flows such as production, household consumption, government consumption, capital formation, exports, imports, etc., in both value and volume terms. Moreover, information is provided about certain key balancing items and ratios which can only be defined and measured within an accounting framework, for example, the budget surplus or deficit, the share of income that is saved or invested by individual sectors of the economy or the economy as a whole, the trade balance, etc. The SNA also provides the background against which movements of short-term indicators, such as monthly indices of industrial production, consumer or producer prices can be interpreted and evaluated. The monitoring of the behaviour of the economy may be significantly improved if at least some of the main aggregates of the SNA are not usually compiled more frequently than once a year.

# 2. Macroeconomic analysis

- 1.33<u>1.51</u>National accounts are also used to investigate the causal mechanisms at work within an economy. Such analysis usually takes the form of the estimation of the parameters of functional relationships between different economic variables by applying econometric methods to time series of data in both value and volume terms compiled within a national accounting framework. The types of macroeconomic models used for such investigations may vary according to the school of economic thought of the investigator as well as the objectives of the analysis, but the SNA is sufficiently flexible to accommodate the requirements of different economic theories or models, provided only that they accept the basic concepts of production, consumption, income, etc. on which the SNA is based.
- 1.34<u>1.52</u> Economic policy in the short term is formulated on the basis of an assessment of the recent behaviour and current state of the economy and a view, or precise forecast, about likely future developments. Short-term forecasts are typically made using econometric models of the type just described. Over the medium- or long-term, economic policy has to be formulated in the context of a broad economic strategy.
- 1.35<u>1.53</u>Economic policymaking and decision-taking take place at all levels of government and also within public and private corporations. Large corporations such as multinationals have the ability to build their own macroeconomic models tailored to their own requirements, for which they need national accounts data. The investment programmes of major corporations must be based on long-term expectations about future economic developments that require national accounts data. There are also specialist agencies that provide forecasts for individual clients in return for fees. Such agencies typically require very detailed national accounts data.

# 3. International comparisons

- 1.361.54 The SNA is used for international reporting of national accounts data that conform to standard, internationally accepted concepts, definitions and classifications. The resulting data are widely used for international comparisons of the volumes of major aggregates, such as GDP or GDP per head, and also for comparisons of structural statistics, such as ratios of investment, taxes or government expenditures to GDP. Such comparisons are used by economists, journalists or other analysts to evaluate the performance of one economy against that of other similar economies. They can influence popular and political judgements about the relative success of economic programmes in the same way as developments over time within a single country. Databases consisting of sets of national accounts for groups of countries can also be used for econometric analyses in which time-series and cross- section data are pooled to provide a broader range of observations for the estimation of functional relationships.
- 1.37<u>1.55</u>Levels of GDP or, alternatively, gross national income (GNI) per head in different countries are also used by international organizations to determine eligibility for loans, aid or other funds or to determine the terms or

conditions on which such loans, aid or funds are made available. When the objective is to compare the volumes of goods or services produced or consumed per head, data in national currencies must be converted into a common currency by means of purchasing power parities and not exchange rates. It is well known that, in general, neither market nor fixed exchange rates reflect the relative internal purchasing powers of different currencies. When exchange rates are used to convert GDP, or other statistics, into a common currency the prices at which goods and services in high-income countries are valued tend to be higher than in low-income countries, thus exaggerating the differences in real incomes between them. Exchange rate converted data must not, therefore, be interpreted as measures of the relative volumes of goods and services concerned. Levels of GDP, or GDP per head, in different countries are also used to determine, in whole or in part, the size of the contributions which the member countries of an international organization make to finance the operations of the organization.

1.381.56 Although international organizations use the SNA in order to be able to collect internationally comparable national accounts data, the SNA has not been created for this purpose. It has become the standard, or universal, system used with little or no modification by most countries in the world for their own national purposes. National statistical offices and government agencies have a strong vested interest in ensuring that the SNA meets their own analytic and policy requirements and have taken an active part in the development of the SNA for this reason.

# E.G. The boundaries of the SNA

#### **1.** Non-monetary transactions

- 1.39<u>1.57</u> When goods and services produced within the economy are sold in monetary transactions, their values are automatically included in the accounts of the SNA. Many goods or services are not actually sold but are nevertheless supplied to other units: for example, they may be bartered for other goods or services or provided free as transfers in kind. Such goods and services must be included in the accounts even though their values have to be estimated. The goods or services for sale. Moreover, the transactions in which the goods and services are supplied to other units are also proper transactions even though the producers do not receive money in exchange. It is misleading to describe such output as "imputed". For example, the services of financial intermediaries which are measured indirectly in the SNA do actually take place; but their values have to be measured indirectly. It is the value, not the transaction that is "imputed".
- 1.40<u>1.58</u>When goods or services are retained for own use, no transactions with other units take place. In such cases, in order to be able to record the goods or services in the accounts, internal transactions have to be recorded whereby producers allocate the goods or services for their own consumption or capital formation and values also have to be estimated for them.
- 1.41<u>1.59</u> Thus, estimates and imputations are needed in order to be able to record in the accounts productive activities whose outputs are not disposed of in monetary transactions with other units. Such estimates and imputations should not be interpreted as introducing hypothetical activities or flows of goods and services into the SNA. Their purpose is the opposite, namely, to capture in the accounts major flows of goods and services actually taking place in the economy that would otherwise be omitted. In order to obtain comprehensive measures, values have to be estimated for all outputs of goods and services that are not sold but disposed of in other ways.
- 1.42<u>1.60</u>In practice the SNA does not record all outputs, however, because domestic and personal services produced and consumed by members of the same household are omitted. (However, as explained below, countries are encouraged to compile extended accounts on unpaid household service work.) Subject to this one major exception, GDP is intended to be a comprehensive measure of the total gross value added produced by all resident institutional units. GDP is confined to outputs produced by economic activities that are capable of being provided by one unit to another. Not all activities that require the expenditure of time and effort by persons are productive in an economic sense, for example, activities such as eating, drinking or sleeping cannot be produced by one person for the benefit of another.

# 2. The production boundary

1.43<u>1.61</u> The activity of production is fundamental. In the SNA, production is understood to be a physical process, carried out under the responsibility, control and management of an institutional unit, in which labour and assets are used to transform inputs of goods and services into outputs of other goods and services. All goods and services produced as outputs must be such that they can be sold on markets or at least be capable of being provided by one unit to another, with or without charge. The SNA includes within the production boundary all production actually destined for the market, whether for sale or barter. It also includes all goods or services provided free to individual households or collectively to the community by government units or NPISHs.

# **Household production**

- 1.44<u>1.62</u> The main problem for defining the range of activities recorded in the production accounts of the SNA is to decide upon the treatment of activities that produce goods or services that could have been supplied to others on the market but are actually retained by their producers for their own use. These cover a very wide range of productive activities, in particular:
  - a. The production of agricultural goods by household enterprises for own final consumption;
  - b. The production of other goods for own final use by households: the construction of dwellings, the production of foodstuffs and clothing, etc.;
  - c. The production of housing services for own final consumption by owner occupiers;
  - d. The production of domestic and personal services for consumption within the same household: the preparation of meals, care and training of children, cleaning, repairs, etc.

All of these activities are productive in an economic sense. However, inclusion in the SNA is not simply a matter of estimating monetary values for the outputs of these activities. If values are assigned to the outputs, values have also to be assigned to the incomes generated by their production and to the consumption of the output. It is clear that the economic significance of these flows is very different from that of monetary flows. For example, the incomes generated are automatically tied to the consumption of the goods and services produced; they have little relevance for the analysis of inflation or deflation or other disequilibria within the economy. The inclusion of large non-monetary flows of this kind in the accounts together with monetary flows can obscure what is happening on markets and reduce the analytic usefulness of the data.

- 1.63 The SNA is designed to meet a wide range of analytical and policy needs. A balance has to be struck between the desire for the accounts to be as comprehensive as possible and the need to prevent flows used for the analysis of market behaviour and disequilibria from being swamped by non-monetary values. The SNA therefore includes all production of goods for own use within its production boundary, as the decision whether goods are to be sold or retained for own use can be made even after they have been produced, but it excludes all production of services for own final consumption within households (except for the services produced by employing paid domestic staff and the own-account production of housing services by owner- occupiers). The services are excluded because the decision to consume them within the household is made even before the service is provided. The location of the production boundary in the SNA is a compromise, but a deliberate one that takes account of the needs of most users. In this context it may be noted that in labour force statistics economically active persons are defined as those engaged in productive activities as defined in the SNA. If the production boundary were extended to include the production of personal and domestic services by members of households for their own final consumption, all persons engaged in such activities would become self-employed, making unemployment virtually impossible by definition. This illustrates the need to confine the production boundary in the SNA and other related statistical systems to market activities or fairly close substitutes for market activities.
- 1.451.64 The exclusion of unpaid household service work from the SNA production boundary is seen as a significant limitation in using GDP as a measure of economic well-being since it omits a significant volume of production and consumption undertaken by households that relates directly to the health, education and general well-being of people. Given this limitation, countries are encouraged to develop extended accounts

for unpaid household service work to provide important insights into economic well-being and a range of data can be organized following accounting principles to support extended analysis. Unpaid household service work accounts are described in more detail in chapter 34 Measuring well-being.

### Other production boundary problems

- 1.461.65 Certain natural processes may or may not be counted as production depending upon the circumstances in which they occur. A necessary condition for an activity to be treated as productive is that it must be carried out under the instigation, control and responsibility of some institutional unit that exercises ownership rights over whatever is produced. For example, the natural growth of stocks of fish in the high seas not subject to international quotas is not counted as production: the process is not managed by any institutional unit and the fish do not belong to any institutional unit. On the other hand, the growth of fish in fish farms is treated as a process of production in much the same way that rearing livestock is a process of production. Similarly, the natural growth of wild,completely uncultivated forests or wild fruits or berries is not counted as production, whereas the cultivation of crop-bearing trees, or trees grown for timber or other uses, is counted in the same way as the growing of annual crops. However, the deliberate felling of trees in wild-completely uncultivated forests, and the gathering of wild fruit or berries, and also firewood, counts as production. Similarly, rainfall and the flow of water down natural watercourses are not processes of production, whereas storing water in reservoirs or dams and the piping, or carrying, of water from one location to another all constitute production.
- 1.47<u>1.66</u> These examples show that many activities or processes that may be of benefit to institutional units, both as producers and consumers, are not processes of production in an economic sense. Rainfall may be vital to the agricultural production of a country but it is not a process of production whose output can be included in GDP. Similarly, a range of ecosystem services that do not produce any direct monetary benefit are excluded. However, as explained in chapter 34 Measuring well-being, the compilation of complementary accounts covering ecosystem services according to the System of Environmental- Economic Accounting Ecosystem Accounting 2021 is encouraged.

# 3. The consumption boundary

1.48<u>1.67</u> The coverage of production in the SNA has ramifications that extend considerably beyond the production account itself. The boundary of production determines the amount of value added recorded and hence the total amount of income generated by production. The range of goods and services that are included in household final consumption expenditures, and actual consumption, is similarly governed by the production boundary. For example, these expenditures include the estimated values of the agricultural products consumed by households that they have produced themselves and also the values of the housing services consumed by owner occupiers, but not the values of "do-it-yourself" repairs and maintenance to vehicles or household durables, the cleaning of dwellings, the care and training of children, or similar domestic or personal services produced for own final consumption. Only the expenditures on goods utilized for these purposes, such as cleaning materials, are included in household final consumption expenditures.

# 4. The asset boundary

1.491.68 Balance sheets are compiled for institutional units, or sectors, and record the values of the assets they own or the liabilities they have incurred. Assets as defined in the SNA are entities that must be owned by some unit, or units, and from which economic benefits are derived by their owner(s) by holding or using them over a period of time. Financial assets and fixed assets, such as machinery, equipment and structures which have themselves been produced as outputs in the past, are clearly covered by this definition. However, the ownership criterion is important for determining which natural resources are treated as assets in the SNA. Natural resources such as land, mineral deposits, fuel reserves, renewable energy resources, uncultivated forests or other vegetation and wild animals are included in the balance sheets provided that institutional units are exercising effective ownership rights over them, that is, are actually in a position to be able to benefit from them. Assets need not be privately owned and could be owned by government units exercising ownership rights on behalf of entire communities. Thus, many environmental assets are included within the

SNA. Resources such as the atmosphere or high seas, over which no ownership rights can be exercised, or mineral or fuel deposits that have not been discovered or that are unworkable, as demonstrated by the absence of production or the expectation of production via the granting of a lease to exploit the resources, are not included as they are not capable of bringing any benefits to their owners, given the technology and relative prices existing at the time.

1.501.69 Changes in the values of natural resources owned by institutional units between one balance sheet and the next are recorded in the accumulation of assets accounts of the SNA. For example, the depletion of a natural resource as a result of its use in production is recorded in the <u>capital account</u>, together with the depreciation of fixed assets. On the other hand other changes in volume of assets account, together with losses of fixed non-financial assets due to their destruction by natural disasters (floods, earthquakes, etc.) are recorded in the other changes in the volume of assets and liabilities account. Conversely, whenAlso, the appearance of workable deposits or reserves of minerals or fuels are discovered or previously unworkable deposits become workable, their appearance as demonstrated by their use in production or their expected used via the granting of a lease for production are is recorded in this account and they enter the balance sheets in this way.

# 5. National boundaries

- 1.51<u>1.70</u> The accounts of the SNA are compiled for resident institutional units grouped into institutional sectors and subsectors. The concept of residence is the same as that used in the Balance of Payments and International Investment Position Manual, <u>Sixth-Seventh</u> Edition (International Monetary Fund (IMF), 2<u>025008</u>), known as BPM<u>76</u>. An institutional unit is said to be resident within the economic territory of a country when it maintains a centre of predominant economic interest in that territory, that is, when it engages, or intends to engage, in economic activities or transactions on a significant scale either indefinitely or over a long period of time, usually interpreted as one year.
- 1.521.71 The GDP of a country, viewed as an aggregate measure of production, is equal to the sum of the gross value added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs). This is not exactly the same as the sum of the gross value added of all productive activities taking place within the geographical boundaries of the national economy. Some of the production of a resident institutional unit may take place abroad, for example, the installation of some exported machinery or equipment or a consultancy project undertaken by a team of expert advisers working temporarily abroad. Conversely, some of the production taking place within a country may be attributable to non- resident institutional units.
- 1.531.72 When GDP is derived from the expenditure side, allowance has also to be made for goods and services produced by non-residents but consumed by residents as well as for goods and services produced by residents but consumed abroad. For the SNA to be comprehensive in coverage, all transactions with the rest of the world have to be identified so their impact on measures relating to the resident economy is properly accounted for. The complete set of transactions with the rest of the world in the SNA matches exactly the set of transactions captured in the balance of payments.

# 6. Final consumption, intermediate consumption and gross fixed capital formation

- 1.54<u>1.73</u> The contents of the accounts are determined not only by the conceptual framework, definitions and classifications of the SNA but also by the ways in which they are interpreted and implemented in practice. No matter how simple and precise concepts and classifications may appear in principle, there are inevitably difficult borderline cases which cannot easily be fitted into predetermined categories. These points may be illustrated by considering a fundamental distinction in economics and in the SNA, namely, the distinction between consumption and gross fixed capital formation (or gross fixed investment, as it is often described in other contexts).
- 1.55<u>1.74</u>Before considering the difference between consumption and investment, though, it is necessary to look more closely at the nature of consumption. Consumption is an activity in which institutional units use up goods or services, but there are two quite different kinds of consumption. Intermediate consumption consists of goods and services used up in the course of production within the accounting period. Final consumption consists of

goods and services used by individual households or the community to satisfy their individual or collective needs or wants. The activity of gross fixed capital formation, like intermediate consumption, is restricted to institutional units in their capacity as producers, being defined as the value of their acquisitions less disposals of fixed assets. Fixed assets are produced assets (such as machinery, equipment, buildings or other structures) that are used repeatedly or continuously in production over several accounting periods (more than one year). The distinction between intermediate consumption and gross capital formation depends on whether the goods and services involved are <u>expected to be</u> completely used up <u>within a yearin the accounting period</u> or not. If they are, the use of them is a current transaction recorded as intermediate consumption; if not it is an accumulation transaction recorded in the capital account.

1.561.75 The general nature and purpose of the distinction between gross fixed capital formation and consumption, whether intermediate or final, is clear. The distinction is fundamental for economic analysis and policymaking. Nevertheless, the borderline between consumption and gross fixed capital formation is not always easy to determine in practice. Certain activities contain some elements that appear to be consumption and at the same time others that appear to be capital formation. In order to try to ensure that the SNA is implemented in a uniform way, decisions have to be taken about the ways in which certain difficult, even controversial, items are to be classified. Two examples are given below.

#### Human capital

- 1.57<u>1.76</u>It is often proposed that expenditures on staff training and education should be classified as gross fixed capital formation as a form of investment in human capital. The acquisition of knowledge, skills and qualifications increases the productive potential of the individuals concerned and is a source of future economic benefit to them. However, while knowledge, skills and qualifications are clearly assets in a broad sense of the term, they cannot be equated with fixed assets as understood in the SNA. They are acquired through learning, studying and practising, activities that cannot be undertaken by anyone else on behalf of the student and thus the acquisition of knowledge is not a process of production even though the instruction conveyed by education services is. The education services produced by schools, colleges, universities, etc. are thus treated as being consumed by students in the process of their acquiring knowledge and skills. This type of education is treated as final consumption. When training is given by an employer to enhance the effectiveness of staff, the costs are treated as intermediate consumption.
- 1.58<u>1.77</u> This treatment of education costs is consistent with the production and asset boundaries of the SNA but not all users of the SNA find it satisfactory in all instances. Accordingly, as described in chapter 34, the compilation of thematic accounts on education and training is encouraged, as well as extended accounts that treat human capital as an assetHowever, as explained below, the SNA is such that users are encouraged to explore alternative conventions in the form of satellite accounts, described in chapter 29. An alternative treatment for the recording of human capital is one such application.

# Repairs, maintenance and gross fixed capital formation

1.591.78 Another, less familiar, example of the intrinsic difficulty of trying to draw a dichotomy between consumption and gross fixed capital formation is provided by repairs and maintenance. Ordinary maintenance and repairs undertaken by enterprises to keep fixed assets in good working order are treated as intermediate consumption. However, major improvements, additions or extensions to fixed assets, both machinery and structures, which improve their performance, increase their capacity or prolong their expected working lives count as gross fixed capital formation. In practice it is not easy to draw the line between ordinary repairs and major improvements, although the SNA provides certain recommendations for this purpose. Some analysts, however, consider that the distinction between ordinary repairs and maintenance and major improvements and additions is neither operational nor defensible and would favour a more "gross" method of recording in which all such activities are treated as gross fixed capital formation.

# **F.H.** The SNA as a coordinating framework for statistics

# 1. Harmonization between different statistical systems

- 1.601.79 The SNA has a very important statistical function by serving as a coordinating framework for economic statistics in two different senses. In the first place, the SNA is seen as the conceptual framework for ensuring the consistency of the definitions and classifications used in different, but related, fields of statistics. Secondly, the SNA acts as an accounting framework to ensure the numerical consistency of data drawn from different sources, such as industrial inquiries, household surveys, merchandise trade statistics, VAT returns and other administrative sources.
- 1.80 Consistency between different statistical systems enhances the analytical usefulness of all the statistics involved. The SNA has always occupied a central position in economic statistics because the data from more specialized systems, such as balance of payments or labour force statistics, typically have to be used in conjunction with national accounts data. The need for harmonization of the SNA and related statistical systems, such as financial statistics or balance of payments statistics, leads to the practice of revising other statistical systems in parallel with, and in close collaboration with, that of the SNA. This coordination eliminates conceptual differences between them other than a few exceptions that can be specifically justified in terms of the special characteristics of different kinds of data, or the special requirements of different kinds of users. Harmonization between the SNA and other major systems has proved to be largely successful and has been achieved by making changes to the SNA as well as to the other systems.
- 1.81 The other major macroeconomic statistical standards that complement the SNA include:
  - The IMF's Balance of Payments and International Investment Position Manual Seventh Edition (BPM7) 2025, which serves as the standard framework for statistics on the transactions and positions between an economy and the rest of the world and facilitates analysis of balance of payments and related issues. Further information on the BPM is provided in chapter 33.
  - The IMF's Government Finance Statistics Manual (GFSM) 2014, which describes the government finance statistics (GFS) framework, designed to support fiscal analysis. Further information on the GFSM is provided in chapter 31.
  - The IMF's Monetary and Financial Statistics Manual and Compilation Guide (MFSMCG) 2016, which provides guidelines for the compilation and presentation of monetary statistic within a financial statistics framework, as a critical input for monetary policy formulation and monitoring. Further information on the MFSM is provided in chapter 29.
  - The United Nations et al System of Environmental-Economic Accounting 2012—Central Framework (SEEA CF), which is a multipurpose conceptual framework that describes the interactions between the economy and the environment, and the stocks and changes in stocks of environmental assets. The SEEA CF is complemented by the SEEA Ecosystem Accounting 2021 (SEEA EA), which provides an integrated and comprehensive statistical framework for organizing data about habitats and landscapes, measuring the ecosystem services, tracking changes in ecosystem assets, and linking this information to economic and other human activity. Further information on SEEA CF and SEEA EA is provided in chapter 35.

1.82 Annex 1 provides a consolidated description of the macro-economic statistics that are related to the SNA.

# 2. The use of microdata for macroeconomic accounting

1.61<u>1.83</u> The sequence of <u>economic</u> accounts and balance sheets of the SNA could, in principle, be compiled at any level of aggregation, even that of an individual institutional unit. It might therefore appear desirable if the macroeconomic accounts for sectors or the total economy could be obtained directly by aggregating corresponding data for individual units. There would be considerable analytical advantages in having microdatabases that are fully compatible with the corresponding macroeconomic accounts for sectors or the total economy. Data in the form of aggregates, or averages, often conceal a great deal of useful information

about changes occurring within the populations to which they relate. For example, economic theory indicates that changes in the pattern of the distribution of income may be expected to have an impact on aggregate consumption over and above that due to changes in the aggregate level of income. Information relating to individual units may be needed not only to obtain a better understanding of the working of the economy but also to monitor the impact of government policies, or other events, on selected types of units about which there may be special concern, such as households with very low incomes. Microdata sets also make it possible to follow the behaviour of individual units over time. Given the continuing improvements in computers and communications, the management and analysis of very large microdatabases is becoming progressively easier. Data can be derived from a variety of different sources, such as administrative and business records, as well as specially conducted censuses and surveys.

- 1.621.84In practice, however, macroeconomic accounts can seldom be built up by simply aggregating the relevant microdata. Even when individual institutional units keep accounts or records, the concepts that are needed or appropriate at a micro level may not be suitable at a macro level. Individual units may be obliged to use concepts designed for other purposes, such as taxation. The accounting conventions and valuation methods used at a micro level typically differ from those required by the SNA. For example, the widespread use of historic cost accounting means that the accounts of individual enterprises may differ significantly from those used in the SNA. Depreciation as calculated for tax purposes may be quite arbitrary and unacceptable from an economic viewpoint as a measure of consumption of fixed capital depreciation for national accounting purposes. In such situations, it is impractical to try to adjust the individual accounts of thousands of enterprises before aggregating them. Instead the data are adjusted after they have been aggregated to some extent. Of course, the data do not have to be aggregated to the level of the total economy, or even complete sectors or industries, before being adjusted and it is likely to be more efficient to make the adjustments for smaller and more homogenous groups of units. This may involve compiling so-called intermediate systems of accounts. At whatever level of aggregation the adjustments are made, the inevitable consequence is to make the resulting macrodata no longer equivalent to simple aggregations of the microdata from which they are derived. When the microdata are not derived from business accounts or administrative records but from censuses or surveys designed for statistical purposes, the concepts used should be closer to those required, but the results may still require adjustment at a macro level because of incomplete coverage (the surveys being confined to enterprises above a certain size, for example) and bias from response errors.
- 1.631.85 Most households are unlikely to keep accounts of the kind needed by the SNA. Because of this, when mMicrodata for households are typically derived from sample surveys that may be subject to significant response and reporting errors. It may be particularly difficult to obtain reliable and meaningful data about the activities of small unincorporated enterprises owned by households. Aggregates based on household surveys have to be adjusted for certain typical biases, such as the underreporting of certain types of expenditure (on tobacco, alcoholic drink, gambling, etc.) and also to make them consistent with macrodata from other sources, such as imports. The systematic exploitation of microdata may also be restricted by the increasing concerns about confidentiality and possible misuse of such databases.
- 1.641.86 It may be concluded therefore that, for various reasons, it may be difficult, if not impossible, to achieve microdatabases and macroeconomic accounts that are fully compatible with each other in practice. Nevertheless, as a general objective, the concepts, definitions and classifications used in economic accounting should, so far as possible, be the same at both a micro and macro level to facilitate the interface between the two kinds of data. Tables that reconcile the differences between micro and macro statistics, including any adjustments made to the microdata should be produced.

# G.I. Links with business accounting

1.651.87 The accounting rules and procedures used in the SNA are based on those long used in business accounting. The traditional double-entry bookkeeping principle, whereby a transaction gives rise to a pair of matching debit and credit entries within the accounts of each of the two parties to the transaction, is a basic axiom of economic or national accounting. For example, recording the sale of output requires not only an entry in the production account of the seller but also an entry of equal value, often described as the counterpart, in the seller's financial account to record the cash, or short-term financial credit, received in exchange for the output sold. As two matching entries are also needed for the buyer, the transaction must give rise to four

simultaneous entries of equal value in a system of macroeconomic accounts covering both the seller and the buyer. In general, a transaction between two different institutional units always requires four equal, simultaneous entries in the accounts of the SNA (that is, quadruple entry accounting) even if the transaction is a transfer and not an exchange and even if no money changes hands. These multiple entries enable the economic interactions between different institutional units and sectors to be recorded and analysed. However, transactions within a single unit (such as the consumption of output by the same unit that produced it) require only two entries whose values have to be estimated.

- 1.661.88 The design and structure of the SNA draws heavily on economic theory and principles as well as business accounting practices. Basic concepts such as production, consumption and capital formation are meant to be rooted in economic theory. When business accounting practices conflict with economic principles, priority is given to the latter, as the SNA is designed primarily for purposes of economic analysis and policymaking. The difference between business accounting and economic theory can be illustrated by the concept of cost of production used in the SNA.
- 1.67<u>1.89</u>Business accounts commonly (but not invariably) record costs on an historic basis, partly to ensure that they are completely objective. Historic cost accounting requires goods or assets used in production to be valued by the expenditures actually incurred to acquire those goods or assets, however far back in the past those expenditures took place. In the SNA, however, the concept of opportunity cost as defined in economics is employed. In other words, the cost of using, or using up, some existing asset or good in one particular process of production is measured by the amount of the benefits that could have been secured by using the asset or good in alternative ways. Opportunity cost is calculated with reference to the opportunities foregone at the time the asset or resource is used, as distinct from the costs incurred at some time in the past to acquire the assets and goods used in production are valued at their actual or estimated current market prices at the time the production takes place. Current cost accounting is sometimes described as replacement cost accounting, although there may be no intention of actually replacing the asset in question after it has been used.
- 1.681.90 When there is persistent inflation, even at moderate levels, the use of historic costs tends to underestimate the opportunity costs of production in an economic sense so that historic cost <u>operating</u> profit may be much greater than the operating surplus as defined in the SNA. <u>Operating pProfits at historic costs are liable to give very misleading signals as to the profitability of the production processes to which they relate by systematically undervaluing inputs compared with outputs. They can lead to mistaken decisions at both a microeconomic and macroeconomic level.</u>
- 1.691.91 Current cost accounting has ramifications that permeate the entire SNA. It affects all the accounts and balance sheets and their balancing items. A fundamental principle underlying the measurement of gross value added, and hence GDP, is that output and intermediate consumption must be valued at the prices current at the time the production takes place. This implies that goods withdrawn from inventories must be valued at the prices prevailing at the times the goods are withdrawn and not at the prices at which they entered inventories. This method of recording changes in inventories is not commonly used in business accounting, however, and may sometimes give very different results, especially when inventory levels fluctuate while prices are rising. Similarly, consumption of fixed capital depreciation in the SNA is calculated on the basis of the estimated opportunity costs of using the assets at the time they are used, as distinct from the prices at which the assets were acquired. Even when the fixed assets used up are not actually replaced, the amount of consumption of fixed capital<u>depreciation</u> charged as a cost of production should be sufficient to enable the assets to be replaced, if desired. When there is persistent inflation, the value of consumption of fixed capital depreciation is likelyable to be much greater than depreciation at historic costs, even if the same assumptions are made in the SNA and in business accounts about the service lives of the assets and their rates of wear and tear and obsolescence. To avoid confusion, the term "consumption of fixed capital" is used in the SNA to distinguish it from "depreciation" as typically measured in business accounts.
- 1.701.92 A difference between the SNA and commercial accounting is that the term "profits" is not used to describe a balancing item in the SNA. The item entrepreneurial income is a close approximation to before tax profits and disposable income to after tax profits. The use of the term disposable income comes from the fact that the corresponding item for the household sector represents the maximum amount available to a household for purposes of consumption after maintaining its net worth intact, that is the current value of its liabilities. For corporations, since they do not have final consumption, this is the

amount available for investment.

1.71<u>1.93</u>Unlike commercial accounting, the SNA excludes from the calculation of income any assets received or disposed of as a result of capital transfers that merely redistribute wealth between different units, and also any assets received or disposed of as a result of events not connected with production, such as earthquakes or other natural disasters, or acts of war. <u>HReal holding gains or losses on assets or liabilities due to changes in their relative prices are also excluded from income generated by production.</u>

# 1. International accounting standards

- 1.94The key international accounting standards for businesses are the International Financial Reporting Standards<br/>(IFRS), which are a set of rules for company financial statements developed by the International Accounting<br/>Standards Board (IASB). The IASB is an independent standard-setting body. The IFRS replaced the<br/>International Accounting Standards (IAS) in 2001. Companies in more than 140 jurisdictions are required to<br/>use them when reporting on their financial health.
- 1.95
   In 2025, most countries have adopted IFRS for company accounting. Exceptions include the United States, China and Japan. The United States requires public companies to follow Generally Accepted Accounting Principles (GAAP). However, there is ongoing work to converge GAAP and IFRS. China is working towards adopting IFRS and Japan allows voluntary adoption.
- 1.96 For public sector entities, the International Public Sector Accounting Standards Board (IPSASB) has developed the International Public Sector Accounting Standards (IPSAS). These standards are applied by national, regional and local governments, and related governmental entities (such as agencies, boards and commissions). IPSAS do not apply to government business enterprises. IPSAS adapt IFRS to a public sector context when appropriate, wherever possible maintaining the accounting treatment of IFRS unless there is a significant public sector issue which warrants a departure.
- 1.97 Notwithstanding the differences between the SNA and business accounting that are mentioned above, there is considerable overlap between IFRS/IPSAS and the SNA. Both the international accounting standards and the SNA are accrual-based; have assets, liabilities, revenues and expenditures; and apply similar concepts such as recognition, measurement and control. However, there are some conceptual differences between the accounting standards and the SNA.
- 1.72<u>1.98</u> A feature of the 2008 update of the SNA isIn recognition of the increasing use of international accounting standards by corporations and in the public sector, <u>s</u>-Subsequent chapters make reference to <u>IFRS and IPSAS</u> International Accounting Standards Board (IASB) and the International Public Sector Accounting Standards Board (IPSASB) norms. In several cases, notably on pension liabilities and intangible assets, the feasibility of including certain items in the SNA is dependent on the application of the international accounting standards. Chapters 28 and 30 provide further information on the relationship between the SNA and IFRS and the

# H.J. Expanding the scope of the SNA

- 1.731.99 The SNA is designed to be sufficiently comprehensive that individual countries, whatever their economic structures, institutional arrangements or level of development, can select from within it those parts of the SNA that are considered to be most relevant and useful to implement in the light of their own needs and capabilities. The SNA is meant to be implemented in a flexible manner and the accounts and tables, classifications and sectoring presented in this volume should not be regarded as fixed. For example, classifications of institutional units, transactions and assets may be implemented flexibly by introducing further aggregation or disaggregation in order to adapt them to the data availability and special circumstances of different countries. The flexible use of classifications does not change the basic concepts and definitions of the SNA.
- 1.74<u>1.100</u> In some cases, the SNA explicitly insists on flexibility. For example, two alternative methods of subsectoring the general government sector are proposed in chapter 4-<u>5</u> without either being assigned priority. Similarly, although the SNA recommends suggests subsectoring the households sector on the basis of the

household's principal source of income, it stresses that this is only one possible criterion for subsectoring. In some cases, it may be more appropriate to subsector on the basis of socio-economic criteria or the type of area in which the household is located or, indeed, to carry the disaggregation of the households sector further by using two or more criteria together in a hierarchical manner.

1.751.101 Ways in which the SNA may be adapted to meet differing circumstances and needs are addressed in chapters 18.34 to 3929. Chapter 29-38 provides a general discussion on shows how flexibility may be used to develop thematic accounts, which use the same concepts as the SNA but highlight a particular aspect of the economy, taken a stage further by developing satellite accountor extended accounts that are closely linked to the main SNA but are not bound to employ exactly the same concepts or restricted to data expressed in monetary terms. Satellite Extended accounts are intended for special purposes such as monitoring the community's healthunpaid household service work or the state of environment. They may also be used to explore new methodologies and to work out new accounting procedures that, when fully developed and accepted, may become absorbed into the main SNA in the course of time, in the way that input-output analysis, for example, has been integrated into the SNA.

1.2 Another way in which the SNA may be implemented flexibly is by rearranging the data in the accounts in the form of a social accounting matrix in order better to serve particular analytical and policy needs. Such matrices should not be construed as constituting different systems but as alternative ways of presenting the mass of information contained in the SNA which some users and analysts find more informative and powerful for both monitoring and modelling social and economic development.

A. The SNA and measures of welfare

1.3 GDP is often taken as a measure of welfare, but the SNA makes no claim that this is so and indeed there are several conventions in the SNA that argue against the welfare interpretation of the accounts. The implications of some of these conventions are outlined briefly in this section.

**1.** Qualifications to treating expenditure as a welfare measure

1.4 In a market economy, the prices used to value different goods and services should reflect not only their relative costs of production but also the relative benefits or utilities to be derived from using them for production or consumption. This establishes the link between changes in aggregate production and consumption and changes in welfare. However, changes in the volume of consumption, for example, are not the same as changes in welfare. It is widely accepted that, other things being equal, increased expenditure on goods and services leads to increased welfare. The increase in welfare may not, however, be proportionate to the increase in expenditure. Nor is the unit incurring the expenditure necessarily the one that benefits from an increase in welfare. The SNA makes a distinction between actual consumption, showing the amount of goods and services actually consumed, and consumption expenditure. Household actual consumption is greater than consumption expenditure because it includes expenditures incurred by general government and NPISHs on behalf of individual households.

1.5 An increase in consumption of food by someone living in extreme poverty is likely to lead to a greater increase in welfare than a similar increase in consumption by someone already well fed. The SNA however, cannot distinguish this because although the rules allow distinguishing which unit incurs the expenditure as opposed to which unit consumes the food, the valuation basis in the SNA is the price paid for the food with no adjustment for the qualitative benefits derived from its consumption. The most that can be claimed for treating expenditure as a measure of welfare is that it may be a reasonable lower bound on the level of welfare engendered by the expenditure.

#### 1.76

#### 2. Unpaid services and welfare

1.6 The production boundary of the SNA is such that the services produced and consumed by households are not included except for the imputed rental of owner-occupied dwellings and the payments made to domestic staff. Similarly, no estimate is included in the SNA for the labour services of individuals provided without cost to non-profit institutions. In both these cases, the contribution of time increases the welfare of other individuals in the community. The exclusion of these services from the production boundary is not a denial of the welfare properties of the services but a recognition that their inclusion would detract from rather than add to the usefulness of the SNA for the primary purposes for which it is designed, that is economic analysis, decision taking and policymaking.

#### 3. The impact of external events on welfare

1.7 The level of an individual's and a nation's welfare may be affected by a wide range of factors that are not economic in origin. Consider the effects of an exceptionally severe winter combined with an influenza epidemic. Other things being equal, the production and consumption of a number of goods and services may be expected to rise in response to extra demands created by the cold and the epidemic; the production and consumption of fuels, clothing and medical services will tend to increase. As compared with the previous year, people may consider themselves to be worse off overall because of the exceptionally bad weather and the epidemic, notwithstanding the fact that production and consumption may have increased in response to the additional demand for heating and health services. Total welfare could fall even though GDP could increase in volume terms.

1.8 This kind of situation does not mean that welfare cannot be expected to increase as GDP increases, other things being equal. Given the occurrence of the cold and the epidemic, the community presumably finds itself much better off with the extra production and consumption of heating and health services than without them. There may even be a general tendency for production to rise to remedy the harmful effects of events that reduce people's welfare in a broad sense. For example, production may be expected to increase in order to repair the damage caused by such natural disasters as earthquakes, hurricanes and floods. Given that the disaster has occurred, the extra production presumably increases welfare. However the question remains how changes in welfare should be measured over time; a community that has suffered a natural disaster will have a higher level of welfare if damage is repaired than if it is not, but how does this new level of welfare compare to the situation in the absence of the disaster?

#### The impact of externalities on welfare

1.9 Some production activities cause a loss in welfare that is not captured in the SNA. A factory, for example, may generate noise and emit pollutants into the air or nearby water systems to the extent of causing a loss of amenity and thus a loss of welfare to individuals living nearby. As long as there is no financial penalty to the factory, the consequences go unmeasured in the SNA. If, in response to government legislation or otherwise, the factory incurs expenditures that reduce the noise or quantity of pollutants emitted, costs will rise and so will welfare but again the match is not necessarily one to one and the level of welfare after the ameliorations may still be lower than it might be if the factory simply closed down.

1.10 Environmental externalities are a major cause of concern both as regards measuring welfare and indeed economic growth itself. In response to these concerns, a satellite account of the SNA has been developed and is being refined to try to answer such questions.

**5.** Non-economic impacts on welfare

1.11 An individual's state of well being, or welfare, is not determined by economic factors alone. Personal and family circumstances, quality of health, the satisfaction of lack of it derived from employment are just some other factors that affect welfare. It is difficult to imagine an objective way in which factors such as these could be quantified and more difficult to imagine the usefulness of including them in a system designed primarily to facilitate economic analysis.

6. Welfare indicators and macroeconomic aggregates

1.77

1.12 Welfare is a wide ranging concept with many different facets. Some of these may be captured reasonably well by one or more of the key aggregates of the SNA. Others may be captured by using the basic structure of the SNA and expanding it in certain directions, perhaps by including unpaid services and the effects of environmental damage, for example. Yet other aspects are likely to remain forever outside the reach of a system not designed with the measurement of welfare as a prime consideration. It would be foolish to deny this just as it is unrealistic to expect a system of economic accounts to necessarily and automatically yield a wholly satisfactory measure of welfare.

# K. Readers Guide to the SNA

1.102 This edition of the SNA comprises 7 main parts:

I Introduction and overview (chapters 1 to 3)

- II The main foundations (chapters 4 to 6)
- III Structure of the framework and the integrated framework of national accounts (chapters 7 to 21)
- IV Cross-cutting issues (chapters 22 to 27)

V Institutional units and sectors in detail (chapters 28 to 33)

VI Extended and thematic accounts (chapters 34 to 39)

VII Supplementary material (Annexes 1 to 5, as well as references, the glossary and an index)

- 1.103
   Part I provides an overview of the main aspects of the SNA, including its place in the measurement of wellbeing and sustainability (chapter 2) and the main features of the integrated framework that underpins the SNA (chapter 3). This part is helpful for those seeking a broad understanding of the SNA, including users of national accounts statistics who only require a broad overview.
- 1.104Part II deals with the main building blocks of the SNA: flows, stocks and accounting rules (chapter 4),<br/>residence, institutional units and sectors (chapter 5) and enterprises, establishments and industries (chapter<br/>6). This part is helpful for those who want an appreciation of the key aspects of the SNA.
- 1.105 Part III is of particular interest to compilers of national accounts statistics, and may also be relevant to users who would like an in-depth understanding of these statistics. It describes each of the accounts that make up the sequence of economic accounts, including the current accounts (chapters 7 to 10), the accumulation accounts (chapters 11 to 13) and the balance (chapter 14). To complete the integrated framework for national accounts, it also includes chapters on supply and use tables which underpin the production account (chapter 15) as well as chapters on the two key inputs into the production process: labour (chapter 16) and capital services (chapter 17). Measuring prices, volumes and productivity are vital in understanding economic performance and these are dealt with in chapter 18. The part concludes with chapters on summarizing,

integrating and balancing the accounts (chapter 19); elaborating the accounts, including sub-annual and regional accounts (chapter 20); and communicating and disseminating the accounts (chapter 21).

- 1.106 There are a range of issues impacting the economy that cut-across the various accounts in the sequence of economic accounts. These are elaborated in Part IV, and include digitalization (chapter 22), globalization (chapter 23), insurance and pensions (chapter 24), selected issues on financial instruments (chapter 25), Islamic finance (chapter 26) and contracts, leases, licenses and permits (chapter 27). This part will be of interest to compilers and users who want an in-depth understanding of particular aspects of the sequence of economic accounts.
- 1.107Part V provides details on each of the main institutional units and sectors: non-financial corporations (chapter<br/>28), financial corporations (chapter 29), general government and the public-sector (chapter 30), non-profit<br/>institutions (chapter 31) and households (chapter 32). It also includes a chapter on transactions and positions<br/>between residents and non-residents (chapter 33). This part will be mainly of interest to compilers, although<br/>users wanting an in-depth understanding of the accounts may also find it of interest.
- 1.108 The SNA can be enhanced by the compilation of thematic and extended accounts and tables. This is the focus of part V1, which includes chapters on measuring well-being (chapter 34), measuring sustainability of wellbeing (chapter 35), input-output tables (chapter 36), from whom-to-whom tables and related financial analysis (chapter 37), thematic accounts (chapter 38) and informal economy (chapter 39). Once again, this part will be of interest to compilers and users seeking an in-depth understanding.
- 1.781.109 The supplementary material in Part VII includes annexes on international standards for macroeconomic statistics, and the links to the SNA (Annex 1), The classification hierarchies of the SNA and associated codes (Annex 2), the sequence of economic accounts, which provides a numerical example of how the accounts are structured (Annex 3), changes from the 2008 System of National Accounts (Annex 4) and the Research Agenda (Annex 5). This part also includes References, a Glossary and an Index. Of particular note is the Glossary, which has been harmonized across the macro-economic statistics standards.

# Chapter 2: National accounts and its contribution to measuring wellbeing and sustainability

# Draft – Version 10.1

# (new chapter)

# A. Introduction

- 2.1 There can be no doubting the relevance of measuring well-being and sustainability for all countries. We face a real and growing range of economic, social and environmental challenges including poverty and food insecurity, social and health inequality, climate change and biodiversity loss. In different but related ways these challenges affect our capacity to satisfy the needs of current generations (well-being), both in aggregate and in relation to different groups of people (distributions), and to ensure that future generations can satisfy their needs (sustainability). Developing and implementing solutions to these challenges requires that a significant focus be given to the relevant measurement issues by the community of official statisticians and other experts.
- 2.2 The breadth of the measurement requirements in the space of well-being and sustainability means that the SNA as a statistical framework must work with and complement other frameworks and measurement initiatives to support the analysis and discussion of these issues. Thus, this chapter describes the ways in which the SNA can contribute appropriately to the wider objectives of measuring well-being and sustainability. It is also recognized at the outset that assessments of well-being and sustainability are context dependent and consequently the focus of discussion in this chapter is on the organization of relevant data to support such assessments rather than providing a definitive quantification of well-being or sustainability.
- 2.3 The measurement scope of well-being and sustainability involves encompassing and integrating its environmental, social and economic dimensions. Within this scope, the System of National Accounts (SNA) provides a comprehensive statistical framework for the organization of data concerning the economic dimension following established national accounting rules. The measurement scope of the SNA can be generally characterized in terms of data on economic development including production, income, accumulation and wealth which is presented in a sequence of economic accounts. For more than 70 years, the organization of economic data following the SNA to create rich and coherent datasets has supported the design, analysis and evaluation of economic policies around the world, and gross domestic product (GDP) has become one of the world's most well-known statistics.
- 2.4 The institutionalization of economic data in decision making through the accounting structures provided by the SNA has established credible, comparable and authoritative measures of economic activity suitable for all countries. One effect of this institutionalization has been the wide-spread use of national accounts measures of economic activity, in particular GDP, as indicators of the general performance of a country including its people's well-being and standard of living. Such use of GDP has been criticized as driving poor policy outcomes, notwithstanding the routine advice of compilers of national accounts that there are limitations in using GDP and similar measures of aggregate economic performance as measures of wellbeing.
- 2.5 The chapter discusses two primary avenues of contribution by the SNA to the wider objective of measuring well-being and sustainability. The first avenue recognizes that, other than GDP, there is a very wide range of data and aggregate measures contained within the SNA's sequence of economic accounts that can be used to inform discussion of well-being and sustainability. These include measures of household disposable income, consumption, saving and net worth. Further, it is possible to supplement the national level information presented in the sequence of economic accounts with data on the distribution of these economic measures across groups of economic units. For example, measures of household income and wealth may be disaggregated by type of household, income decile, gender and other characteristics. This additional detail provides a richer body of data to support discussion of well-being and sustainability.
- 2.6 The second avenue recognizes that a significant part of the development of frameworks and approaches to the measurement of well-being and sustainability has involved applying and adapting the accounting rules and structures presented in the SNA to organize data on the environmental and social dimensions of well-being and sustainability. Examples of these accounting based approaches cover topics including unpaid

household service work, health care expenditure, education and training, and environmental stocks and flows. The motivation for the development of these frameworks recognizes the potential of accounting-based approaches and the advantages of ensuring that data about the environmental and social dimensions can be readily connected to data from the SNA's sequence of economic accounts.

- 2.7 The description of how accounting approaches can be used to extend and broaden the set of information available for the discussion of well-being and sustainability is a significant step. At the same time, in the history of the development of the SNA there have been ongoing discussions on the role of the national accounts in the measurement of well-being and sustainability, with long-standing debates about the appropriate setting of boundaries concerning production, income and assets. In essence, the second avenue of discussion in the chapter aims to better highlight the potential for compilers to apply meaningful complementary accounting boundaries, for example concerning unpaid household service work or ecosystem services, and hence organize data that more comprehensively cover the range of stocks and flows relevant for the assessment of well-being and sustainability.
- 2.8 There is a range of potential accounting boundaries and different challenges in extending the range of stocks and flows (such as concerning human capital). Consequently, this chapter does not describe an overarching or inclusive framework for the integration of all aspects of well-being and sustainability. Nor does it propose a single indicator of well-being and sustainability. Rather, the discussion reflects that accounting based approaches can provide a basis for further discussion and research about the integrated measurement of wellbeing and sustainability as evidenced by a range of measurement initiatives including by national statistical offices. This approach also highlights the complementary role of the SNA within the broader well-being and sustainability measurement space.
- 2.9 Further research might focus on (i) establishing higher levels of agreement on the details and associated accounting rules and treatments that are needed to describe a more integrated accounting framework; (ii) delineating the boundaries and role of the accounts of the SNA as part of a wider framework; (iii) building the methods and data available to compile the range of accounts and tables that would be within the scope of such a framework; (iv) clarifying the limits of accounting-based approaches, for example with respect to recording multiple value perspectives; and (v) explaining the role of measurement and accounting as part of decision making about well-being and sustainability.
- 2.10 This chapter describes the role of the SNA in supporting discussion of well-being and sustainability in the following way. Section B introduces the concepts of well-being and sustainability recognizing the range of work that has been undertaken in this measurement space. Using these concepts, it then outlines the measurement scope to be considered and describes the role and benefits of accounting-based approaches to measurement. Section C focuses on the SNA's sequence of economic accounts and sustainability. Section D goes beyond the sequence of economic accounts and introduces a range of accounting-based approaches that extend and broaden the suite of data available. Sections C and D provide only short introductions to the relevant topics with further details elaborated in different chapters of the SNA, in particular Chapters 34 and 35.

# B. Approaches to the measurement of well-being and sustainability

# 1. Conceptual framing of well-being and sustainability

- 2.11 The concepts of well-being and sustainability have been framed in a number of different ways but a common understanding is that they embody economic, environmental and social dimensions. Two entry points to framing the concepts are considered most relevant here and are discussed directly below.
- 2.12 The first entry point ties the concepts of well-being and sustainability to the concept of sustainable development. The enduring definition of sustainable development is that of the 1987 Brundtland Commission report which defines it as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN World Commission on Environment and Development, 1987, p423). This entry point links the measurement of well-being to the measurement of sustainability, i.e., well-being needs to be sustained into the future.

- 2.13 The second entry point concerns the work of the Joint UNECE/Eurostat/OECD Task Force on Measuring Sustainable Development (UNECE, 2015). This work frames the broad concept of <u>the</u> well-being of households as being reflected in a mix of objective and subjective measures <u>and will-concerning</u> well-being in the "here and now", or current well-being, the well-being of future generations and the well-being of people elsewhere. Thus, households are the focus of measuring well-being as it is ultimately the lives of people that are the primary focus of a well-being perspective. In the following discussion, while the two concepts of well-being and sustainability are distinguished for measurement purposes, it must be accepted that they are inherently linked.
- 2.14 The measurement of the well-being of present and future generations can be considered in a number of ways. Three aspects are of most relevance. First, the goods and services consumed by people as recorded in measures of household final consumption-expenditure. Second, the goods and services consumed by people that are outside the scope of the SNA production boundary. These will include the supply (or loss of) non-market benefits including those sourced from the environment, from unpaid household service work, and from the connections and relationships people hold with each other. Third, people's functioning and capabilities i.e. the freedom and possibilities they have to satisfy their needs (Sen, 1993, 2000). These capabilities will be linked to topics such as education and training, health care and human capital. The connections and boundaries between these different aspects may be challenging to identify. For example, the nature of the relationship between people's level of functioning and capabilities and their level of consumption of market goods and services is not definitive. Thus, well-being is best characterized as a multi-dimensional concept that encompasses a range of benefits accruing to people and not all aspects will be able to be embodied within an accounting context.
- 2.15 Measuring the sustainability of well-being requires introducing a time dimension, i.e. assessing whether the capacity to provide well-being can be secured in the future. From an economic and accounting perspective, the capacity to provide well-being in the future is most readily interpreted in terms of the capital available to underpin future well-being. Overall, from an accounting perspective, the link between well-being and sustainability can be reflected by recording data about (i) a range of capitals namely <u>economicproduced</u>, natural, human and social capital; and (ii) the associated changes in benefits (including losses of benefits) across the economic, environmental and social dimensions using a common set of accounting rules and assumptions about how these benefits might change in the future.
- 2.16 Nonetheless, even using this relatively broad scope, not all relevant aspects of well-being and sustainability will fall within scope of accounting as described further in the following section. In part, this reflects the need to establish a clear boundary of benefits for accounting purposes which, in turn, limits the consideration of a wider set of measures of outcomes (e.g. concerning quality of life) and subjective measures of well-being. For this reason, the discussion in this chapter should be seen as complementing other measurement work. Box 1 (below) lists a range of other frameworks and approaches that concern this area of measurement and the content of this chapter seeks to build on and adapt the relevant findings.

# Box 1: Well-being and sustainability initiatives

There have been many approaches to measuring well-being and sustainability over more than 50 years. Collectively, these approaches reflect the importance of measuring well-being and sustainability and the view that the current and future well-being of households is a complex multi-dimensional phenomena that cannot be comprehensively addressed using a single summary indicator.

The following initiatives are noted here:

- The Stiglitz-Sen-Fitoussi Report by the Commission on the Measurement of Economic Performance and Social Progress, calling for statistics to move 'Beyond GDP' and close the gap between aggregate production, citizen's well-being and long-term sustainability.
- The United Nations Sustainable Development Goals (SDGs) adopted in 2015 which recognize the need to build economic growth while addressing a wide range of social and environmental needs.
- Measures of comprehensive or inclusive wealth for an enhanced understanding of national wealth across multiple capitals as a complement to current measures of national income and

wealth. Leading work in this area includes the World Bank's Changing Wealth of Nations (2021) and UNEP Inclusive Wealth Report (2018).

- The development of dashboards with a range of indicators on various aspects of well-being and sustainability by countries and international organizations (e.g., UNECE Sustainable Development Indicators, OECD How's Life?).
- The development of composite indicators which summarize data from multiple themes into single, composite measures of well-being and/or sustainability (e.g., Index of Sustainable Economic Welfare, Genuine Progress Indicator, UNDP Human Development Index, World Bank Multidimensional Poverty Measures)
- The development of global environmental and social thresholds indicating boundaries beyond which sustainability may be compromised (e.g. work on planetary boundaries (Rockstrom et al, 2009) and Doughnut Economics (Raworth, 2017)).
- Advances in the measurement of sustainability and well-being from a corporate perspective including measures of environmental, social and governance risks, and corporate impact reporting and disclosure.

# 2. Measurement scope of well-being and sustainability

- 2.17 In the discussion here about the role of the SNA in assessing well-being, 'well-being' refers to the current material well-being of households. It is acknowledged that measures of material well-being do not provide a complete reflection of all aspects of well-being. Nonetheless, components of material well-being are important considerations. Chapter 34 provides a longer discussion on the measurement scope of well-being, including the link to measures of subjective well-being.
- 2.18 Within the scope of material well-being are measures of household income, consumption and wealth, labour and work (including unpaid household service work), education, health care and housing. A particular focus of the discussion in an SNA context is identifying measures that are present within the SNA production boundary and those beyond the production boundary. Measures within the production boundary include data on household final consumption expenditure by type of good and service, actual final consumption and disposable income. As explained further in Chapter 34 there is also a range of data on health care expenditures and expenditures on education and training that can be organized to provide rich information sets to support decision making.
- 2.19 Beyond the SNA production boundary, a range of aspects is considered relevant in the measurement of wellbeing. Of particular importance are measures of unpaid household service work, such as concerning child care and food and meal preparation. Measurement of this work is important since it involves the type of activity that can also be undertaken within the production boundary and hence shifts across this boundary are important in understanding wider economic and social trends.
- 2.20 In measuring well-being using an accounting approach, it is strongly encouraged, and often essential, to incorporate measurement in non-monetary terms. Thus, for example measures of the quantity of consumption (e.g. calories per day), estimates of the number of people employed and their hours worked, and data on the allocation of time across different activities (e.g. number of hours of sleep) all provide information to support analysis of well-being. In many instances, non-monetary data can be organized using accounting based approaches to complement measures in monetary terms.
- 2.21 Finally, for each of these areas<u>of well-being</u>, the scope envisaged in this discussion also encompasses measures of the distribution across key socio-demographic characteristics, such as income and wealth deciles/quintiles, household type, home ownership status, gender, age group, education level or employment status.
- 2.22 In the discussion here, supporting the assessment of <u>"sustainability\_"</u>refers to accounting for the stock and changes in stock of a range of capitals, namely <u>economicproduced</u>, natural, human and social capital. Thus, the measurement of sustainability focuses on the extent to which there is the maintenance and generation of

resources to support the material well-being of households in the future.

- 2.23 The measurement of <u>economic produced</u>-capital falls within the scope of the SNA sequence of economic accounts and encompasses produced non-financial assets, non-produced non-financial assets (e.g. contracts, leases and licences) and financial assets and liabilities while excluding natural resources which are included <u>under natural capital.</u>. The relevant data covers the values of the stock of produced capital and changes in those values including due to investment, depreciation and revaluation. Chapters 11 and 14 provide a full description of the relevant accounting considerations.
- 2.24 In relation to natural capital, some elements are recorded in the sequence of economic accounts, including monetary stocks and flows associated with mineral and energy resources, biological resources, water resources, and land. A more comprehensive accounting for natural capital in monetary and non-monetary terms is described in the System of Environmental-Economic Accounting (SEEA) which applies accounting rules for the recording of data on the stock of natural capital and changes in stock in both biophysical and monetary terms. The scope of the SEEA covers natural resources, land and ecosystems and includes measurement of (i) the non-market ecosystem services supplied by ecosystems (e.g. global climate regulation, air filtration and water regulation); (ii) the pressures exerted on the environment through economic and human activity (e.g. flows of air pollutants, solid waste, wastewater); (iii) the changes in the condition of ecosystems due to human activity, both positive and negative; and (iv) responses by economic units in terms of expenditures, taxes, subsidies and other flows recorded but not separately identified in the sequence of economic accounts. The SEEA thus facilitates a broader recording of well-being in addition to broader measures of natural capital and its sustainability. Chapter 35 provides an introduction to the key features of the SEEA.
- 2.25 In relation to human capital, some of the benefits of human capital are explicitly recorded in the sequence of economic accounts, i.e., compensation of employees, but the stock value of human capital itself is not included. Measures concerning human capital have been developed separately and an introduction to the key features is provided in Chapter 3435. While connections to the sequence of economic accounts can be made to support a broader assessment of sustainability, there is a number of remaining accounting and measurement challenges requiring further research.
- 2.26 Social capital is generally understood as the combination of formal and informal institutions and networks that support the functioning of our societies and economies. <u>A short introduction to social capital is provided in Chapter 35 recognizing that the mM</u>easurement of social capital is a developing area <u>andbut that</u>, at present, its measurement from an accounting perspective is not sufficiently advanced for inclusion in the discussion. Future research may identify ways in which social capital can be effectively defined and measured for accounting purposes.
- 2.27 It is acknowledged that the scope of measurement reflected here does not encompass all possible areas of measurement with regard to well-being and sustainability. Nonetheless, the scope does bring into consideration measures not currently considered in the compilation of the sequence of economic accounts. It is the ambition of the discussion here to describe how this range of data in monetary and non-monetary terms can be meaningfully connected using accounting rules and hence provide a coherent information set to support the discussion of well-being and sustainability. Through these descriptions the role of the SNA's sequence of economic accounts within the wider measurement space should become apparent.
- 2.28 As an example of the potential application of these accounting data, from the perspective of the economic theory concerning well-being and sustainability, it is fundamental that analysis uses measures in volume and real terms (i.e. taking into account the effects of price change). Thus, while in an accounting sense the initial focus is on the organization of data in nominal or current price terms for each accounting period, for economic analysis purposes, changes in nominal terms do not provide a correct measure or approximation of changes in well-being or its sustainability.

<sup>&</sup>lt;sup>+</sup> The term "produced capital" is used here to encompass non-financial non-produced assets (except for natural resources which are included under natural capital), and financial assets and liabilities. Produced capital thus also includes non-produced non-financial assets, such as contracts, leases and licences.

# 3. Role and benefits of accounting-based measurement approaches

- 2.29 An accounting-based approach has a number of features that support the organization of data relevant to the assessment of well-being and sustainability. At its core, accounting is an approach that can be used to describe the components of systems for example, economic, financial, or environmental systems and how the components of these systems change over time. Through the logic of defining and recording stocks and flows, the application of accounting rules enables the state and changes in state of a system to be systematically and comprehensively recorded and allows the benefits supplied by a system to be quantified. Traditionally, the focus in the application of accounting has been to economic and financial systems with recording being undertaken in monetary terms. However, as demonstrated in this chapter, accounting rules can be readily applied to the organization of data about environmental and social systems with recording being undertaken in both monetary and non-monetary terms.
- 2.30 The complementary advantage of using accounting to describe systems is that the logic of stocks and flows speaks directly to <u>the connection between a narrative of well-being</u> and sustainability. In short, flows provide information relevant to current well-being and the maintenance of (and investment in) stocks will underpin current and future flows of benefits. Conversely, the depletion, degradation or depreciation of a system's stocks will reduce the potential of deriving benefits from these stocks in the future. Accounting is thus a tool that can organize data and information in a way that can be readily interpreted in relation to well-being and sustainability.
- 2.31 To underpin its systematic and comprehensive approach to recording, accounting relies on establishing measurement boundaries concerning both the stocks and flows to be incorporated. Consistently applying the same measurement boundaries over time provides a pragmatic system boundary to underpin analysis. For example, establishing the boundaries of economic territory consistently across countries allows interactions between these economic systems to be recorded coherently. The connections across different accounts are further reinforced through the consistent use of classifications, for example of economic units and products.
- 2.32 However, as described above, the measurement of well-being and sustainability requires consideration of a wider range of stocks and flows, i.e., alternative measurement boundaries are required to support a more complete description of a wider system. While measurement boundaries may change, accounting approaches retain the benefits provided through a systematic recording of stocks and flows, i.e., consistency, coherence, comparability and repeatability. In addition, there are measurement advantages in the ongoing confrontation of data from multiple sources within an accounting process that improve the quality and credibility of the data. This includes confrontation of data in monetary and non-monetary terms.
- 2.33 A significant analytical benefit from the consistent application of accounting approaches across different aspects of economic, environmental and social systems, is that it builds a set of data that can be meaningfully connected and integrated to support analysis across the different aspects. For example, the measurement of unpaid household service work can be linked to both measures of production in the economy and to measures of health care expenditure. Where data are available such analysis may also be intersected with datapresented by household type, e.g., by income decile.
- 2.34 It is common for the measurement of well-being and sustainability to focus on the development of a set of indicators selected and organized around the three core dimensions of economy, society and environment. Sometimes the indicators are aggregated to derive composite indicators. Where indicator-based approaches to measuring well-being and sustainability are applied, the data organized using accounting-based approaches can readily support the organization of relevant data for the derivation of indicators and may support a richer analysis of connections between indicators, for example between food security and agricultural productivity.
- 2.35 The potential of accounting-based measurement approaches and the relevance of information beyond the scope of the sequence of economic accounts has been widely recognized for many years and this understanding has seen the development of a range of accounting-based measurement approaches for specific themes. Traditionally referred to as satellite accounts, the area of thematic accounting (discussed in Chapter 38) has been a long-standing feature of national accounting. Stand-alone accounting-based frameworks have now been developed across a number of themes, including tourism, health, education, culture, environment, transport, unpaid household work and labour. The frameworks of most relevance to the measurement of well-

being and sustainability are described in Section D below. These frameworks have reached different levels of endorsement within statistical processes recognizing that, as for the SNA, the need for ongoing development and refinement remains present.

- 2.36 Of special note is that developments in a number of areas including environmental-economic accounting, labour <u>market tablesaccounts</u> and health accounts, have demonstrated the way in which accounting rules can be applied to non-monetary data and thus support the integration and comparison of a broader range of data. By way of example, accounts have been developed for the extent (area) of ecosystems, stocks of carbon, hours worked of labour and numbers of health procedures. By encompassing these types of non-monetary data<sub>a</sub> more comprehensive linkages between the economy and the environment may be obtained. Nonetheless, for a number of purposes, there remains an interest in determining monetary values for stocks and flows that are beyond the scope of the sequence of economic accounts.
- 2.37 In the context of broader monetary measures, another accounting-based approach is commonly referred to as wealth accounting. Wealth accounting, as the label suggests, focuses on measurement of a nation's wealth, ideally reflected in a balance sheet that includes all forms of capital natural, human, social and produced economic (including financial) capital. Wealth accounting theory speaks directly to the need to invest in and maintain stocks of capital to secure future benefits. Its increasing prominence in policy discussions through work on measures of comprehensive and inclusive wealth by the World Bank and UNEP, as well as work at national level in a range of countries, reinforces the measurement approach outlined here and its implementation can be directly supported using the framing described.
- 2.38 Collectively, the ambition presented in the SNA discussion of well-being and sustainability is to describe how accounting approaches can be used and adapted to provide a coherent body of information to support discussion of these fundamental topics. The coherent body of information will be reflected in consideration of two main parts. First, the role of the SNA sequence of economic accounts, including measures of distributions across households (Section C); and second, accounting approaches beyond the sequence of accounts (Section D).

# 4. Considerations in the interpretation of accounting-based measures of well-being and the connection to welfare values

- 2.39 As mentioned above, well-being is a wide-ranging concept with many different aspects. Some of these aspects may be captured reasonably well by one or more of the key aggregates of the SNA. At the same time, some aspects of well-being are likely to remain outside the reach of the SNA sequence of economic accounts given it was not designed with the measurement of well-being as a prime consideration. This section summarizes the main issues that should be considered in interpreting SNA measures in relation to well-being and welfare, highlights some limits of accounting based approaches more generally in relation to measuring well-being and introduces the effects of applying different principles for monetary valuation in measuring well-being.
- 2.40 It is useful to recall that there is a long history of debate dating to at least the initial development of the SNA in the 1930s concerning the role of GDP and other national accounts measures in the assessment of changes in economic welfare. In recent editions of the SNA, the position of the SNA is that while the change in GDP in volume (or real) terms is often taken as a measure of changes in material well-being or economic welfare, the SNA makes no claim that this is a preferred or appropriate measure. There are several conventions applied in the SNA's sequence of economic accounts that argue against such an interpretation of the accounts. First, in a market economy, the prices used to value transactions in different goods and services should reflect not only their relative marginal costs of production but also the relative marginal benefits or utilities derived from using the goods and services for production and consumption. This framing establishes a theoretical link between changes in aggregate production are not the same as changes in well-being, and changes in well-being may not be proportionate to the increase in consumption.
- 2.41 Further, it is noted that the unit incurring the expenditure is not necessarily the one that benefits. For example, governments will commonly undertake expenditure on health and education services while the benefits are received by households. To support analysis of this distinction, the SNA describes the concept of actual

consumption, that adjusts the consumption expenditure of households to account for goods and services purchased by government on behalf of households (e.g. government provided education and health care).

- 2.42 Second, the production boundary of the SNA is such that the services produced and consumed within a household are not included in the measurement of GDP except for the imputed rental of owner-occupied housing services dwellings and the payments made to domestic staff. Similarly, no estimate is included in the SNA for the labour services of individuals provided without cost to non-profit institutions, i.e. volunteering. In both these cases, the contribution of time increases the overall material well-being of individuals and households in the community. The exclusion of these services from the production boundary is not a denial of the relevance of the services but reflects a view that their inclusion would not necessarily add to the usefulness of the SNA for the primary purposes for which it is designed, that is macro-economic policy and analysis. The inclusion of measures of unpaid household service work as part of the SNA's measurement scope for other analytical purposes. More generally, it is the case that the use of alternative production boundaries for the compilation of measures of national income may support the derivation of improved measures of changes in well-being.
- 2.43 Third, the level of an individual's and a nation's well-being may be affected by a wide range of factors that are not economic in origin. Consider the effects of an exceptionally severe winter combined with an influenza epidemic. Other things being equal, the production and consumption of a number of goods and services may be expected to rise in response to extra demands created by the cold and the epidemic. These additional expenditures are often referred to collectively as defensive expenditures. As compared with the previous year, people may consider themselves to be worse off overall and thus total well-being could fall even though GDP would increase in volume terms, notwithstanding the fact that the community likely finds itself better off with the extra production and consumption of heating and health services than without them. Again, as noted in relation to unpaid household service work, the use of alternative measurement boundaries to account for defensive expenditures may support the derivation of improved measures of changes in well-being.
- 2.44 Fourth, some production activities may cause a loss in well-being that is not fully reflected in GDP. A factory, for example, may generate noise and emit pollutants into the air or nearby water systems thereby causing a loss of amenity and a loss of well-being to individuals living nearby or downstream. If there is no financial penalty to the factory, the consequences on well-being could go unmeasured in the SNA or may show up elsewhere in the accounts for example in the form of lower rents, higher health related expenditures or lower labour productivity for those people living nearby or downstream. On the other hand, if the factory incurs expenditures that reduce the noise or quantity of pollutants emitted, well-being should rise but the offset will not necessarily be complete. Of course, it is not a simple task to identify and re-attribute the full range of economic effects of environmental and other externalities, or to determine which effects are captured within aggregate measures such as GDP. However, undertaking this work would support the derivation of improved measures of changes in well-being. As one step in that direction, Section D (below) introduces the use of accounting approaches to organize data on the extent and condition of ecosystems and flows of ecosystem services to provide a structured set of data to support measurement of consider some external effects in a more explicit and integrated manner.
- 2.45 The four issues just described concern the potential to interpret measures from the SNA, such as changes in real GDP, as measures of changes in material well-being. Beyond these issues, there are also limits in the extent to which measures of material well-being should be considered measures of well-being more broadly. Three issues are of particular relevance. First, in keeping with the SNA production boundary, material well-being is measured in relation to the expenditure on goods and services consumed by households rather than in relation to the outcomes arising from their consumption. Thus, for example, a distinction can be made between the expenditure on outputs of doctors' services and medicines and the outcome of improved length and quality of life that is expected from consumption of these outputs. Although outputs may be important in securing outcomes, a focus on measuring outputs will not provide as comprehensive a measure of well-being as may be desired.
- 2.46 Second, measures of material well-being exclude measurement of subjective well-being. This may include factors such as personal and family circumstances, quality of health, and the satisfaction or lack of it derived from employment. While there is a growing body of measurement expertise and experience concerning

subjective well-being (e.g. OECD, 20132), it is a topic that lies outside the domain of accounting and is not considered further here. Future research may identify means by which data on subjective well-being and economic data from the accounts may be appropriately connected.

- 2.47 Third, the measurement of material well-being discussed here does not encompass the recording of data on spiritual and cultural values or values and preferences with respect to the environment and nature. Some aspects of these values may be reflected in measures of subjective well-being and some aspects will be reflected in measures of stocks and flows related to natural capital in biophysical terms. However, while these values will be relevant in an overall assessment of well-being, the incorporation of them within an accounting framing requires further investigation.
- All of the preceding discussion on the potential to use GDP to support the measurement of well-being relate 2.48 to the scope of measurement. Another important consideration in appropriately interpreting accounting measures in monetary terms is understanding the underlying valuation concepts and methods. Most commonly, the valuation methods that are used in the measurement of changes in material well-being focus on the measurement of changes in welfare values - i.e. measures of the change in total benefit (or surplus) accruing to consumers and producers from undertaking exchanges of goods and services. Welfare values will thus incorporate estimates of the changes in consumer surplus received by consumers. Importantly, such measures of consumer surplus are estimated either by ex-ante comparisons of two alternative contexts (programs) or by ex-post (i.e. observed) evaluations compared to a counterfactual or alternative context. The resulting estimates of the differences between two contexts do not reflect observed changes in prices and hence are inappropriate for inclusion in the accounts. However, in the case of ex-post evaluations, the observed (or realized) price that is one input into the derivation of changes in welfare values is equivalent to the exchange price used in accounting. Further, in the measurement of changes in consumer surplus, if the actual programs and institutions are compared at two points in time, then changes in real exchange values will approximate changes in consumer surplus. In short, while welfare values reflecting changes in consumer surplus are not equivalent to the exchange values used in accounting, there are connections between these valuation concepts. Chapter 5 provides a discussion on valuation principles and techniques applied in the national accounts.

# C. The role of the SNA sequence of economic accounts in measuring wellbeing and sustainability

# 1. Introduction

- 2.49 The SNA sequence of economic accounts provides a comprehensive record of an economy's production, income, accumulation and wealth. An overview of the sequence is provided in Chapter 3 and the thorough description of the relevant accounting rules, treatments, measurement boundaries and economic units required for the compilation of the sequence of economic accounts is the focus of SNA chapters 4-20.
- 2.50 One feature of the sequence of economic accounts is that each account in the sequence contains one or more aggregates, each of which has a particular economic interpretation. For example, an aggregate from the production account is gross domestic product (GDP) providing a measure of the value added of resident economic units; and an aggregate from the balance sheet is net worth revealing the total value of assets less liabilities for an economy.
- 2.51 The potential to describe a coherent sequence of economic accounts arises from the application of a single production boundary and a single asset boundary across the various accounts. The boundaries are defined and applied through chapters 4-20. One key outcome from the use of these boundaries is that there is a coherence across measures of income, consumption, accumulation and wealth. At the same time, the consistent application of production and asset boundaries means that there is a number of elements relevant to measurement of well-being and sustainability that are excluded from the measures within the sequence of

<sup>&</sup>lt;sup>2</sup>-OECD (2013) *Guidelines on Measuring Subjective Well-being* (<u>https://www.oecd.org/wise/oecd\_guidelines\_on\_measuring-subjective\_well-being\_9789264191655\_en.htm</u>)

economic accounts. For example, unpaid household service work and ecosystem services are both excluded from the production boundary of the SNA and hence the benefits of these flows are not captured in measures of national income or wealth. Thus, as explained in the earlier sections, a more complete basis for the measurement of well-being and sustainability requires consideration of areas outside the SNA's standard boundaries.

- 2.52 To provide a clear structure for delimiting the role of the SNA in the context of measuring well-being and sustainability, the current section focuses on measures within the sequence of economic accounts while the following section introduces measures that relate to aspects of well-being and sustainability that are outside the standard production and asset boundaries.
- 2.53 The combination of accounts and aggregates within the sequence of economic accounts provides a rich basis for organizing data about well-being and sustainability and for deriving relevant aggregates and indicators. In particular, the sequence of economic accounts provides a comprehensive platform for the integration of data on prices and quantities of goods, services and assets and hence supports measurement in volume or real terms and <u>in turnhence</u> provides measures to support measurement of economic welfare. Four Three-areas are introduced in this section: measures of income and consumption, measures of wealth, and-measures of distributions across households\_and measures concerning the environment. More detail on relevant measurement approaches, in particular concerning measures of distribution of income, consumption and wealth are provided in Chapters <u>32</u>. <u>34</u> and <u>35</u>. Note that the potential to undertake measurement beyond the SNA's production and asset boundaries is considered in Section D.
- 2.54 In the measurement of income, consumption, wealth and distributions across households, the analysis of well-being and sustainability can be well supported through measurement of spatial variation. For example, measurement can focus on breaking down income, consumption and wealth measures by sub-national administrative areas within a country. Such spatial information can be of high relevance in understanding the variation in trends in well-being across a country but also in terms of supporting policy responses in cases of catastrophic events such as floods, hurricanes and storms.

#### 2. Measures of income and consumption

- 2.55 The measurement of income and consumption relates directly to the measurement of current material wellbeing. At a national level, aggregates such as gross domestic product and gross national income provide measures of the income generated by economic activity within the scope of the SNA production boundary. However, neither of these aggregates recognizes the cost of using capital in the generation of income. In the past, compilation challenges limited the potential for cross-country comparability of net measures which deduct the costs of capital. With advances in data and methods, the SNA\_2025 places greater emphasis on the derivation of net measures which in turn provides aggregates of production and income that are more relevant for the purposes of assessing well-being and sustainability. In scope of the SNA sequence of economic accounts, net measures are derived by deducting the <u>consumption of fixed capital\_depreciation</u> and the depletion of natural resources.
- 2.56 Net measures, such as net domestic product and net national income, do not replace and generally complement the corresponding gross measures in the sequence which remain relevant aggregates for different policy and analytical questions, for example concerning aspects of monetary and budgetary policy. A longer discussion on the relevance of net measures is presented in Chapter 21.
- 2.57 Given the focus of <u>economic-material</u> well-being on the household sector, of particular relevance in the SNA sequence of economic accounts are the accounts of the household sector. Important aggregates from these accounts for the assessment of <u>economic-material</u> well-being include: household disposable income, household final consumption, household saving and household net worth.
- 2.58 Across countries, there is variation in the way in which governments provide services to households. To support improved comparison and understanding of household consumption patterns across countries, the SNA has developed measures of adjusted household final consumption and disposable income, where individual consumption paid for by governments and non-profit institutions serving households (NPISH), for example, health and education services, are allocated to the household sector rather than being treated as government consumption. Of course, households will also benefit from the public goods provided by

governments such as law and order, and a comparison of levels of expenditure on these services will also provide insight into the <u>economic material</u> well-being of households.

- 2.59 The distribution and redistribution of income accounts for households will also provide measures of the different mix of incomes earned by households including <u>compensation remuneration</u> of employees, property income (interest<u>a</u> and-dividends<u>a</u> and-rent, etc.), social benefits and other current transfers, while also recording payments of taxes. The composition of these flows and structural changes over time can provide important context in understanding the general <u>economic-material</u> well-being of households, particularly when supported by breakdowns according to different household groups.
- 2.60 The use of income account for households derives measures of household saving by deducting final consumption expenditure from disposable income. In compiling measures of final consumption expenditure most national accounts provide some level of detail concerning the types of goods and services consumed by households following the Classification of Individual Consumption by Purpose (COICOP). Such information can provide a national perspective on the share of final consumption expenditure spent on food, transport, education, energy, etc. Again, breakdowns of these data by household groups will provide richer insights into well-being. These topics are considered further in Chapters 32 and 34.
- 2.61 For many of these income and consumption measures, the assessment of current <u>economic-material</u> wellbeing will be complemented by deriving measures in volume or real terms, i.e. removing the effects of price change. While volume and real measures are not presented directly in the sequence of economic accounts, their measurement is a standard feature of national accounting compilation systems with standard practices described in Chapter 18.

# 3. Measures of wealth

- 2.62 At a national, economy-wide level, the SNA sequence of economic accounts can provide a series of wealth related measures, including measures of net worth, that are relevant in the assessment of well-being and sustainability. The compilation of time series of wealth measures will provide an indication of whether the capital base of a country is improving or declining and measures expressed in real terms or per capita terms will provide additional insights on the aggregate trends. The SNA's capital account, other changes in volume of assets and liabilities account, revaluation account, and balance sheet will also provide information on measures of changes in wealth including investment (capital formation), depreciation, depletion, appearances, catastrophic losses and revaluations. All of this information can help build a picture of the wider trends and expectations for wealth for the economy as a whole. Although the assets in the sequence of economic accounts do not cover the whole suite of assets mentioned before, the sequence does capture a full set of produced and non-produced non-financial assets, and <u>including</u> a component of the value of natural capital. In addition, the SNA provides a complete overview of financial assets, then these <u>trends</u> will be relevant in a broader context as well.
- 2.63 For the household sector as a whole, a range of wealth measures can be taken from the sequence of economic accounts. Thus, measures of household wealth, its changes over time, in real terms and per capita, can all be taken from the household sector's sequence of economic accounts.
- 2.64 At both the economy-wide level and for the household sector, it will be relevant to consider the changing composition of financial and non-financial assets within the balance sheet. Particular focus may be placed on, for example, estimates of pension entitlements and measures of the housing stock, including the value of dwellings and land. Supplementary items such as the value of consumer durables included in household final consumption expenditure will also be of relevance for assessing the well-being of the household sector.
- 2.65 For all sectors and for the economy as a whole, measures of financial assets and liabilities may be an important consideration in assessing sustainability. This could include for example, data on the composition of financial assets, levels of debt and liquidity. The measurement of financial assets and liabilities is discussed in Chapter 12 and is not considered further here aside from noting the relevance of understanding the distribution of household sector financial assets and liabilities.
- 2.66 Although not included in the balance sheets of households, the sustainability of their well-being will usually
be closely tied to the quantity and condition of a range of public and private investments that support the supply of public goods and services (e.g., investments in roads, hospitals, schools, energy and water supply, etc.). The sequence of economic accounts should provide relevant information on the capital stock, the level of depreciation, the level of gross fixed capital formation in these asset types, and the sources of funding for this investment. Again, measures in real terms and per capita will be of high relevance in assessing sustainability and determining capacity gaps.

#### 4. Measuring distributions across households

- 2.67 All of the measures and aggregates described above are included within the SNA's sequence of economic accounts and can provide a rich national level view of many aspects driving the current economic well-being of households, recognizing that important aspects of well-being lie outside the measurement boundary. However, in all societies, not all households are equal and hence the nature of the distribution of income, consumption and wealth across households is an important factor in understanding current economic well-being.
- 2.68 The various income, consumption and wealth measures described above can be ascribed to individual households and then households can be grouped to derive aggregates focused on different types of households within the household sector. Household types may be grouped by income or wealth deciles/quintiles, home ownership status, or location (e.g., region). Alternatively, households may be grouped according to the characteristics of a reference person in a household such as gender, age, education level, employment status and industry of employment. A comprehensive discussion on these distributional issues is presented in Chapter 32 on accounting for the household sector. That discussion on distribution encompasses a range of topics including links to the measurement of the informal economy, the use of equivalence scales and the recording of supplementary items recommended for measurement such as consumer durables.

#### 5. Measures concerning the environment

- 2.69 A long-standing area of interest for many analysts has been the description of the connection between the economy and the environment. This has often been simplified in a national accounting context as requiring the adjustment of measures of GDP and the derivation of so-called green GDP. In fact, the connections between the economy and the environment are far more extensive. They encompass the dependencies and impacts of economic activity on the environment, as reflected for example in flows of water, energy, natural resources and emissions, and the many-various economic activities focused on environmental protection and restoration.
- 2.70 In this context, the SEEA has been developed to provide a comprehensive framework for measuring the environment and its connection to the economy. It is introduced further below. The accounts of the SEEA apply and extend the accounting treatments and rules of the SNA and there are a number of instances where there is an overlap between the entries in the SEEA and entries in the SNA sequence of economic accounts. In particular, both the SEEA and the SNA incorporate measures of environmental assets including the value of natural resources, the changes in value and volume of these resources (including through discovery, depletion or catastrophic loss) and associated income streams (including flows of <u>natural</u> resource rent). As well, the sequence of economic accounts contains data on transactions that can be associated with the environment such as environmental protection expenditure (and associated financing arrangements), environmental taxes and subsidies and payments for access to resources. The SEEA provides accounts which explicitly identify these transactions since they are not usually readily identifiable in standard presentations of the economic accounts.
- 2.71 Further, Current refinements to the SNA sequence of economic accounts concerning environmental issues build on advances in accounting described in the SEEA. [NB: The following text is to be confirmed pending the outcomes from the SNA2025 consultation and revision process.] First, the measurement of natural resources has been explicitly extended to include the value of energy from renewable sources, including wind and solar (but excluding from biological resources which is already captured in the accounts). Second, the entries to record rents arising from the extraction of natural resources have been amended. Third, the costs of depletion of natural resources are now treated as a deduction from income in the production account.

Fourth, the measurement boundaries and treatments have been clarified for different types of biological resources<u>-including produced and non-produced biological resources</u> and migrating and non-migrating biological resources. Finally, the recording of emission trading schemes and other environmentally related transactions such as provisions, has been updated to support comparable and coherent measurement.

# D. Accounting approaches for the measurement of well-being and sustainability

#### 1. Key features of accounting approaches

- 2.72 There is widespread acknowledgement of the relevance of measuring aspects of well-being and sustainability that are not captured within the standard production and asset boundary of the SNA's sequence of economic accounts. Section B introduced the relevance of using accounting-based approaches for the organization of data that can enhance and broaden the information set for the discussion of well-being and sustainability. This section introduces a range of well-established accounting approaches for measuring <u>components of well-being</u> and sustainability beyond the SNA. In doing so this section highlights the potential to apply alternative and complementary measurement boundaries.
- 2.73 There are five key features of the accounting approaches that have been developed for this purpose. First, the accounting approaches adapt the various types of account structures used in the SNA including supply and use tables, balance sheets and asset accounts. This supports application of the same accounting identities as applied in the SNA and the derivation of balancing items and aggregates.
- 2.74 Second, the accounting approaches include accounts in both monetary and non-monetary terms thus supporting the organization of a wider range of information than recorded within the SNA's accounts.
- 2.75 Third, connections and intersections can be made between the accounting approaches described here and individual accounts within the SNA sequence of economic accounts. For example, accounts for flows of water and energy and accounts for unpaid household service work can be connected to standard production accounts and household sector income accounts. Beyond the analytical benefits of these connections and intersections to the sequence of economic accounts, they also allow for more coordinated data collection and treatment.
- 2.76 An extension of this feature is that the linkages across different topics can be more readily analyzed. For example, there are important connections between unpaid household service work and the production of health care. The consistent application of accounting approaches can facilitate a richer understanding of these connections, including for example, examining each of these topics using a common disaggregation of household types.
- 2.77 Fourth, connections and intersections across accounting approaches and the organization of data can be strongly enforced through the use of consistent classifications and associated alignment in the detail presented in accounting tables. Of particular relevance will be the consistent application of classifications of economic units (by institutional sector and by industry), classifications of products and socio-economic breakdowns such as household groups.
- 2.78 Finally, all accounting approaches support discussion of <u>the connections inherent between a narrative</u> <u>concerning</u> well-being and sustainability that relate tos changes in the quantity and quality of the stocks of different capitals <u>and to-the flows of</u> benefits (or loss of benefits) that are embodied in well-being. The <u>consistency of this narrativeembodiment of these connections between stocks and flows</u> across accounting frameworks is an empowering one for users and compilers through the ability to frame the discussion of well-being and sustainability using a common language across economic, environmental and social dimensions.
- 2.79 While the compilation of these accounting approaches expands and broadens the range of information to support the discussion of well-being and sustainability, there remain a range of aspects that are not within scope of the measurement describe here. Such aspects include health outcomes (as measured for example by life expectancy), subjective well-being, social cohesion, crime and justice, and governance. Also not discussed here are applications of accounting approaches to support measurement in relation to specific activities or events (such as the effects of catastrophic natural disasters), although accounting approaches can

help to understand the impact of these activities or events.

2.80 The remainder of this section introduces six accounting approaches of high relevance to the discussion of well-being and sustainability, namely the accounts of the SEEA, and accounting for labour, health care, unpaid household service work, education and training and human capital. The figure belowFigure 2.1 provides a stylized representation of the connections between these various accounts and the sequence of economic accounts, including household distributional accounts and labour market tables.





2.81 Additional detail on the connections between these accounting approaches and the SNA sequence of economic accounts is presented in Chapters 34 and 35 and there is an extensive specific literature on each of these accounting frameworks that should be referenced when working on these topics. Further, there is discussion of some of these accounting approaches in specific SNA chapters. These chapters include Balance sheet (Chapter 14); Supply and use tables (Chapter 15); Labour (Chapter 16); Summarizing, integrating and balancing the accounts (Chapter 19); Households (Chapter 32), From whom to whom tables and related financial analysis (Chapter 37) and Thematic accounts (Chapter 38). The presence of these connections are

is inevitable given the inherent inter-connectivity of the SNA system and its wider connections as described here and hence some overlap in the discussion across the chapters should be expected.

#### 2. System of Environmental-Economic Accounting (SEEA)

- 2.82 The System of Environmental-Economic Accounting (SEEA) is a multipurpose statistical framework that describes the environment and its connections to the economy. The SEEA is presented in a number of documents that collectively provide statistical standards, international recommendations and technical guidance. These documents include the SEEA Central Framework and the SEEA Ecosystem Accounting and the supplements SEEA Water, SEEA Energy and SEEA Agriculture, Forestry and Fisheries.
- 2.83 The SEEA complements the SNA by providing a thorough approach to the organization of environmental data in non-monetary and monetary terms. While there are some overlaps with the scope of the SNA, for example concerning accounting for the monetary value of <u>cultivated biological resources and</u> natural resources, there are many areas covered in the SEEA that are not accounted for in the SNA. However, the connection between the two systems has allowed the significant advancements in the SEEA since 2010 to provide important inputs to the update of the SNA within the general intent to harmonize concepts, increase the visibility of environmental issues and refine valuation concepts and methods across both statistical frameworks.
- 2.84 The accounting described in the SEEA commences from the perspective of recording all environmental stocks and flows and the connections to economic units. Thus, within the scope of the SEEA are accounts for environmental assets in non-monetary (biophysical) and monetary terms; accounts (physical supply and use tables) for material and energy flows; and accounts for environmental transactions, including accounting for environmental taxes and subsidies and the activities of the environmental goods and services sector.
- 2.85 In relation to environmental assets, to cover the breadth of stocks and flows, the SEEA's measurement boundary is broader than the SNA's. In the SEEA Central Framework the extension is made to include within scope all environmental assets in non-monetary terms whether or not they have an exchange value within scope of the SNA sequence of economic accounts. Thus, for example, the area of land without an exchange value is included within the scope of the land accounts of the SEEA Central Framework. The SEEA Ecosystem Accounting places direct focus on the measurement of ecosystems and the services they supply. It extends the measurement boundary for environmental assets relative to the SNA by including all ecosystems within a country and by recording flows of ecosystem services between ecosystems and economic units.
- 2.86 Specific examples of SEEA accounts include supply and use tables for water, energy, air emissions (including <u>greenhouse gas GHG</u> emissions), emissions to water and solid waste. Each of these accounts is structured to provide a comprehensive tracking of flows from the environment, within the economy and returns to the environment; and to present data according to the industry and sector classifications used in the SNA. The data can thus support the derivation of many indicators (e.g. footprint indicators) and types of analysis (e.g. extended input-output analysis). The SEEA Central Framework also provides definitions that enable environmental transactions recorded within the SNA sequence of economic accounts to be identified and consistently reported.
- 2.87 The SEEA Ecosystem Accounting framework presents standards and recommendations for the measurement and analysis of ecosystem stocks and flows. Accounting for ecosystem assets and the services they generate is crucially important for reflecting the importance of natural capital to a fuller extent and hence providing more complete measures of well-being and sustainability. In accounting for stocks, ecosystem accounting incorporates measurement of both the extent (size) and composition of ecosystem types and the condition (or health) of ecosystems. In accounting for flows, ecosystem accounting provides a framework for recording flows of ecosystem services such as biomass provisioning, air filtration, water purification, coastal protection, pollination and recreation related services that collectively contribute to human well-being either as inputs to market goods and services or in providing additional non-market benefits. The SEEA Ecosystem Accounting thus recognizes stocks and flows that are outside the SNA's production and asset boundaries and presents an associated sequence of accounts.
- 2.88 The range of data encompassed by the SEEA provides a rich basis for describing the environmental

dimension of well-being and sustainability and the use of an accounting structure provides the opportunity to link and use environmental data alongside, and in combination with, the SNA sequence of economic accounts data and other data discussed in this chapter. For many well-being and sustainability related reporting and analysis purposes, the development of coherent information sets linking the environment and the economy represents a significant step forward. Chapter 35 provides further discussion of the SEEA.

#### 3. Labour

- 2.89 In addition to providing insights into the role of labour in the production process, more detailed information on labour is important as it directly contributes to the well-being of households. First, it provides the income needed to satisfy basic needs and pursue other important life goals. Second, the quality of a job, the opportunities it provides to develop new skills, and the time spent commuting and in the workplace are all aspects directly affecting household well-being.
- 2.90 It is recommended to include tables on labour as standard components to accompany the sequence of economic accounts (as is the case for the supply and use tables). These <u>-</u>labour <u>market</u> tables<u>-</u> <u>would</u>-provide coherent and consistent data on aspects of the labour market, both in monetary terms and in physical terms. The information in the labour <u>market</u> tables will provide insights into the labour market, its role in the distribution of income, and the role of labour in economic growth. This information will also provide insights into working and living conditions, including the impact of changes in production arrangements, for example driven by digitalization and globalization. There will also be direct connections between the data in labour <u>market</u> tables and accounting for a number of other aspects of well-being and sustainability including unpaid household service work, human capital and education and training <u>expenditures</u>. Chapter 16 provides further discussion of labour <u>market</u> tables.

#### 4. Health care

- 2.91 As health is commonly considered an important element of people's well-being, it is important to have more detailed insights concerning the production and outputs of the health care systems in countries, the entities involved, and how this activity is being financed. To this end, health accounts can be compiled that provide more detailed information on health care final consumption expenditure data (as presented in the sequence of economic accounts) in terms of functions, providers and financing schemes, following the guidance and treatments of the System of Health Accounts 2011 as described in Chapter 34.3-. The focus of measurement here is on the outputs of a country's health system rather than the health outcomes that might be reported in terms of expected life years and similar statistics. While the provision of health care may not always be the primary determinant of health outcomes, the information from health accounts can still give direct insight into the nature of the societal response to securing those outcomes.
- 2.92 On the basis of this information, important indicators can be developed that provide users with relevant insights into the provision of health care in countries, such as health care expenditures as a share of GDP, per capita or per household group, expenditure by health care function, the shares between health care expenditures paid out of pocket versus the payments made by private insurance, government or non-profit organizations. To support derivation of more cross-cutting indicators, it is also recommended to ensure the inclusion of measures in physical terms, such as employment in health and social care and number of hospital beds available. Chapter 34 provides further discussion of health care accounts.

#### 5. Unpaid household service work

2.93 The sequence of economic accounts excludes unpaid household service activities (except for owner-occupied housing <u>services</u>) from its production boundary due to challenges in measurement and the view that their inclusion may detract from rather than add to the usefulness of the SNA for the primary purposes for which

<sup>&</sup>lt;sup>3</sup> There are some small differences between the SNA and SHA that could be considered in a future update of the SHA.

it is designed, that is <u>macro-economic policy and analysis</u>, <u>decision taking and policymaking</u>. However, understanding this work is crucial to the analysis of household well-being. Individuals' well-being is affected by both paid and unpaid work, with each feeding into goods and services consumed by households. Furthermore, measurement of unpaid work may contribute to a fuller understanding of economic growth, factoring in the impact of shifts across the SNA production boundary (e.g., for preparing meals).

2.94 To support analysis of these activities, accounts for unpaid household service work can be compiled to complement measures of household production activity included in the sequence of economic accounts. Data from these accounts can be used to derive complementary estimates of GDP, as well as extended measures of household disposable income that reflect the implicit income derived from unpaid household service work. It is also recommended to include estimates of consumer durables as used in the production of unpaid household work on the balance sheet, as part of the extended accounts. Chapter 34 provides further discussion of accounting for unpaid household service work.

#### 6. Education and training

- 2.95 From an economic viewpoint, education is important for improving both career opportunities and living conditions by gaining knowledge and skills that can be used in day-to-day life. Furthermore, it provides a sense of self-fulfillment that may also enhance well-being. Many people spend large portions of their life in the education system, so it is important to fully understand the production and outputs of these institutions, the entities providing the services, and how activities are financed.
- 2.96 Accounting for education and training can be undertaken through the compilation of thematic tables. These tables present data on output by provider and purpose, education expenditure by purchaser and purpose, financing of education expenditure by sector and purpose, and cost structures of education output by purpose. Chapter 34 provides further discussion of accounting for education and training <u>expenditures</u>.

#### 7. Human capital

- 2.97 Assessing the role of human capital in the economy is gaining increasing prominence in discussions on productivity and sustainable development. Generally speaking, there is a need for a better understanding of the role of human capital in production and its relationship to other knowledge-based capital included in the SNA. How human capital is created, how it affects labour markets, and how it relates to the sustainability of future growth paths are all key topics of interest. As an important asset for households, it provides career opportunities, and benefits day-to-day activities.
- 2.98 To support investigation of these aspects of sustainability, extended tables on human capital can be compiled, encompassing stock estimates in both volumes and current prices and reflecting different demographic dimensions (e.g., gender, age, educational attainment). Two approaches to accounting may be applied, a cost-based approach and a lifetime income approach. Further discussion of these approaches to accounting for human capital is provided in Chapter 3<u>5</u>4.



# National Statistician's Committee for Advice on Standards for Economic Statistics

NSCASE January 2024 - Chapter 2 NSCASE Meeting Minutes

# 2025 SNA Chapter 2: National Accounts and Measures of Wellbeing and Sustainability foreword

- 1. Paul D presented a paper on the 2025 SNA Chapter 2: National accounts and measures of wellbeing and sustainability. The Chapter was selected as an example of one that would require heavy editing. He explained that ONS would provide a short synopsis on the chapter.
- 2. The Chair noted that the chapter did not provide a clear definition of sustainability. He observed that the ONS made references to welfare prices; he agreed the text on these was not helpful. There was the observation that an increase in GDP might be used to finance extra defensive expenditures and not lead to a rise in well-being. The Chair said that he would have liked more detail on the connection between NDP and national income- a theoretically better welfare indicator.
- 3. Cliodhna Taylor noted that the chapter was one of three on well-being and sustainability. She added that the overview would be followed by chapter thirty-four which would focus on wellbeing. There would then be a further chapter thirty-five on sustainability which hadn't been published.
- 4. Cliodhna explained that the ONS were pleased to hear the SNA would be developing chapters on wellbeing and sustainability as it was an area in which the organisation was very interested. A lot of work had been carried out internationally on the beyond GDP agenda particularly through the UN network of statisticians. She explained that there were concerns that the chapters so far represented something of a halfway house where the authors talked about issues of wellbeing and sustainability in a summary fashion but did not delve into their complexity as interdisciplinary topics. The ONS would either rather see the SNA specifically address wellbeing and sustainability as something the SNA could speak to, but which was dealt with in another framework, or that it made wellbeing and sustainability a larger part that could be addressed in more than three chapters.
- 5. Richard agreed noting that the issue had probably arisen from the mandate that they had been given to refer to wellbeing and sustainability but not write a standard for the subjects. He explained that there was a gap in international guidance landscape which ONS was working with other countries to fill. He noted that there was a paper going to UNSC recommending work in this space.
- 6. Paul M asked what kind of document the SNA authors were trying to write. He asked if it was attempting to set up a common standard that countries could aim to implement or were they thinking about more ambitious standards that some countries would reach but others would not, within the scheme of the SNA. He also noted there were a range of concepts about what was meant by wellbeing



and asked if they were attempting to recognise many or were trying to be normative around one.

- 7. Cliodhna explained that these were the types of questions that the ONS would be taking back to the editorial team. In chapter thirty-four, they discussed whether the wellbeing work was mandatory.
- 8. Richard added that he believed they were attempting to draw distinction between the core sequence of economic accounts and a sequence of enhanced accounts, thematic accounts, and supplementary tables that were more discretionary. He gave the example that if the UK were to be fully compliant with SNA 25, they would be talking about the core sequencing of accounts rather than every table. The core would still be based in market price economic fundamentals not human capital, natural capital, or other "beyond GDP" staples.
- 9. Robert explained that the SNA was not mandatory and was written for use by countries as a guide to compilation. Chapter 2 did not provide any guidance on how to compile statistics. In his view the SNA should not discourage progress by leading economies. Further, distributional effects of income and wealth had been part of G -20 Data Gaps Initiative since 2009 with considerable work subsequently undertaken, not least led by the OECD, but the chapter provided no guidance arising from what had been done.
- 10. Nick noted that the chapter read like a commentary, and he did not think a more encompassing approach would be right. He agreed with Robert's points since welfare measures could not be separated from distribution. There was no attribution of government outputs and discussions on wellbeing.
- 11. The Chair believed the paper's reference to measures of wealth was back to front and that there should be something about the appropriateness of different deflators – an issue that the UN had found difficult to offer advice on in the last twenty years.
- 12. Ian McCafferty noted a slight disconnect in deriving wellbeing in the national accounts. He believed indicators of sustainability and wellbeing leave out quite a lot. He asked if the chapter was in danger of overpromising.
- 13. Richard Heys explained that the SNA had not been commissioned to develop a framework on inclusive and sustainable wellbeing and chapter thirty-four may do a better job at proposing what countries should do.
- 14. The Chair asked whether Chapter thirty-four would be brought to NSCASE in April and whether it might be better to wait until chapter thirty-five was published so they could be reviewed together.
- 15. Cliodhna explained that while they did not know when chapter thirty-five would be published, if it was made available with time ahead of the April meeting, the two chapters could be brought to NSCASE together.
- 16. Nick Vaughan did not think that there was a need to wait for chapter thirty-five but if it was published ahead of the April meeting it would make sense to review them together.
- 17. The Chair asked the NSCASE research team to circulate chapter thirty-four ahead of the usual circulation of papers.

# Chapter 3: Overview of the integrated framework (revised title) (Old Chapter 2: Overview)

# A. Introduction

- 3.1 This chapter provides an overview of the accounting framework of the SNA and in doing so gives an overview of most of the following chapters also.
  - It introduces the conceptual elements that form the building blocks of the accounting system and the rules of accounting to be followed. They are further elaborated in section B and C and in their full detail in part II of these standards (chapters 34, 45 and 56).
  - It describes the standard view of the <u>sequence of economic accounts and related tables</u>, which constitute the main elements of itseentral framework of main accounting structure. Each account is introduced with a description of the nature of the account and an insight into the sort of analysis the account can yield. The accounts, including concise information on elaborating and communicating the accounts, are described in section D and then in part III of these standards (chapters 67 to 1721).
  - Thereafter, section E provides a short introduction to crosscutting issues which are described in more detail in part IV of these standards (chapters 22 to 27).
  - Section F then provides a short introduction to part V of these standards, which comprises of chapters 28 to 33. Each of these chapters provides more detail on one of the main sectors, including the transactions and stocks between residents and non-residents (the rest of the world). These chapters also provide further information, where relevant, on the relationship with other macroeconomic standards
  - <u>Finally</u>, thise chapter shows some of the ways in which the <u>sequence of economic accounts</u>, the <u>supply</u> and <u>use tables and the labour market tablesentral framework</u> may be applied flexibly, depending on specific country requirements. In particular satellitethematic and extended accounts are introduced. These extensions and applications of the SNA are described briefly in section <u>EG of this chapter</u>-and as well as, more extensively, in part VI of these standards (chapters 1834 to 2939.
- 3.2 As explained in chapter 1, the <u>integrated framework of national accountseentral framework</u> describes the essential phenomena which constitute economic behaviour: production, consumption, accumulation and the associated concepts of income and wealth. The SNA aims to provide a representation of this set of phenomena and their interrelations that is simplified to aid comprehension but still covers all important considerations. To achieve this, the <u>integrated framework of national accountseentral framework</u> must satisfy two conditions; it must be integrated and consistent.
- 3.3 To be integrated, the same concepts, definitions and classifications must be applied to all accounts and subaccounts. For example, once it is decided dwellings are treated as assets, all dwellings must give rise to housing services that are included within the production boundary, regardless of whether the dwellings are occupied by the owners or are rented on the market. Equally, all give rise to income that must be treated in the same way in the SNA, regardless of the relationship between the owner and the occupier.
- 3.4 To be consistent, each economic flow or stock level appearing in the SNA must be measured identically for the parties involved. This consistency is achieved by applying throughout the SNA the same concepts and definitions and also by using a single set of accounting rules for all entries in the SNA. In practice, the actual data coming from the\_accounts or statistics provided by elementary units will not be fully consistent for various reasons and so achieving the consistency required by the SNA requires a large amount of additional work.

#### 1. Analysing flows and stocks

- 3.5 Basically, the purpose of a system of national accounts is to record economic flows and stocks. Economic
- 3.3

flows can be thought of in various ways. Consider the question "Who does what?" "Who" refers to the economic agent engaged in doing something, the operator. "What" is connected with the kind of action this agent is undertaking. In a few cases, the answer to this simple question provides a good preliminary characterization of an economic flow. However, in general the question is too simple to provide even a rough economic description of a specific flow. Take the example of somebody buying a loaf of bread. In order to characterize the flow, it is necessary to consider from whom this loaf of bread is bought (a baker or a supermarket) and what is given in exchange (a coin<u>s</u> or a note<u>s</u> or a payment with debit card). So the starting question is transformed into "Who does what with whom in exchange for what?" This rather simple flow involves two operators (a buyer, a seller), two main actions (a purchase, a sale), two secondary actions (a payment, a receipt) and two objects (bread, a coin<u>s</u> or a note<u>s</u> or a payment with debit card). Again, a complete description would require more information, at least the weight, kind and price of the bread.

- 3.6 The picture in the real world is still more complicated. Before this flow occurred, the seller had a certain quantity of bread in his shop; afterwards he has less bread but more money. The buyer had a certain amount of money, now he has less money but some bread (before eating it). So the flow between them has changed their initial situations. This means that flows cannot be looked at in isolation; the situations before and after a flow occurs need to be considered. At those two points in time, one must ask the question "Who has what?" The baker not only has bread and currency, he also has a house with the shop, baking equipment, some flour, a deposit in a bank, a car, etc. In other words, he has (he owns) a certain stock of objects. The same is true for the buyer. In addition to what they are in themselves, flows modify stocks. Flows and changes in stocks are intrinsically connected. The previous question is again transformed into "Who does what with whom in exchange for what with what changes in stocks?"
- 3.7 However, the various ways of looking at this example have not yet been exhausted. Before the baker can sell bread, he has to bake it. He uses flour, water, electricity, baking equipment, etc. So, an additional question is "Who does what by what means?" What he does can also be characterized in two ways: his activity (to bake) and the result of it (a product: bread). With respect to the buyer one can ask "Why does he buy bread?" The obvious purpose is to eat, as food; however, it could be to give to a beggar, as charity. This raises the question "Who does what for what purpose?"
- 3.8 Adding all the questions together results in a rather complex combination of simple links: "Who does what, with whom, in exchange for what, by what means, for what purpose, with what changes in stocks?" Answering these questions for all economic flows and stocks and operators in a given economy would provide an enormous amount of information describing the complete network of economic interrelations. However, it would require an enormous amount of basic information, which is not always available nor complete in that it may cover only certain aspects of the complex chain of questions. Further, it is necessary to organize the recording of economic flows and stocks in a comprehensible way, as discussed in the next section.

#### 2. Recording flows and stocks

- 3.9 Users' needs set certain requirements for the accounting framework. The first requirement is that it should provide a picture of the economy, but the picture must be simplified in order to be both comprehensible and manageable. The second requirement is that it should faithfully represent economic behaviour by covering all important aspects in a balanced way without neglecting or giving too little emphasis to some aspects or giving others too much prominence. Finally, it should portray all significant economic interrelations and the results of economic activity. Although meeting these requirements is necessary, they are somewhat contradictory. Achieving the right balance between them is not easy. Too great a simplification can lose sight of or neglect important aspects of economic behaviour; too detailed a portrayal of reality can overburden the picture and reduce insight; too much sophistication can lower comprehension and mislead some users; and so on.
- 3.10 To meet these requirements, the SNA uses a limited number of basic categories to analyse and aggregate certain aspects (Who? What? What purpose? What stocks?) of the very numerous elementary flows. However, the SNA simplifies the picture it gives of the economic interrelations by not recording the "from-whom-to-whom?" question in a fully systematic way; that is, it does not always depict the network of flows between the various types of operators. Consider three units, A, B and C, each of which makes payments of

the same type to the other two; they might be three shopkeepers, for example, who sell different types of goods. Suppose A buys 2 from B and 3 from C; B buys 6 from A and 1 from C; C buys 4 from each of A and B. A full articulation of the flows could be captured in a three- by-three table as follows:

#### [Small unnumbered table below paragraph 2.10 of the 2008 SNA]

- 3.11 Although only the purchases were specified, it follows that the receipts of each unit are also available in the table. The totals in the right-most column show the total purchases of each of the three units and the bottommost row shows the total receipts by each of the three units. The sum of each must, obviously, be the same since each is the sum of all entries within the table. Within the <u>central frameworksequence of economic accounts</u>, the full detail of the flows from each of A, B and C to each of the others is not generally shown; it is sufficient to show only the totals in the right-most column and the bottom-most row and know that these must balance.
- 3.12 In some presentations, particularly those using a matrix format of presentation, some of these extra details may be shown. Discussion of this appears in chapters <u>1415</u>, <u>2836</u> and <u>2937</u>. Even in the <u>central frameworksequence of economic accounts</u>, the full detail may be available. For example if in some case A, B and C do not interact with one another but only with another unit G, as is the case in the payment of taxes, then there are only four entries to be shown; the payments by each of A, B and C and the receipts by G.
- 3.13 Another case where the SNA introduces a simplification is in terms of the "what in exchange for what?" question; that is, it does not indicate, for example, the specific nature of the financial counterpart (currency or deposit or short-term loan, etc.) for the purchases of goods and services or the payment of taxes.
- 3.14 The fact that the SNA is integrated, although articulated in only two and not three dimensions, does not reduce its consistency requirements. In effect, the purpose of the SNA is to derive national accounts that are as consistent as they would be if they were fully articulated; each economic flow or stock should be measured identically for both parties involved. The consistency in the SNA is achieved by applying the same concepts and definitions throughout and also by using a single strict set of accounting rules.

# **B.** The conceptual elements of the SNA

- 3.15 The SNA contains a number of conceptual elements that determine the accounting framework of the SNA and permit various aspects of the questions raised above to be answered. These concepts are:
  - Institutional units and sectors (*who*?);
  - Transactions and other flows (*what*?);
  - Assets and liabilities (*what stocks*?);
  - Products and producing units (other aspects of *who* and *what*?);
  - Purposes (why?).

They are presented in turn.

#### 1. Institutional units and sectors

3.16 The fundamental units identified in the SNA are the economic units that can engage in the full range of transactions and are capable of owning assets and <u>also typically capable of</u> incurring liabilities on their own behalf. These units are called institutional units. Further, because they have legal responsibility for their actions, institutional units are centres of decision-making for all aspects of economic behaviour. In practice, some institutional units are controlled by others and thus in such cases autonomy of decision is not total and may vary over time. Legally independent holding of assets and liabilities and autonomous behaviour do not

always coincide. In the SNA, preference is generally given to the first aspect because it provides a better way to organize the collection and presentation of statistics even if its usefulness is limited in some cases.

#### **Institutional sectors**

- 3.17 The institutional units are grouped together to form institutional sectors, on the basis of their principal functions, behaviour and objectives:
  - *Non-financial corporations* are institutional units that are principally engaged in the production of market goods and non-financial services.
  - *Financial corporations* are institutional units that are principally engaged in <u>the production of market</u> financial services including financial intermediation. <u>It also includes the central bank, although they mainly produce non-market output.</u>
  - *General government* consists of institutional units that, in addition to fulfilling their political responsibilities and their role of economic regulation, produce services (and possibly goods) for individual or collective consumption mainly on a non-market basis and redistribute income and wealth.
  - *Households* are institutional units consisting of one individual or a group of individuals. All physical persons in the economy must belong to one and only one household. The principal functions of households are to supply labour, to undertake final consumption and, as entrepreneurs, to produce market goods and non-financial (and possibly financial) services. The entrepreneurial activities of a household consist of unincorporated enterprises that remain within the household except under certain specific conditions.
  - *Non-profit institutions serving households (NPISHs)* are legal entities that are principally engaged in the production of non-market services for households or the community at large and whose main resources are voluntary contributions.
- 3.18 Each sector contains a number of subsectors distinguished according to a hierarchical classification (described in chapter 45). A subsector comprises entire institutional units, and each institutional unit belongs to only one subsector though alternative groupings are possible. The distinction between public, national private and foreign controlled corporations and between various socio-economic groups of households is included in the SNA in order to respond to policy concerns.

#### Delimitation of the total economy and the rest of the world

- 3.19 The total economy is defined in terms of institutional units. It consists of all the institutional units which are resident in the economic territory of a country. The economic territory of a country, although consisting essentially of the geographical territory, does not coincide exactly; some additions and subtractions are made (see chapter 265). The concept of residence in the SNA is not based on nationality or legal criteria. An institutional unit is said to be a resident unit of a country when it has a centre of predominant economic interest in the economic territory of that country; that is, when it engages for an extended period (one year or more being taken as a practical guideline) in economic activities on this territory. The institutional sectors referred to above include only resident units.
- 3.20 Resident units <u>may</u> engage in transactions with non-resident units (that is, units that are residents of other economies). These transactions are the external transactions of the economy and are grouped in the account of the rest of the world. Strictly speaking, the rest of the world is the account of transactions occurring between resident and non-resident units, but it may also be seen as the whole group of non-resident units that enter into transactions with resident units. In the accounting structure of the SNA, the rest of the world plays a role similar to that of an institutional sector, although non-resident units are included only in so far as they are engaged in transactions with resident institutional units. These transactions also result in (changes in) stocks/positions of assets and liabilities between resident units and non-resident units.

3.3

#### 2. Transactions and other flows

- 3.21 Institutional units fulfil various economic functions; that is, they produce, consume, save, invest, etc. They may engage in various types of production (agriculture, manufacturing, etc.) as entrepreneurs, providers of labour or suppliers of capital. In all aspects of their economic functions and activities, they undertake a great number of elementary economic actions. These actions result in economic flows, which, however they are characterized (wages, taxes, fixed capital formation, etc.), create, transform, exchange, transfer or extinguish economic value; they involve changes in the volume, composition or value of an institutional unit's assets or liabilities. The economic value may take the form of ownership rights on physical objects (a loaf of bread, a dwelling) or intangible assets (a film original) or of financial claims (liabilities being understood as negative economic value). In all cases, economic value is potentially usable to acquire goods or services, pay wages or taxes, etc.
- 3.22 Most economic actions are undertaken by mutual agreement between institutional units. They are either an exchange of economic value or a voluntary transfer by one unit to another of a certain amount of economic value without a counterpart. These actions undertaken by mutual agreement between two institutional units are called transactions in the SNA. The SNA also treats certain economic actions involving only a single institutional unit as transactions. They are described as internal, or intra-unit, transactions. For example, own-account fixed capital formation is treated as a transaction between a unit in its capacity as a producer with itself in its capacity as an acquirer of fixed capital. Such transactions are similar in nature to actions undertaken by mutual agreement by two different institutional units.
- 3.23 However, not all economic flows are transactions. For example, certain actions undertaken unilaterally by one institutional unit have consequences on other institutional units without the latter's consent. The SNA records such actions only to a limited extent, essentially when governments or other institutional units take possession of the assets of other institutional units, including non-resident units, without full compensation. In fact, unilateral economic actions bearing consequences, either positive or negative, on other economic units (externalities) are much broader but such externalities are not recorded in the SNA. Human action may result in the transfer of natural assets to economic activities and the subsequent transformation of these assets. These phenomena are recorded in the SNA as economic flows, bringing in economic value. Non-economic phenomena, such as wars and natural disasters, may destroy economic assets, and this extinction of economic value must be accounted for. The value of economic assets and liabilities may change during the time they are held as stocks, as a consequence of changes in prices. These and similar flows that are not transactions, which are called other economic flows in the SNA, are described in chapter 4213.
- 3.24 Economic flows can be actual, observable flows or they can be built up or estimated for analytical purposes. Certain flows may be directly observed in value terms. This is the case for monetary transactions between two institutional units, such as a purchase or sale of a good or the payment of a tax. Other two-unit flows are observable but cannot be immediately valued. These flows include barter of goods and services or education services consumed by students and provided free of charge by government; a value in money terms has to be attributed to them. Barter is an example of a two-unit flow involving a "quid pro quo" that is, a flow in one direction is linked to a counterpart flow in the opposite direction; a social assistance benefit in cash is a twounit flow that does not involve a quid pro quo. Another kind of flow involves only one institutional unit. Such flows may be physically observable, as in the case of output for own-account consumption or capital formation, or destruction by natural catastrophes. A value has to be attributed to them (this may be fairly easy in certain cases, such as when output is mostly sold). Other intra-unit, or internal, flows may not be observable as such; accounting entries are then constructed in order to measure economic performance correctly. This is the case for the consumption of fixed capitaldepreciation and depletion or the revaluation of assets and liabilities. Certain inter-units flows, such as reinvested earnings on foreign direct investment, are also accounting entries created for analytical purposes. Finally, some observable monetary transactions are not recorded as they are observed in practice because they are of a composite nature (nominal-interest on loans and deposits provided by financial intermediaries, total insurance premiums) or their legal nature does not correspond to their economic one (financial leasing). Consequently, for the SNA, they are split up into various components and their classification and routing are modified.
- 3.25 Although monetary transactions have a basic role in the valuation of flows in the SNA, non-monetary transactions are also significant. They include flows of goods and services that take place between institutional units for which values have to be estimated and also some flows that are assumed to take place

within units. The relative importance of non-monetary transactions varies according to the type of economy and the objectives pursued by the accounting system. Although the volume of non-monetary flows is generally greater for less developed economies than for developed ones, even for the latter it is not negligible.

#### Main types of transactions and other flows

- 3.26 Elementary transactions and other flows are very numerous. They are grouped into a relatively small number of types according to their nature. The main classification of transactions and other flows in the SNA includes four first-level types, with each subdivided according to a hierarchical classification. It is designed to be used systematically in the accounts and tables of the <u>central frameworkintegrated framework of national accounts</u> and cross-classified with institutional sectors, industry and product, and purpose classifications. A full set of transactions and their codes appear in annex 1.
- 3.27 Transactions in goods and services (products) describe the origin (domestic output or imports) and use (intermediate consumption, final consumption, capital formation or exports) of goods and services. By definition, goods and services in the SNA are always a result of production, either domestically or abroad, in the current period or in a previous one. The term products is thus a synonym for goods and services.
- 3.28 Distributive transactions consist of transactions by which the value added generated by production is distributed to labour, capital and government and transactions involving the redistribution of income and wealth (taxes on income and wealth and other transfers). The SNA draws a distinction between current and capital transfers, with the latter deemed to redistribute saving or wealth rather than income. (This distinction is discussed in detail in chapter <u>\$9</u>.)
- 3.29 Transactions in financial instruments (or financial transactions) refer to the net acquisition of financial assets or the net incurrence of liabilities for each type of financial instrument. Such changes often occur as counterparts of non-financial transactions. They also occur as transactions involving only financial instruments. Transactions in contingent assets and liabilities are not considered transactions in the SNA (see chapter 1412).
- 3.30 Other accumulation entries cover transactions and other economic flows not previously taken into account that change the quantity or value of assets and liabilities. They include acquisitions less disposals of non-produced non-financial assets, other economic flows of non-produced assets, such as discovery or depletion of subsoil resources or transfers of other natural resources to economic activities, the effects of non-economic phenomena such as natural disasters and political events (wars for example) and finally, they include holding gains or losses, due to changes in prices, and some minor items (see chapter 1213).

#### Characteristics of transactions in the SNA

- 3.31 In order to provide more useful answers to the questions raised in the analysis of flows, some transactions are not recorded in the SNA as they might be directly observed. The SNA often uses categories which are more closely identified with an economic concept. For example, gross fixed capital formation, a subcategory of transactions in goods and services, is broader than the limited coverage thought of as "purchases of fixed assets". In order to be closer to an economic concept, it covers the acquisition of new and existing fixed assets, through purchases, barter transactions or own-account capital formation, less the disposal of existing assets, through sales or barter transactions.
- 3.32 As the previous example shows, the SNA also often uses categories which are compacted, that is, are the result of combining a number of elementary transactions. The term changes in inventories, for example, refers to the difference between entries into and withdrawals from inventories and recurrent losses. The same netting happens for transactions in financial instruments. All transactions in an instrument held as an asset (or as a liability) are grouped under the heading of this instrument. The item "loans", for example, covers issuance of new loans, conversions, and redemptions or cancellations of existing loans. Finally, some categories of transactions in the SNA, such as distributive transactions concerning interest and net-non-life insurance premiums, require an actual transaction to be split into parts.

## 3. Assets and liabilities

- 3.33 Assets and liabilities are the components of the balance sheets of the total economy and institutional sectors. In contrast to the accounts that show economic flows, a balance sheet shows the stocks of assets and liabilities held at one point in time by each unit or sector or the economy as a whole. Balance sheets are normally constructed at the start and end of an accounting period but they can in principle be constructed at any point in time. However, stocks result from the accumulation of prior transactions and other flows, and they are modified by future transactions and other flows. Thus stocks and flows are closely related.
- 3.34 The coverage of assets is limited to those assets which are subject to ownership rights and from which economic benefits may be derived by their owners by holding them or using them in an economic activity as defined in the SNA. Consumer durables, human capital<sub>a</sub> and <u>also</u> those natural resources that are not capable of bringing economic benefits to their owners<sub>a</sub> are outside the scope of assets in the SNA.
- 3.35 The classification of assets distinguishes, at the first level, financial and non-financial (produced and nonproduced) assets (see chapter 1011). Most non-financial assets generally serve two purposes. They are primarily objects usable in economic activity and, at the same time, serve as stores of value. Financial assets are necessarily and primarily stores of value, although they may also fulfil other functions.

### 4. Products and producing units

#### Products

3.36 Goods and services, also called products, are the result of production. They are exchanged and used for various purposes; as inputs in the production of other goods and services, as final consumption or for investment. The SNA makes a conceptual distinction between market, own final use and non-market goods and services, allowing in principle any kind of good or service to be any of these three types.

# **Producing units**

- 3.37 Institutional units such as corporations may produce various types of goods and services. These goods and services result from processes of production which may differ as regards materials and supplies consumed, kind of equipment and labour employed and techniques used. In other words, they may come from different production activities. In order to study transactions in goods and services in detail, the SNA uses the Central Product Classification Version 2 (CPC) 2 (United Nations 2008b).
- 3.38 To study production and production functions in detail, it is necessary to refer to more homogeneous units. The ideal solution would be to be able to identify and observe units that engaged in only one production activity. As it is also necessary to give a picture of the distribution of production in space, this unit should also be in a single location or nearby sites. In practice, it is not always feasible to distinguish units of production engaged in a single activity, and for which the necessary data are available, inside multiactivity units. Inevitably, therefore, some secondary activities that cannot be separated are covered. For that reason, for the detailed study of production, the SNA uses a unit which, in addition to its principal activity, may cover secondary activities. This unit is the establishment.
- 3.39 Establishments that have the same principal activity are grouped into industries according to the International Standard Industrial Classification of All Economic Activities Revision 4 (ISIC, Rev.4) (United Nations, 2008a).
- 3.40 Given the fundamental role played by the market in modern economies, the SNA distinguishes, as an essential feature of its structure, between establishments that are market producers, producers for own final use and non-market producers. Market establishments produce goods and services mostly for sale at prices that are economically significant. Producers for own final use produce goods and services mostly for final consumption or fixed capital formation by the owners of the enterprises in which they are produced. Non-market establishments supply most of the goods and services they produce without charge or at prices that are not economically significant.
- 3.41 There is a hierarchical relationship between institutional units and establishments. An institutional unit
- 3.3

contains one or more entire establishment(s); an establishment belongs to one and only one institutional unit.

3.42 The process of producing goods and services, including total supply and total use of goods and services, classified by products and, for the domestic production process, by industries, is the principal focus of supply and use tables (see chapter 15).

#### 5. Purposes

3.43 The concept of purpose, or function, relates to the type of need a transaction or group of transactions aims to satisfy or the kind of objective it pursues. Transactions are first analysed in the SNA according to their nature. Then, for certain sectors or kind of transactions, they are analysed from the expenditure side, by purpose, answering the earlier question "for what purpose?" Classification by purpose is described in the context of the supply and use tables in chapter <u>1415</u>.

# C. Rules of accounting

# 1. Introduction

#### Terminology for the two sides of the accounts

- 3.44 The SNA utilizes the term resources revenues for transactions which add to the amount of economic value of a unit or a sector. For example, wages and salaries are a resourcerevenue for the unit or sector receiving them. Resources Revenues are by convention shown on the right-hand side of the current accounts. The left-hand side of the accounts, which includes transactions that reduce the amount of economic value of a unit or sector, is termed uses expenditures. To continue the example, wages and salaries are an use expenditure for the unit or sector that must pay them.
- 3.45 Balance sheets are presented with liabilities and net worth (the difference between assets and liabilities) on the right-hand side and assets on the left-hand side. Comparing two successive balance sheets gives changes in liabilities and net worth and changes in assets.
- 3.46 The accumulation accounts and balance sheets being fully integrated, the right-hand side of the accumulation accounts is called changes in liabilities and net worth and their left-hand side is called changes in assets. In the case of transactions in financial instruments, the changes in liabilities are often referred to as (net) incurrence of liabilities and the changes in assets as (net) acquisition of financial assets.

#### Change of ownership and the recording of transactions in goods and services

- 3.47 A good may be held and be processed by a unit that does not have title to the ownership of the good. One example is a good given to a unit for repair. The activity of the repairer is only the cost incurred to effect the repair and the cost of the good being repaired does not feature in the accounts of the repairer. This is obvious and uncontroversial for every day types of repairs such as repairing shoes or a vehicle. However, the same principle also applies when one unit processes goods on behalf of another unit. For example, one unit may receive a set of components from another unit and return the assembled product.
- 3.48 Within the SNA, a distinction is made between legal ownership and economic ownership. The criterion for recording the transfer of products from one unit to another in the SNA is that the economic ownership of the product changes from the first unit to the second. The legal owner is the unit entitled in law to the benefits embodied in the value of the product. A legal owner may, though, contract with another unit for the latter to accept the risks and rewards of using the product in production in return for an agreed amount that has a smaller element of risk in it. Such an example is when a bank legally owns a plane but allows an airline to use it in return for an agreed sum. It is the airline that then must take all the decisions about how often to fly the plane, to where and at what cost to the passengers. The airline is then said to be the economic owner of the plane even though the bank remains the legal owner. In the accounts, it is the airline and not the bank that is shown as purchasing the plane. At the same time, a loan, equal in value to payments due to the bank for the duration of the agreement between them is imputed as being made by the bank to the airline.

- 3.49 The same principle applies to goods sent abroad for processing. If the processor is not concerned about how and where and for how much the item he is assembling is sold, the economic ownership remains with the legal owner. Even though the goods may physically pass from one country to another, they are not treated as imports and exports because the economic ownership has not changed.
- 3.50 Within a large enterprise with several specialized establishments, it is not immediately obvious whether a delivery of goods from one establishment to another is to be recorded or not. Since all the establishments have the same ownership, the distinction between economic and legal ownership needs refining. The criterion used is to record a delivery when the receiving unit assumes the responsibility, in terms of economic risks and rewards, of the items delivered. If the receiving unit does not accept this responsibility, for example by returning the processed items to the original sending unit, then it is only performing a service on the items and they are not recorded as being delivered from the first unit to the second.

#### Double entry or quadruple entry accounting

- 3.51 For a unit or sector, national accounting is based on the principle of double entry, as in business accounting. Each transaction must be recorded twice, once as a resourcerevenue (or a change in liabilities) and once as an useexpenditure (or a change in assets). The total of transactions recorded as resources revenues or changes in liabilities and the total of transactions recorded as usesexpenditures or changes in assets must be equal, thus permitting a check of the consistency of the accounts. Economic flows that are not transactions have their counterpart directly as changes in net worth. This is shown in section D below (and also in chapter 1213, which describes the other changes in the volume of assets and liabilities account and the revaluation account).
- 3.52 The implications of the double entry principle are easy to grasp in a number of cases. A household's purchase on credit of a consumer good will appear as an <u>useexpenditure</u> under final consumption expenditure and as an incurrence of a liability under loans. If this good is paid for in cash, however, the picture is less simple. The counterpart of an <u>useexpenditure</u> under final consumption is now a negative acquisition of assets, under currency and deposits. Other transactions are more complicated. Output of goods is recorded as a positive change in inventories. When the output is sold, there is a negative change in inventories, that is, a negative acquisition of non-financial assets, balanced by a positive acquisition of financial assets, for instance under currency and deposits. In many instances, as explained earlier, the difficulty of seeing how the double entry principle applies is due to the fact that the categories of transactions in the SNA are compacted.
- 3.53 In principle, the recording of the consequences of an action as it affects all units and all sectors is based on a principle of quadruple entry accounting, because most transactions involve two institutional units. Each transaction of this type must be recorded twice by each of the two transactors involved. For example, a social benefit in cash paid by a government unit to a household is recorded in the accounts of government as an <u>useexpenditure</u> under the relevant type of transfers and a negative acquisition of assets under currency and deposits; in the accounts of the household sector, it is recorded as a <u>resource-revenue</u> under transfers and an acquisition of assets under currency and deposits. The principle of quadruple entry accounting applies even when the detailed from-whom-to-whom relations between sectors are not shown in the accounts. Correctly recording the four transactions involved ensures full consistency in the accounts.
- 3.54 As noted in the introduction, the data available to the national accounts compiler may not in practice initially satisfy the consistency requirements of the SNA. The accounts of the nation are not kept in the same way as a business unit or government, that is, by actually recording all flows occurring in a given period. They rely on accounts of various units that are not always consistent, complete or even available. For household accounts in particular, other statistics such as those from household surveys have to be used. Reconciling disparate data sources within the consistency constraints imposed by the quadruple entry accounting principle is fundamental to compiling a complete set of accounts.

### 2. Time of recording

3.55 One implication of the quadruple entry accounting principle is that transactions, or other flows, have to be recorded at the same point of time in the various accounts in question for both units involved. The same

applies to stocks of financial assets and liabilities.

- 3.56 The general principle in national accounting is that transactions between institutional units have to be recorded when claims and obligations arise, are transformed or are cancelled. This time of recording is called an accrual basis. Transactions internal to one institutional unit are equivalently recorded when economic value is created, transformed or extinguished. Generally speaking, all transactions, however they are described, can always be viewed as dealing with economic value.
- 3.57 One has thus to distinguish carefully between the point in time at which a transaction and the corresponding cash movement take place. Even when a transaction (a purchase or sale of a good, for example) and the payment or receipt are simultaneous, the two aspects exist. The purchaser incurs a liability, the seller acquires a claim as a counterpart of the delivery of the good. Then the liability and the claim are cancelled by the payment. In most cases there is a delay between the actual transaction and the corresponding payment or receipt. In principle, national accounts record actual transactions on an accrual basis, not on a cash basis. Conceptually national accounts follow the same principle as business accounting.
- 3.58 Although the principle is clear, its implementation is far from simple. Institutional units do not always apply the same rules. Even when they do, differences in actual recording may occur for practical reasons such as delays in communication. Consequently, transactions may be recorded at different times by the transactors involved, sometimes even in a different accounting period. Discrepancies exist which national accounts must eliminate by after-the-fact adjustments. In addition, because the time at which a claim or liability arises is not always unambiguous, further implementation problems arise. The rules and conventions adopted in the SNA for particular transactions are specified in subsequent chapters, in particular in chapter 34.

### 3. Valuation

### **General principles**

- 3.59 It also follows from the quadruple entry accounting principle that a transaction must be recorded at the same value through all the accounts of both sectors involved. The same principle applies to assets and liabilities. It means that a financial asset and its liability counterpart have to be recorded for the same amount in the creditor and the debtor accounts.
- 3.60 Transactions are valued at the actual price agreed upon by the transactors. Market prices, or exchange values, are thus the basic reference for valuation in the SNA. In the absence of market transactions, valuation is made according to costs incurred (for example, non-market services produced by government) or by reference to market prices for analogous goods or services (for example, services of owner-occupied dwellings).
- 3.61 Assets and liabilities are recorded at current values at the time to which the balance sheet relates, not at their original valuation. Theoretically, national accounts are based on the assumption that the values of assets and liabilities are continuously up-rated to current values, even if in fact up-rating occurs only periodically. The appropriate valuation basis for assets and liabilities is the value at which they might be bought in markets at the time the valuation is required. Ideally, values observed in markets or estimated from observed market values should be used. When However, often this is not possible, and the current values may need to be approximated for balance sheet valuation in two other ways; (i) by accumulating and revaluing transactions over time, or (ii) by estimating the discounted present value of future benefitsreturns expected from a given asset. The latter methods are of particular relevance for valuing non-financial assets (see also the annex to chapter 134 and chapter 14).
- 3.62 Internal transactions are valued at current values at the time these transactions occur, not at the original valuation. These internal transactions include entries into inventories, withdrawals from inventories, intermediate consumption, and consumption of fixed capital depreciation and depletion.

#### Methods of valuation for valuing output and transactions in goods and services

3.63 Various methods exist of treating the effect of taxes on products, subsidies <u>on products</u> and trade and transport margins on the valuation of transactions on products (goods and services).

- 3.64 The preferred method of valuation of output is at basic prices, although producers' prices may be used when valuation at basic prices is not feasible. The distinction is related to the treatment of taxes and subsidies on products. Basic prices are prices before taxes on products are added and subsidies on products are subtracted. Producers' prices include, in addition to basic prices, taxes less subsidies on products other than value added type taxes. Thus three valuations of output may be encountered; at basic prices, at producers' prices in the absence of value added type taxes, and at producers' prices in the presence of value added type taxes.
- 3.65 In the same set of accounts and tables, all transactions on the uses of goods and services (such as final consumption, intermediate consumption, capital formation) are valued at purchasers' prices. Purchasers' prices are the amounts paid by the purchasers, excluding the deductible part of value added type taxes. Purchasers' prices are the actual costs to the users.
- 3.66 The various methods of valuing output, with intermediate consumption always at purchasers' prices, imply consequences for the content and uses of value added (the difference between output and intermediate consumption) by a producer, a sector or an industry. When output is valued at basic prices, value added includes besides primaryearned incomes due to labour and capital, only taxes less subsidies on production other than taxes less subsidies on products; when output is valued at producers' prices, value added includes taxes, less subsidies, on products other than value added type taxes (which means all taxes, less subsidies, on products when value added type taxes do not exist). A complementary definition of value added is at factor cost, which excludes taxes on production of any kind, though this concept is not used explicitly in the SNA.

#### Volume measures and measures in real terms

- 3.67 Up until this point, only current values have been described. In addition, the SNA includes calculation of some transactions in volume terms, that is, the use of the systems of prices which prevailed in a past period. The changes over time in the current values of flows of goods and services and of many kinds of assets can be decomposed into changes in the prices of these goods and services or assets and changes in their volumes. Flows or stocks in volume terms take into account the changes in the price of each item covered. However, many flows or stocks do not have price and quantity dimensions of their own. Their current values may be deflated by taking into account the change in the prices of some relevant basket of goods and services or assets, or the change in the general price level. In the latter case, flows or stocks are said to be in real terms (that is, they represent values at constant purchasing power). For example, the SNA provides for the calculation of income in real terms. Interspatial comparisons raise similar but even more complex problems than inter-temporal comparisons because countries at different stages of development are involved.
- 3.68 Both inter-temporal and interspatial measures are discussed in chapter <u>1518</u>.

#### 4. Consolidation and netting

#### Consolidation

- 3.69 Consolidation may cover various accounting procedures. In general, it refers to the elimination from both <u>usesexpenditures</u> and <u>resourcesrevenues</u> of transactions which occur between units that are grouped together and to the elimination of financial assets and the counterpart liabilities.
- 3.70 As a matter of principle, flows between constituent units within subsectors or sectors are not consolidated. However, consolidated accounts may be compiled for complementary presentations and analyses. Even then, transactions appearing in different accounts are never consolidated so that the balancing items are not affected by consolidation. Consolidation may be useful, for example, for the government sector as a whole, thus showing the net relations between government and the rest of the economy. This possibility is elaborated in chapter 2230.
- 3.71 Accounts for the total economy, when fully consolidated, give rise to the rest of the world account (external transactions account).

# Netting

3.72 Consolidation must be distinguished from netting. For current transactions, netting refers to offsetting uses<u>expenditures</u> against resources<u>revenues</u>. The SNA does this only in a few specific instances; for example, taxes on products may be shown net of subsidies on products. For changes in assets or changes in liabilities, netting may be envisaged in two ways. The first case is where various types of changes in assets (for example, entries in inventories and withdrawals from inventories) or various types of liabilities (for example, incurrence of a new debt and redemption of an existing debt) are netted. The second case is where changes in financial assets and changes in liabilities (or, in the balance sheet, financial assets and liabilities themselves) related to a given financial instrument are netted. As a matter of principle, the SNA discourages netting beyond the degree shown in the classifications of the SNA. Netting financial assets (changes in financial assets) against liabilities (changes in liabilities) is especially to be avoided. Netting is discussed in chapters <u>34</u> and <u>112</u>.

#### The use of "net"

3.73 With very few exceptions, in the SNA the term "net" is used only in connection with the balancing items of the accounts in juxtaposition to the term "gross". The exceptions are the use of the expressions net worth, <u>and net borrowing andor net lending in relation to the accumulation accounts and net premiums in the context</u> of insurance.

# **D.** The accounts

#### 1. Introduction

- 3.74 With the tools introduced in sections B and C above, all flows and stocks can be recorded. This is done in the accounts of the SNA. Each account relates to a particular aspect of economic behaviour. It contains flows or stocks and shows the entries for an institutional unit, a group of units such as a sector or the rest of the world. Typically the entries in the account do not conceptually balance so a balancing item must be introduced. Balancing items are meaningful measures of economic performance in themselves. When calculated for the whole economy, they constitute significant aggregates.
- 3.75 The accounts can be divided into two main classes:
  - The integrated sequence of economic accounts; and
  - The other parts of the integrated frameworkaccounting structure.
- 3.76 The integrated sequence of economic accounts use the first three of the conceptual elements of the SNA described in section  $B_7$  (institutional units and sectors, transactions and assets and liabilities) together with the concept of the rest of the world to form a wide range of accounts. These include the full sequence of economic accounts for institutional sectors, separately or collectively, the rest of the world and the total economy. The full sequence of economic accounts is described briefly below. A full description of each of the accounts concerned is the subject matter of chapters 67 to 1314. The rest of the world account is described in chapter 26.
- 3.77 The other parts of the <u>integrated frameworkaccounting system</u> bring in the three other conceptual elements from section B, that is, establishments, products and purposes as well as <u>population and employment</u>. The accounts covered here include the supply and use framework, which is the subject of chapter <u>1415</u>, <u>population and employment</u>]abour market tables which are described in chapter <u>1916</u>, <u>capital services (chapter 17)</u>, the three dimensional analysis of financial transactions and stocks of financial assets and liabilities, showing the relations between sectors (from-whom-to-whom) described in chapter <u>2737</u> and functional analyses, whereby certain transactions of institutional sectors are presented according to the purpose they serve. These appear in a number of chapters including chapter <u>1415</u>.
- 3.78 The sections following are devoted to:
- 3.3

- The full sequence of <u>economic</u> accounts;
- An integrated presentation of the accounts including the goods and services account, the accounts for the rest of the world and an examination of the aggregates of the SNA; and
- The other parts of the integrated frameworkaccounting structure.

#### 2. The full sequence of <u>economic</u> accounts

- 3.79 Before presenting the full sequence of <u>economic</u> accounts for institutional units and sectors, some preliminary remarks are useful. The purpose of this subsection is to explain the accounting structure of the SNA in general, not to show the precise content of the accounts for each specific unit or sector. The accounting structure is uniform throughout the SNA. It applies to all institutional units, subsectors, sectors and the total economy. However, some accounts may not be relevant for certain sectors. Similarly, not all transactions are relevant for each sector and, when they are, they may constitute <u>resourcesrevenues</u> for some sectors and <u>usesexpenditures</u> for others.
- 3.80 Another remark relates to the way the classification of transactions is used when presenting the general structure of the accounts. Section B above shows only the main categories of transactions, not the detailed ones which are displayed in the relevant chapters of the publication. However, in order to make the accounts clear, it is necessary to include a number of specific transactions. This is done by using the actual classification of transactions in the SNA at a level of detail sufficient for a good understanding of the accounts. Definitions of these transactions are not given at this stage unless absolutely necessary but appear in subsequent chapters.
- 3.81 It is also worth noting that balancing items can be expressed gross or net, the difference being the consumption of fixed capital depreciation and depletion. Conceptually, net balancing items are much more meaningful. However, gross concepts, specifically gross aggregates, are widely used and gross accounts are often estimated more easily, accurately and promptly than the net ones. In order to accommodate both solutions and to ease the integrated presentation of the accounts and aggregates, a double presentation of balancing items is allowed.
- 3.82 Finally, it has to be said that the sequence of <u>economic</u> accounts shows the accounting structure of the SNA; it is not necessarily a format for publishing the results.

#### The three sections of the sequence of accounts

- 3.83 The accounts are grouped into three categories: current accounts, accumulation accounts and balance sheets.
- 3.84 Current accounts deal with production, the generation, distribution and use of income. Each account after the first starts with the balancing item of the previous one recorded as resources revenues. The last balancing item is saving which, in the context of the SNA, is that part of income originating in production, domestically or abroad, that is not used for final consumption.
- 3.85 Accumulation accounts cover changes in assets and liabilities and changes in net worth (the difference for any institutional unit or group of units between its assets and liabilities). The accounts concerned are the capital account, financial account, the other changes in the volume of assets <u>and liabilities</u> account and the revaluation account. The accumulation accounts show all changes that occur between two balance sheets.
- 3.86 Balance sheets present stocks of assets and liabilities and net worth. Opening and closing balance sheets are included with the full sequence of <u>economic</u> accounts. Even when balance sheets are not compiled, a clear understanding of the conceptual relationship between accumulation accounts and balance sheets is necessary if the accumulation accounts themselves are to be correctly elaborated.

#### The production account

3.87 The production account (shown in table  $\frac{23}{2}$ .1) is designed to show value added as one of the main balancing

3.3

items in the SNA. Consequently, it does not cover all transactions linked with the production process, but only the result of production (output) and the using up of goods and services when producing this output (intermediate consumption). Intermediate consumption does not cover the progressive wear and tear of fixed capital and the depletion of non-produced natural resources. The latter <u>isare</u> recorded as <u>a</u>-separate transactions (consumption of fixed capital\_depreciation and depletion) which <u>isconstitute</u> the difference between the gross and net balancing items.

# Table 23.1: The production account

- 3.88 As already explained in section C, different types of valuation of output may be used according to the choice made between basic prices and producers' prices and, in the latter case, the existence or absence of value added type taxes. Consequently, the extent to which taxes (less subsidies) on products are included in value added differs.
- 3.89 All institutional sectors have a production account. However, in the production account of institutional sectors, output and intermediate consumption are shown in total only, not broken down by products.
- 3.90 The balancing item of the production account is value added. Like all balancing items in the current accounts, value added may be measured gross or net.

#### The distribution of income accounts

3.91 The process of distribution and redistribution of income is so important that it is worth distinguishing various steps and depicting them separately in different accounts. The distribution of income is decomposed into three main steps: primary distribution of carned income, secondary distribution of transfer income other than social transfers in kind, and redistribution of social transfers in kind. As long as all kinds of distributive current transactions included in the SNA are actually measured, increasing the number of accounts adds very little to the work already done, but it allows the introduction of balancing items that are meaningful concepts of income.

#### The primary distribution of earned income account

3.92 The primary distribution of earned income account shows how gross value added is distributed to labour, capital, government and, where necessary, flows to and from the rest of the world. In fact the primary distribution of earned income account is never presented as a single account but always as two sub-accounts. The first of these is the generation of earned income account (shown in table 23.2) in which value added is distributed to labour (compensationremuneration of employees), capital and government (taxes, less subsidies, on production and imports less subsidies as far as they are included in the valuation of output). The distribution to capital (and implicitly the compensation of the labour input provided by self-employed persons) appears in the balancing item in this account, operating surplus or mixed income.

#### Table 23.2: The generation of earned income account

3.93 The allocation of <u>primaryearned</u> income account (table 23.3) shows the remaining part of the <u>primary</u> distribution of <u>carned</u> income. It contains operating surplus or mixed income as a <u>resourcerevenue</u>. It records, for each sector, property income receivable and payable, and <u>compensationremuneration</u> of employees and taxes, less subsidies, on production and imports receivable by households and government, respectively. Since transactions of this kind may appear in the rest of the world account, these must be included also.

#### Table 23.3: The allocation of primaryearned income account

- 3.94 The balancing item of the allocation of <u>primaryearned</u> income account (and of the complete <u>primary</u> distribution of <u>earned</u> income account) is the balance of <u>primaryearned</u> income.
- 3.95 For non-financial and financial corporations, the allocation of <u>primaryearned</u> income account is further subdivided in order to show an additional balancing item, entrepreneurial income, which is closer to the concept of current profit before tax familiar in business accounting. This balancing item and the related sub-accounts are shown in chapter  $\frac{78}{2}$ .

#### The secondary distribution of income transfers other than social transfers in kind account

3.96 The secondary distribution of income transfers other than transfers in kind account (table 23.4) covers redistribution of income through current transfers other than social transfers in kind, often involvingmade by government and NPISHs to households. Social transfers in kind are recorded in the redistribution of incomesocial transfers in kind account. The secondary distribution of income transfers other than social transfers other than social transfers other than social transfers other than social transfers in kind account records as resources revenues, in addition to balance of primary earned incomes, current taxes on income, wealth, etc. and other current transfers are also recorded. Since these transfers are resources for some sectors and uses expenditures for others also, their precise content varies from one sector to another.

# Table 23.4: The secondary distribution of income transfers other than transfers in kind account

- 3.97 It is worth explaining in some detail here the way social contributions are recorded in the SNA. Although employers normally pay social contributions on behalf of their employees directly to the social insurance schemes, in the SNA these payments are treated as if they were made to employees who then make payments to social insurance schemes. In terms of the accounts, this means that they first appear as a component of compensationremuneration of employees in the useexpenditure side of the generation of earned income account of employers and the resourcerevenue side of the allocation of primarycarned income account of households (adjusted for external flows in compensationremuneration of employees). They are then recorded as usesexpenditures in the secondary distribution of income transfers other than social transfers in kind account of households (and possibly of the rest of the world), and as resourcesrevenues of the sectors managing social insurance schemes. All employers' social contributions follow this route. This way of recording transactions as if they followed another course is often called "rerouting".
- 3.98 The balancing item of the secondary distribution of income transfers other than social transfers in kind account is disposable income. For households, this is the income that can be used for final consumption expenditure and saving. For non-financial and financial corporations, disposable income is income not distributed to owners of equity remaining after taxes on income are paid.

#### The *redistribution of incomesocial transfers* in kind account

3.99 Because of the nature of the transactions concerned, this account is significant only for government, households and NPISHs. Social transfers in kind cover two more elements in the portrayal of the redistribution <u>of income</u> process. The first of these is non-market production by government and NPISHs of individual services and the second is the purchase by government and NPISHs of goods and services for transfer to households free or at prices that are not economically significant. The <u>redistribution of incomesocial transfers</u> in kind account (table <u>23</u>.5) records social transfers in kind as <u>resourcesrevenues</u> for households and <u>usesexpenditures</u> of government and NPISHs.

### Table 23.5: The redistribution of incomesocial transfers in kind account

- 3.100 The purpose of this account is fourfold. In the first place it aims at giving a clearer picture of the role of government <u>and NPISHs</u> as <u>the</u>-providers of goods and services to individual households. Secondly, it delivers a more complete measure of household income. Thirdly, it facilitates international comparisons and comparisons over time when economic and social arrangements differ or change. Fourthly, it gives a more complete view of the redistribution process between subsectors or other groupings of households. Redistribution of income <u>via social transfers in kind can be looked upon as a third way of distributing income</u>, <u>in addition to the distribution of earned income and thein kind is a tertiary re</u>distribution of income <u>via income transfers in kind</u>.
- 3.101 The balancing item of the redistribution of incomesocial transfers in kind account is adjusted disposable income adjusted for social transfers in kind.

#### *The use of income accounts*

3.102 The use of income account exists in two variants, the use of disposable income account (table 23.6) and the use of adjusted disposable income adjusted for social transfers in kind account (table 23.7). The use of disposable income account has the balancing item from the secondary distribution of income transfers other than social transfers in kind account, disposable income, as a resourcerevenue. The use of adjusted disposable income adjusted for social transfers in kind account, adjusted disposable income adjusted for social transfers in kind account, adjusted disposable income adjusted for social transfers in kind account, adjusted disposable income adjusted for social transfers in kind account, adjusted disposable income adjusted for social transfers in kind, as a resourcerevenue. Both accounts show how, for the prevent sectors that undertake final consumption (that is, government, NPISHs and households), disposable income or adjusted disposable income adjusted for social transfers in kind is allocated between final consumption and saving. In addition, both variants of the use of income account include, for households and for pension funds, an adjustment item for the change in pension entitlements which relates to the way transactions between households and pension funds are recorded in the SNA. This adjustment item, which is explained in chapter 910, is not discussed here.

#### Table 23.6: The use of disposable income account

# Table 23.7: The use of adjusted-disposable income adjusted for social transfers in kind account

- 3.103 The difference between the resourcesrevenues of the two variants of the use of income account depends on which balancing item is carried down from an earlier account. In terms of <u>usesexpenditures</u>, the difference is between whether final consumption expenditure or actual final consumption is recorded. The former is recorded in the use of disposable income account; the latter in the use of <u>adjusted</u> disposable income <u>adjusted</u> for social transfers in kind account.
- 3.104 Final consumption expenditure covers transactions in final consumption of goods and services for which a sector is the ultimate bearer of the expense. Government, and NPISHs and the central bank produce non-market goods and services in their production account, where intermediate consumption and compensationremuneration of employees are recorded as usesexpenditures. Final consumption expenditure of these producers relates to the value of their output of non-market goods and services, less their receipts from the sale of non-market goods and services at prices which are not economically significant, and possibly, less the sales of market goods and services which are produced as a secondary activity. However, it also covers goods and services that are purchased by government or NPISHs for ultimate transfer, without transformation, to households.
- 3.105 Actual final consumption of households covers goods and services which are effectively available for
- 3.3

individual consumption by households, regardless of whether the ultimate bearer of the expense is government, NPISHs or households themselves. Actual final consumption of government and NPISHs is equal to consumption expenditure less social transfers in kind, or, in other words, collective consumption. The central bank also has collective consumption, but typically does not transfer individual goods and services at prices which are not economically significant to households.

- 3.106 At the level of total economy, disposable income and adjusted disposable income adjusted for social transfers in kind are equal, as are final consumption expenditure and actual final consumption. They differ only when considering the relevant sectors. For each sector, the difference between final consumption expenditure and actual final consumption is equal to social transfers in kind, provided or received. It is also equal to the difference between disposable income and adjusted disposable income adjusted for social transfers in kind. Thus the figures for saving are the same in both variants of the use of income account as income on the resourcesrevenues side and consumption on the usesexpenditures side differ by the same amount.
- 3.107 The balancing item of the use of income account, in its two variants, is saving. Saving ends the subsequence of current accounts.

#### The accumulation accounts

- 3.108 Saving, being the balancing item of the last current account is the starting element of accumulation accounts.
- 3.109 A first group of accounts covers transactions which would correspond to all changes in assets or liabilities and net worth if saving and capital transfers were the only sources of changes in net worth. The accounts concerned are the capital account and the financial account. These two accounts are distinguished in order to show a balancing item which is useful for economic analysis, that is, net lending or net borrowing.
- 3.110 A second group of accounts relates to changes in assets, liabilities and net worth due to other factors. Examples are discoveries or depletion of subsoil resources, destruction by political events, such as war, or by natural disasters, such as earthquakes. Such factors actually change the volume of assets, either physically or quantitatively. Other changes in assets and liabilities may also be linked with changes in the level and structure of prices. In the latter case, only the value of assets and liabilities is modified, not their volume. Thus the second group of accumulation accounts is subdivided between an account for other changes in volume of assets and an account for revaluation.

#### The capital account

3.111 The capital account (table 23.8) records transactions linked to acquisitions of non-financial assets and capital transfers involving the redistribution of wealth. The right-hand side includes saving, net, and capital transfers receivable and capital transfers payable (with a minus sign) in order to arrive at that part of changes in net worth due to saving and capital transfers. The capital account includes among usesexpenditures the various types of investment in non-financial assets. Because consumption of fixed capitaldepreciation is a negative change in fixed assets, it is recorded, with a negative sign, on the left-hand side of the account. The same holds for the depletion of natural resources. Recording gross fixed capital formationacquisitions, less disposals, of produced non-financial assets less consumption of fixed capitaldepreciation on the same side is equivalent to recording net fixed-capital formation of produced non-financial assets.

#### Table 23.8: The capital account

3.112 The balancing item of the capital account is called net lending when positive and measuring the net amount a unit or a sector finally has available to finance, directly or indirectly, other units or sectors, or net borrowing when negative, corresponding to the amount a unit or a sector is obliged to borrow from others.

#### The financial account

- 3.113 The financial account (table 23.9) records transactions in financial instruments for each financial instrument.
- 3.3

These transactions in the SNA show net acquisition of financial assets on the left-hand side or net incurrence of liabilities on the right-hand side.

#### Table 23.9: The financial account

3.114 The balancing item of the financial account is again net lending or net borrowing, which appears this time on the right-hand side of the account. In principle, net lending or net borrowing is measured identically in both the capital and financial accounts. In practice, achieving this identity is one of the most difficult tasks in compiling national accounts.

#### The other changes in the volume of assets and liabilities account

3.115 The other changes in the volume of assets and liabilities account (table 23.10) records the effect of exceptional events that cause not only the value but also the volume of assets and liabilities to vary. In addition to the kind of events referred to above, such as the consequences of war or earthquakes, this account also includes some adjustment elements such as changes in classification and structure which may or may not have an influence on net worth (see chapter 1213). The balancing item, changes in net worth due to other changes in the volume of assets and liabilities, is recorded on the right-hand side.

#### Table 23.10: The other changes in the volume of assets and liabilities account

#### The revaluation account

3.116 The revaluation account (table 23.11) records holding gains or losses. It starts with nominal holding gains and losses. This item records the full change in value of the various assets or liabilities due to the change in the prices of those assets and liabilities since the beginning of the accounting period or the time of entry into stock and the time of exit from stock or the end of the accounting period.

#### Table 23.11: The revaluation account

- 3.117 Just as transactions and other flows in assets appear on the left<u>-hand side</u> of the account and transactions in liabilities on the right<u>-hand side</u>, so nominal gains or losses on assets appear on the left-hand side of the revaluation account, while nominal gains and losses on financial liabilities are recorded on the right-hand side. A positive revaluation of financial liabilities is equivalent to a nominal holding loss; a negative revaluation of liabilities is equivalent to a nominal holding gain.
- 3.118 The balancing item of the revaluation account is changes in net worth due to nominal holding gains and losses.
- 3.119 Nominal holding gains and losses are subdivided between two components. The first shows the revaluation in proportion to the general price level which is obtained by applying, during the same periods of time, an index of the change in general price level to the initial value of all assets or liabilities, even to those that are fixed in monetary terms. The results of this operation are called neutral holding gains and losses because all assets and liabilities are revalued so as to preserve exactly their purchasing power.
- 3.120 The second component of holding gains and losses shows the difference between nominal holding gains and losses and neutral holding gains and losses. This difference is called real holding gains and losses. If the

3.3

nominal holding gains and losses are higher than the neutral holding gains and losses, there is a real holding gain, due to the fact that on average the actual prices of the assets in question have increased more (or decreased less) than the general price level. In other words, the relative prices of its assets have increased. Similarly, a decrease in relative prices of assets leads to a real holding loss.

3.121 Each of the three types of holding gains or losses are subdivided according to the main groups of assets and liabilities, a decomposition which is necessary even in a simplified accounting presentation. Changes in net worth due to nominal holding gains and losses can be subdivided into changes due to neutral holding gains and losses.

#### **Balance sheets**

3.122 The opening and closing balance sheets (table  $\frac{23}{2}$ .12), display assets on the left-hand side, <u>and</u> liabilities and net worth on the right-hand side. Assets and liabilities, as previously explained, are valued at the prices of the date a balance sheet is established.

# Table 23.12: The opening balance sheet, changes in assets and liabilities and closing balance sheet

- 3.123 The balancing item of a balance sheet is net worth, the difference between assets and liabilities. Net worth is equivalent to the present value of the stock of economic value a unit or a sector holds.
- 3.124 The changes in the balance sheet recapitulate the content of the accumulation accounts, that is, the entry for each asset or liability is the sum of the entries in the four accumulation accounts corresponding to that asset or liability. The changes in net worth can be calculated from these entries but must by definition be equal to the changes in net worth due to saving and capital transfers from the capital account plus changes in net worth due to other changes in the volume of assets and liabilities from the other changes in the volume of assets and liabilities account plus nominal holding gains and losses from the revaluation account.
- 3.125 Conceptually, the entries for the closing balance sheet are equal, asset by asset and liability by liability to the entries in the opening balance sheet plus the changes recorded in the four accumulation accounts.

#### 3. An integrated presentation of the sequence of economic accounts

3.126 It is now possible to put together the various elements which have been introduced in the previous subsections and to present in detail the integrated economic accounts. Table 23.13 gives a simplified version of the integrated current accounts. It is formed by taking each of tables 23.1, 23.2, 23.3, 23.4 and 23.6 and placing them immediately one under the other. In this presentation the transactions and other flows are shown in the middle of the table with columns to the left for the <u>usesexpenditures</u> and columns to the right for <u>resourcesrevenues</u>. In a full presentation of this type there would be one column for each sector or subsector of interest. In the interest of introducing the table in a simple manner, only four columns are shown in table 23.13. The first of these represents the sum of all the five sectors of the total economy (non-financial corporations, financial corporations, general government, NPISHs and households). There follows a column for the rest of the world, then one headed goods and services and the last is a column representing the sum of the previous three. This column has little economic meaning but is a critical way of ensuring that the tables are complete and consistent since the totals on the left-hand side and right-hand side of the accounts must be equal line by line. (When balancing items are shown as the last item in one account and the first in the next account, this equality is misaligned but still obvious.)

#### Table 23.13: The integrated presentation of the full sequence of the current accounts

3.127 Table 23.14 shows the continuation of the integrated accounts, including the accumulation accounts and balance sheets as previously presented in tables 23.8, 23.9, 23.10, 23.11 and 23.12. Here the columns to the left represent assets or changes in assets and columns to the right liabilities or changes in liabilities and net worth or changes in net worth. Together tables 23.13 and 23.14 make up the integrated economic accounts. The data in the two tables are drawn from the numerical example that runs through the entire publication. The tables for each account in chapters 67 to 1314 are expanded versions of the tables shown here with columns for all institutional sectors and a full set of transactions and other flows for each of these accounts. A composite version of the tables, with all the details just mentioned, appears in Annex 2.

# Table 23.14: The integrated presentation of the full sequence of the accumulation accounts and balance sheets

- 3.128 The integrated economic accounts give a complete picture of the accounts of the total economy including balance sheets, in a way that permits the principal economic relations and the main aggregates to be shown. This table shows, simultaneously, the general accounting structure of the SNA and presents a set of data for the institutional sectors, the economy as a whole and the rest of the world.
- 3.129 The presentation of the integrated accounts in this form is one of several ways in which a bird's eye view of the accounts can be obtained. Another way is by means of a diagram such as figure 23.1, which gives the same information in schematic form.

### Figure 23.1: Diagram of the integrated accounts for the total economy

3.130 The integrated economic accounts provide an overview of the economy as a whole. As already indicated, the integrated presentation contains much more detail than has actually been included in the tables and may be used to give a more detailed view if so desired. Columns might be introduced for subsectors. The rest of the world column can be subdivided according to various geographical zones. The column for goods and services may show market goods and services separately. The classification of transactions in the rows might be used at more detailed levels, and so on. However, including more detail directly in this scheme at the same time would result in a very complicated and unmanageable table. For this reason, more detailed analysis of production and transactions in goods and services, transactions in financial instruments, detailed balance sheets, as well as analysis by purpose are done in other frameworks. These are presented in the next section and their links with the integrated sequence of economic accounts are also explained.

#### The rest of the world accounts

- 3.131 The rest of the world account covers transactions between resident and non-resident institutional units and the related stocks of assets and liabilities where relevant.
- 3.132 As the rest of the world plays a role in the accounting structure similar to that of an institutional sector, the rest of the world account is established from the point of view of the rest of the world. A <u>resourcerevenue</u> for the rest of the world is an <u>useexpenditure</u> for the total economy and vice versa. If a balancing item is positive, it means a surplus of the rest of the world and a deficit of the total economy, and vice versa if the balancing item is negative.
- 3.133 The external account of goods and services is shown at the same level as the production account for institutional sectors. Imports of goods and services (499) are a resourcerevenue for the rest of the world, exports (540) are an useexpenditure. The external balance of goods and services is (-41). With a positive sign, it is a surplus of the rest of the world (a deficit of the nation) and vice versa. To this are added or deducted the various kinds of taxes, compensationremuneration of employees and other current transfers payable to, and receivable from, the rest of the world. The current external balance is -32, indicating a deficit for the rest of the world but a surplus for the total economy. Again, if it had a positive sign, it would be a

surplus of the rest of the world (a deficit of the total economy).

#### The goods and services account

- 3.134 As noted above, the integrated presentation of the account includes a column on each side labelled goods and services. Entries in these columns reflect the various transactions in goods and services that appear in the accounts of the institutional sectors. Uses Expenditures of goods and services in the institutional sectors accounts are reflected on the right-hand column for goods and services; resources revenues of goods and services in the institutional sectors accounts are reflected on the left-hand column for goods and services. On the resources revenues side of the table, the figures appearing in the column for goods and services are the counterparts of the usesexpenditures made by the various sectors and the rest of the world: exports (540), intermediate consumption (1 883), final consumption (1 399), gross fixed capital formation (376), changes in inventories (28) and acquisitions less disposals of valuables (10). On the useexpenditure side of the table, the figures in the column for goods and services are the counterparts of the resourcesrevenues of the various sectors and the rest of the world: imports (499) and output (3 604). Taxes on products (less subsidies) are also included on the resource revenue side of the accounts. The coverage of this item varies according to the way output is valued (see the discussion on valuation in section C). The part (possibly the total) of taxes on products (less subsidies on products), that is not included in the value of output does not originate in any specific sector or industry; it is a resource revenue of the total economy. In the numerical example taxes, less subsidies, on products (133) are shown directly in the column for goods and services. They are a component of the value of the supply of goods and services which has no counterpart in the value of the output of any institutional sector.
- 3.135 The goods and services account is a particularly important account as it forms the basis of the most familiar definition of GDP. Table 23.15 shows the account in the same format as earlier tables in the chapter (though with numeric values included).

#### Table 32.15: The goods and services account

#### The aggregates

- 3.136 The aggregates of the SNA, such as value added, income, consumption and saving, are composite values which measure one aspect of the activity of the entire economy. They are summary indicators and key magnitudes for purposes of macroeconomic analysis and comparisons over time and space. The SNA aims to provide a simplified but complete and detailed picture of complex economies, so the calculation of the aggregates is neither the sole nor the main purpose of national accounting; nevertheless summary figures are very important.
- 3.137 Some aggregates may be obtained directly as totals of particular transactions in the SNA; examples are final consumption, gross fixed capital formationacquisitions, less disposals, of produced non-financial assets, and social contributions. Others may result from aggregating balancing items for the institutional sectors; examples are value added, balance of primaryearned incomes, disposable income and saving. They may need some further elaboration. However, some of them are so commonly used that they deserve additional explanation at this early stage.
- 3.138 An overview of the aggregates in the SNA and the accounts in which they appear is given in figure 23.2.

#### Figure 23.2: Summary of the main accounts, balancing items and main aggregates

#### Gross domestic product (GDP)

3.139 Basically, GDP derives from the concept of value added. Gross value added is the difference between output and intermediate consumption. GDP is the sum of gross value added of all resident producer units plus that part (possibly the total) of taxes on products, less subsidies on products, that is not included in the valuation

#### of output.

- 3.140 Next, GDP is also equal to the sum of the final uses of goods and services (all uses except intermediate consumption) measured at purchasers' prices, less the value of imports of goods and services.
- 3.141 Finally, GDP is also equal to the sum of primarycarned incomes distributed by resident producer units.

#### *Net and gross measures*

- 3.142 In principle, the concept of value added should exclude <u>the</u> allowances for <u>consumption of fixed</u> <u>capitaldepreciation and depletion</u>. <u>The latterDepreciation</u>, in effect, is not newly created value, but a reduction in the value of previously created fixed assets when they are used up in the production process. <u>Depletion is also treated as a cost of production, as it represents the decline in the value of natural resources due to their extraction in the production of goods. Thus, theoretically, value added is a net concept. This conclusion applies to domestic product as well; theoretically, domestic product should be a net concept. Net domestic product (NDP) is obtained by deducting <u>the consumption of fixed capitaldepreciation and depletion</u> from GDP.</u>
- 3.143 However, gross measures of product and income are commonly used for various reasons. The depreciation of fixed assets as calculated in business accounting does not generally meet the requirements of the SNA. The calculation of <u>consumption of fixed capitaldepreciation</u> requires that statisticians estimate the present value of the stock of <u>fixedthe relevant</u> assets, the lifetime of various types of assets, patterns of depreciation, etc. Not all countries make such calculations, and when they do there may be differences in methodology (with some of them using business data even when inadequate). There may be similar concerns when it comes to the estimation of depletion. Consequently, gross figures are more often available, or available earlier, and they are generally considered more comparable between countries, although significant efforts are being made to further improve estimates of degradation and depletion, including their comparability across countries. SoAll in all, GDP is broadlytypically used even if it is, on a conceptual basis, economically inferior to NDP. However, NDP should also be calculated, with improved estimates of consumption of fixed expitaldepreciation and depletion when necessary, in order to provide a significant tool for various types of analysis.

#### Gross national income (GNI)

- 3.144 PrimaryEarned incomes generated in the production activity of resident producer units are distributed mostly to other resident institutional units; however, part of them may go to non-resident units. Symmetrically, some primaryearned incomes generated in the rest of the world may come from resident units. This leads to the definition and measurement of gross national income (GNI). GNI is equal to GDP less primaryearned incomes payable to non-resident units plus primaryearned incomes receivable from non-resident units. In other words, GNI is equal to GDP less taxes, (less subsidies,) on production and imports, compensationremuneration of employees and property income payable to the rest of the world plus the corresponding items receivable from the rest of the world. Thus GNI is the sum of gross primaryearned incomes receivable by resident institutional units or sectors. In contrast to GDP, GNI is not a concept of value added, but a concept of income.
- 3.145 By deducting the consumption of fixed capitaldepreciation and depletion from GNI, net national income (NNI) is obtained. The remarks above about the conceptual relevance of the net concept in case of product apply even more strongly to national income.

#### National disposable income

3.146 <u>PrimaryEarned</u> incomes receivable by resident institutional units may be used in part to make <u>current</u> transfers to non-resident units and resident units may receive <u>similar</u> transfers originating out of <u>primaryearned</u> incomes in the rest of the world. Gross national disposable income is equal to GNI less current transfers (other than taxes, less subsidies, on production and imports) payable to non-resident units, plus the

corresponding transfers receivable by resident units from the rest of the world. Gross national disposable income measures the income available to the total economy for final consumption and gross saving. By deducting the consumption of fixed capitaldepreciation and depletion from gross national disposable income, net national disposable income is obtained. National disposable income is the sum of disposable income of all resident institutional units or sectors.

#### Accounts in volume terms

3.147 All the aggregates referred to above are calculated in current values. The influence of changes in prices may also be eliminated. Domestic product is calculated in volume terms in order to measure the real change that occurs from one period to another. This is possible because output, intermediate consumption and taxes on products, less subsidies, on products can all be calculated in volume terms. On the other hand, aggregates of income may not be expressed in volume terms because income flows may not, strictly speaking, be broken down into a quantity and a price component. They may, however, be calculated at constant purchasing power, which is described as being in real terms. When moving from domestic product in volume terms to national income in real terms, the effect of changes in the terms of trade between the total economy and the rest of the world must be taken into account. The necessary adjustment is described in chapter <u>1518</u>.

#### Aggregates per head of population

3.1473.148 A dimension is added to the usefulness of a number of national accounts aggregates by calculating these figures per head. For broad aggregates such as GDP, GNI or household final consumption, the denominator commonly used is the total (resident) population. When sub-sectoring the accounts or part of the accounts of the household sector, data on the number of households and the number of persons in each subsector are also necessary.

#### 4. The other parts of the <u>integrated frameworkaccounting structure</u>

#### The central sSupply and use tables and other input-output tables

- 3.1483.149 The detailed analysis of production by industries and flows of goods and services by kind of products is an integral part of the integrated central framework. It would be feasible to include further details in the integratedsequence of economic accounts table; for example, the rows for output, intermediate consumption and value added might be subdivided by kind of economic activity; the columns for goods and services might be subdivided by type of products. However, the SNA does not adopt this solution, because the table would become cumbersome. Instead, tables that provide a systematic cross-classification by institutional sectors and industries of output, intermediate consumption, and value added and its components are proposed. They are described in detail in chapters 1415 and 2836 but the main features are outlined here.
- 3.1493.150 The production and generation of <u>earned</u> income accounts in the <u>integratedsequence of</u> economic accounts are given only by institutional sectors and with a global balance of transactions on goods and services. The detailed analysis of production activities and product balances is made in the supply and use tables presenting:
  - The <u>resources</u> revenues and <u>uses</u> expenditures of goods and services for each type of product;
  - The production and generation of <u>earned</u> income accounts for each industry according to kind of economic activity;
  - Data on factors of production (labour and fixed-capital) used by industries.

#### Population and IL abour marketinputs tables

- 3.1503.151 In productivity studies, data on the labour inputs used by each industry in the process of production are indispensable. For this purpose, Ttotal hours worked is the preferred measure of labour inputs for the SNA. Labour inputs can also be measured in terms of Inferior alternatives are full time equivalent jobs, the number of jobs or the number of persons employed. These measures are also highly relevant in their own right, and very useful for analysing trends and short-term developments in the labour market. The labour market tables, which are also part of the integrated framework of national accounts, provide a systematic overview of the various measures of labour, including remuneration, consistent with the SNA. The tables also provide the opportunity to include various breakdowns of labour input by, for example, age, sex of gender and level of education.
- 3.1513.152 Data on population and labour inputs may be derived from various data sources, the most important being labour force surveys, data from enterprise surveys, as well as administrative data. These source data must generally be adjusted in order to be consistent with the concepts, definitions and classifications of the SNA, and after adjustment they need to be balanced in order to arrive at a consistent set of data on (compensation of) labour. The resulting labour market tables are an integral part of the SNA and are further explained in chapter 1916.

#### **Functional analysis**

- 3.1523.153 As explained in section B, the description of a transaction explains what type of flow is being recorded but it does not explain why the transaction is being entered into. In order to analyse the purpose of transactions, it is necessary to apply a functional classification to the basic transaction. For example, instead of disaggregating household consumption by type of product, it may be disaggregated to show how much is spent on food, housing, health, recreation and so on. For government consumption a distinction may be made between consumption related to law and order, defence, health or education, for instance. As compatible but different classifications are used according to the sector concerned, these partial analyses by purpose cannot be integrated in a single table and, in most cases, no exhaustive total for the total economy can be calculated in the <u>central frameworksequence of economic accounts</u>.
- 3.1533.154 Another way of looking at function may be to identify all expenditure related to a particular functional activity, such as, for example, environmental protection. This is not (yet) an area where all relevant expenditures are easily identified and so it may be desirable to develop this further outside the central framework in a satellite account.

# E. Cross-cutting issues

- 3.155 There are a range of issues impacting the economy that cut-across the various accounts and tables in the integrated framework of national accounts. Part IV of these standards contains six chapters which provide further details on digitalization, globalization, insurance and pensions, selected issues on financial instruments, Islamic finance, and contracts, leases, licenses and permits.
- 3.156 A wide variety of digital products and activities have appeared as part of digitalisation and digital assets have assumed important roles as stores of wealth or inputs in production. The profound impact of digitalisation on production, consumption, investment, prices, finance, and other aspects of the economy, as well as its impact on international trade in services and other cross-border transactions, calls for additional guidance. Chapter 22 provides more detailed guidance on measuring the activities, products, and assets associated with digitalisation in the framework of the SNA. It also provides methods to enhance the visibility of digital activity and products in the macroeconomic accounts.
- 3.157 Globalisation refers to the economic integration of economies around the world. Reduced trade barriers and advancements in communication, transportation, and technology have facilitated a rise in the cross-border movements of goods, services, capital, information, and people in recent decades. Those factors have also contributed to increasingly complex corporate structures that span across multiple economies. Such multinational enterprise (MNE) groups can be set up for many reasons, including to reduce labour costs,

transportation costs, taxes, and proximity to markets. In addition, other global manufacturing and distribution arrangements, such as factory-less goods production and merchanting, have added to the complexities of interrelations between economies. These globalisation developments pose challenges to traditional macroeconomic statistics, which are based on the concepts of residence and economic presence. Chapter 23 elaborates on issues related to globalisation that are touched upon throughout the integrated framework of the SNA. It focuses on the conceptual, measurement, and analytical challenges that arise from deeper corporate linkages and the fragmentation of production processes across economies, which motivate additional breakdowns and supplementary presentations, to arrive at a better understanding of the connections between economies.

- 3.158 One of the more complex areas in the measurement of economic activities within the integrated framework of the SNA concerns insurance: individual (non-life and life) insurance as well as social insurance, including the delineation between the two of them. Chapter 24 provides a further elaboration of the guidance provided in chapters 7, 9, and 12 to 14. It also recommends a supplementary table to arrive at a better understanding of the differences in institutional arrangements across countries and its profound impact on the international comparison of the relevant data that are presented in the sequence of economic accounts.
- 3.159 Chapter 25 provides additional details on specific financial instruments, as a supplement to chapters 12 to 14. It specifically deals with the treatment of guarantees, financial derivatives and employee stock options. The chapter also touches on issues related to the recording of flows associated with financial assets and liabilities in the broader sequence of economic accounts.
- 3.160 Chapter 26 covers Islamic finance. Islamic finance is distinguishable from traditional finance in several ways, in relation to both financing and insurance activities. Islamic financial institutions as well as financial institutions with Islamic windows that offer both conventional finance and Islamic finance are bound by Shari'ah principles. The chapter provides further details on how to treat the arrangements within Islamic finance in the context of the integrated framework of the SNA.
- 3.161 Chapter 27 brings together more detailed guidance on the treatment of the various types of contracts, leases, licenses and permits. The terms of the agreement for such arrangements may affect the time of recording of transactions made under the agreement as well as the classification of payments and the ownership of the item subject to the agreement.

# F. Institutional units and sectors in more detail

- 3.162 Part V of these standards, comprising of chapter 28 to 33, includes further details on some of the particularities of the main institutional sectors included in the sequence of economic accounts: non-financial corporations (chapter 28), financial corporations (chapter 29), general government and the public sector (chapter 30), households (chapter 31), non-profit institutions (chapter 32) and transactions and positions between residents and non-residents (chapter 33).
- 3.1543.163 In relevant cases, information is also provided on the links with other macro-economic standards, such as the Monetary and Financial Statistics Manual and Compilation Guide (MFSMCG) 2016 in the chapter on financial corporations, and the Government Finance Statistics Manual (GFSM) 2014 in the chapter on general government and the public sector, and the Balance of Payments and International Investment Position Manual (BPM), seventh edition in the chapter on transactions and positions between residents and non-residents. The relationship with business accounting standards and public sector accounting standards are also concisely addressed in chapters 28 and 30, respectively.

# E.G. The integrated central framework and flexibility

# 1. Applying the <u>centralintegrated</u> framework in a flexible way

<u>3.164</u> The <u>central integrated</u> framework of the SNA is consistent in terms of its concepts and its accounting structure. Links between the various elements of the integrated SNA have been illustrated in order to depict its structure in a simple but complete way. That presentation does not imply any order of priority or frequency (quarterly, annually, etc.) for implementing national accounts. Priorities in compiling national accounts are a matter of statistical policy; no universal recommendation can be made. (Some indications relevant to specific circumstances are provided in relevant handbooks.) Similarly, the accounting structure does not imply that results always have to be presented exactly as they stand in this or other chapters. A country may choose to publish mainly time series, to prepare only some accounts or aggregates, etc.

- 3.1553.165 In general, the SNA has to be looked at in a consistent but flexible way. According to analytical requirements and data availability, the attention paid to various aspects of the <u>centralintegrated</u> framework may vary. In general, greater emphasis may be given to one part rather than another by choosing the level of disaggregation to adopt for classifications of institutional sectors, industries, products, transactions, sequence of <u>economic</u> accounts, etc., by using different methods of valuation; by using different priorities for various parts of the accounts and different frequencies; by rearranging the results; by introducing some additional elements, etc.
- 3.1563.166 The household sector provides a good illustration of what may be done in order to provide an indepth analysis of the household conditions and the functioning of the economy as a whole. A detailed approach to the household sector may be undertaken, first of all, by deconsolidating the household sector beyond the subsectors included in the main classification of the SNA, distinguishing, for instance, the type of economic activity carried out (formal or informal), the location of the household (urban or rural) or the level of skill. Secondly, it is possible to adapt the way household activities are portrayed in the sequence of <u>economic</u> accounts. For instance, a concept of discretionary income may be used by excluding from disposable income those elements which are provided in kind and for which the household has no choice on how to spend this part of income, or the classification of household transactions may be complemented, to show the industry of origin of various types of income, and so on.
- 3.1573.167 The flexibility of the SNA is further illustrated with the public sector, whose components are systematically shown at various levels of detail in the classification of institutional sectors. The components of the public sector consist of general government entities and public corporations, and may be rearranged to group the accounts of the overall public sector. These accounts may be shown before consolidation and after consolidation to describe the relations between the public sector and the private sector and between the public sector.
- 3.1583.168 Part VI (Cchapters 34-3821-29 provide more detailed analyses of the above examples. They also present illustrations of the flexible uses of the central framework in the field of key sector accounting, external accounts problems and It also includes more details on the informal economy, in chapter 39. The remainder of this section provides a short introduction to matrix-type of tables as well as a concise overview of extended and thematic accounts/tables.

# 2. Introducing social accounting tables in matrixees form

A social accounting matrix (SAM) is a presentation of the SNA in matrix terms that permits the incorporation of extra details of special interest. To date, builders of SAMs have exploited the flexibility to highlight special interests and concerns such as disaggregating the household sector to show the link between income generation and consumption. The power of a SAM, as well as of the SNA, comes from choosing the appropriate type of disaggregation to study the topic of interest. In addition to a flexible application, SAMs may incorporate more extensive adjustments, which are of a satellite accounting nature, in order to serve specific analytical purposes. For further explanation of the matrix presentation and SAMs, see chapters 28 and 29.Input-output tables

3.169 As noted in the above, supply and use tables are an integral part of the integrated framework of the SNA and the process of compiling these tables is a powerful way of ensuring consistency between the various data sources available to the compiler. For many analytical purposes, though, a transformation from a pair of supply and use tables into a single input-output table where row and column totals are equal brings very considerable advantages. Input-output tables cannot be compiled without passing through the supply and use stage (except under very restrictive assumptions). They are therefore analytical constructs that inevitably involve some degree of modelling in their compilation.

3.170 There is a vast literature on the compilation and use of input-output tables and it is impossible to give a full appreciation of the range of complexities of compilation and inventiveness of applications. Chapter 36 aims to give a feel for the sort of operations necessary to transform supply and use tables into input-output tables and to give some ideas of their possible applications. The chapter also discusses the compilation of multicountry input-output tables, and their use, for example to disentangle gross flows of imports and exports related to global production arrangements, thus arriving at trade in value added, as described in chapter 23.

# <u>From-whom-to-whom</u>The tables of financial transactions and financial assets and liabilities

- 3.1593.171 The integrated economic accounts show which sectors acquire which financial assets and incur which liabilities. In order to examine the working of the financial sector, the first expansion of the financial account is to distinguish nine subsectors within financial corporations and eight categories of financial assets and liabilities. The subsectors of financial institutions are discussed in chapter 45 and the details of the financial instruments are described in chapter 4112.
- 3.1603.172 However, as explained in the introduction to this chapter, the presentation of the financial account as described in this chapter even with the elaboration of subsectors and financial instruments described in chapters 45 and 1112, is still not fully articulated. It shows which sectors and subsectors incur loans and make deposits but it does not allow an in-depth examination of the intermediation process whereby a financial institution draws in funds, repackages them and issues them as other instruments to other units. In order to explore this, a three-dimensional "from-whom-to-whom" style of presentation is needed. This is sometimes referred to as a flow of funds matrix. The three-dimensional table of financial transactions is usually presented as a series of matrices, one matrix for each kind of financial instrument showing the flows from one sector to another.
- 3.1613.173 As such a presentation is not necessarily useful for actually presenting the data, other presentations may be preferred in practice for publication. For example, a table showing each type of financial asset cross-classified by debtor sector and each type of liability cross-classified by creditor sectors may be considered. As compared to the presentation of the financial accounts made in the integrated economic accounts, this means, in short, introducing a sector distinction below headings of financial instruments when relevant. (For a more complete explanation see chapter 27.)
- 3.162 Complete balance sheets and assets and liabilities accounts

3.163

- 3.164<u>3.174</u> In the integrated economic accounts, balance sheets are <u>also</u> presented in a very aggregated way. For each sector or subsector more complete balance sheets may be built up using the detailed classification of assets and liabilities when appropriate. Changes in assets and liabilities for each sector may also be analysed for each type of asset and liability and each source of change.
- 3.175 In addition, three-dimensional tables may be elaborated showing the "from-whom-to-whom" links for each type of financial instrument, to permit better analysis. The presentation of such tables is exactly the same as for tables of financial transactions except that the stock of assets or liabilities is shown instead of changes in assets or liabilities and the net financial position of each sector appears instead of its net lending or borrowing. These tables closely follow the principles for the similar flow tables. and are also described in chapter 27.
- 3.176 From whom-to-whom-tables are also useful for current transactions, such as property income and current transfers, as well as capital transfers. In the case of various property income items, a link may be established with related assets and liabilities in the balance sheets on a from-whom-to-whom basis.
- 3.1653.177 More details on from-whom-to-whom tables are provided in chapter 37.

## 3. Introducing thematic and extended accounts and tablessatellite accounts

- 3.1663.178 In some cases, working with the <u>centralintegrated</u> framework, even in a flexible way, is not sufficient. Even when conceptually consistent, the <u>centralintegrated</u> framework may become overburdened with details. Moreover, some requirements may conflict with the concepts and architecture of the <u>centralintegrated</u> framework.
- 3.1673.179 In some types of analysis, the basic intention is not to use alternative economic concepts, but simply to focus on a certain field or aspect of economic and social behaviour in the context of national accounts. The intent is to make apparent and to describe in more depth aspects that are hidden in the accounts of the central\_integrated framework or surface only to a limited extent. Tourism is a good example. Various aspects of producing and consuming activities connected with tourism may appear in detailed classifications of activities, products and purposes. However, transactions and purposes specific to tourism appear separately in only a few cases. In order to describe and measure tourism in a national accounts framework, it is necessary to make a choice between two approaches: either subdivide many elements in the accounts of the central\_integrated framework to get the required figures for tourism and pay the price of overburdening and unbalancing the various components of the accounts, or elaborate a specific framework for tourism. The latter approach also allows adaptation of the various classifications and measurement of additional aggregates, such as national expenditure on tourism, which may cover intermediate as well as final consumption.
- 3.1683.180 In other types of analysis, more emphasis is given to alternative concepts. For instance, the production boundary may be changed, generally by enlarging it, for example, the production of domestic services by members of the household for their own final consumption may be brought within the production boundary. The concept of fixedproduced non-financial assets and the related fixed-capital formation may be broadened, by covering consumer durables or human capital. It is also possible in environmental accounting to record the relationships between natural resources and economic activities differently by recording the depletion and the degradation of subsoil or other natural resources. In these approaches, the economic process itself is depicted differently and complementary or alternative aggregates are calculated. The analysis of a number of important fields such as social protection, health or the environment may benefit from building a framework to accommodate elements which are included in the central accounts, explicitly or implicitly, plus complementary elements (either monetary or in physical quantities) possibly as well as alternative concepts and presentations. In all cases, however, the links with the <u>central\_integrated</u> framework are made explicit; there are a number of common elements and any contradictory features are introduced, not by chance, but after explicitly considering various ways of looking at reality.
- 3.181 Those special constructs, which are consistent with but not fully integrated the central framework with the integrated framework of national accounts, are called satellite accounts and are described in more detail in chapter 29 either thematic accounts/tables or extended accounts/tables. Thematic accounts/tables increase the visibility of certain key activities by compiling more granular decompositions and by compiling alternative aggregations that summarize the relevant granular data, as described above. General details on the compilation of thematic accounts are provided in chapter 38. Important examples of thematic accounts and tables included in the SNA are the following:
  - digital supply and use tables, to better capture the impact of digitalisation on the economy (chapter 22);
  - "extended" supply and use tables, to arrive at improved analysis of the impact of globalisation on the domestic economy (chapter 23);
  - tables on non-bank financial intermediation, to capture related financial risks and vulnerabilities (chapter 29);
  - thematic accounts for non-profit institutions and other social economy institutions (chapter 31); and
  - thematic accounts for tourism (chapter 38).
- 3.1693.182 Extended accounts/tables include imputed values for indicators measured in monetary units and/or non-monetary indicators measured in physical units. They typically expand the production boundary as well as the asset boundary applied in the integrated framework of national accounts. Important examples of extended accounts are often related to supporting the monitoring of certain aspects that contribute to the well-
being of people, including its sustainability. They are the main topic of chapters 34 and 35, as follows:

- extended accounts on unpaid household service work;
- extended accounts on human capital, education and training; and
- extended account for health.

3.1703.183 General details on the compilation of thematic and extended accounts are provided in chapter 38.

3.184 No thematic or extended accounts/tables are defined in relation to environmental issues. For this purpose, the System of Environmental-Economic Accounts (SEEA) provides an integrated framework complementary to the SNA. Two sets of international standards are available in this area. The SEEA 2012 Central Framework applies and adapts the accounting rules and treatments of the SNA with the intent of supporting the integration of environmental data with the standard economic data organised within the integrated framework of the SNA. In doing so, the various stocks of natural resources are also defined from a physical rather than a monetary perspective. In the second set of standards, the SEEA Ecosystem Accounting, the scope of natural capital is extended to recognise benefits beyond those recognised in the SNA, by also accounting for ecosystem assets and the services that can be derived from these assets. More details, including information on the accounting for sustainability more broadly, are provided in chapter 35.

# Chapter 4: (2025 SNA)/Chapter 3 (BPM7): Flows, stocks and accounting rules (revised title)

(OLD Chapter 3: Stocks, flows and accounting rules)

This chapters uses chapter 3 of the 2008 SNA as a starting point. Please note that the order of the discussion of stocks (section B in the 2008 SNA) and flows (section C in the 2008 SNA) has been reversed. This has not been highlighted in the form of track changes.

# A. Introduction

- 4.1 The SNA and the BOP/IIP are systems of accounts designed to measure stocks of, and changes in, economic value and to identify the person, group of persons, legal or social entity with claims on the economic value, including such claims between residents and non-residents. This chapter discusses the concept of stocks of economic value, the flows that reflect changes in economic value and the accounting rules applied to the recording of stocks and flows. In order to portray stocks and flows in an accounting system, it is necessary to identify the parties with a claim to economic value measured in stocks or affected by flows. These parties are the persons, groups of persons, legal and social entities already referred to. They are described as institutional units in the SNA/BPM and are grouped into institutional sectors according to their economic objectives, functions and behaviour. Units and sectors are the subject of chapter 5/4.
- 4.2 Stocks measure economic value at a point in time. Flows measure changes in economic value over a period of time. Stocks appear in the balance sheets /international investment position (IIP) and related tables. Flows appear in all the other accounts and tables of the SNA/BPM. The flow accounts in the full sequence of economic accounts for institutional sectors in the SNA consist of the current accounts, which deal with production, income and use of income, and the accumulation accounts (capital account, financial account and other changes in assets and liabilities account), which show all changes between two balance sheets. The flow accounts in external accounts consist of the current account, capital account, and the accumulation accounts (financial account and other changes in financial account and other changes in the changes in financial assets and liabilities account), which show all changes between two IIP statements.
- 4.3 In order to have a system that is complete and consistent, all changes in economic value between stock measures (IIP in the case of external accounts) at two points in time must be captured in flows. The first requirement in specifying the accounting conventions is thus to define precisely what is meant by stocks and flows. Once that is done, the rules to set the changes in economic value within an accounting system need to be specified. These rules are defined so as to ensure that the SNA/BPM is consistent in terms of value, time of recording and classification.

## 1. Stocks and flows

1

- 4.4 Stocks refer to the levels of financial/non-financial assets or liabilities at a point in time. In the case of financial assets/liabilities, usually the term "positions" is used, while for levels of non-financial assets, the term "stocks" is often applied. The SNA/BPM records stocks in accounts, usually referred to as balance sheets (or IIP in the case of external accounts), compiled in respect of the beginning and end of the accounting period. However, stocks are connected with flows: they result from the accumulation of prior transactions and other flows, and they are changed by transactions and other flows in the period. They result in fact from a continuum of entries and withdrawals, with some changes in volume or in value occurring during the time a given asset or liability is held.
- 4.5 An asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the item over a period of time. It is a means of carrying forward value from one accounting period to another. Assets may be financial in nature or not. For almost all financial assets, there is a corresponding [financial] liability. A liability is established when one unit (the debtor) is obliged, under specific circumstances, to provide a payment or series of payments to another unit (the creditor). An other unit (the creditor).

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elaboration of these definitions and the concepts embodied in them as well as a typology of the different assets and liabilities in the SNA/BPM is given in section C of this chapter.

- 4.6 Economic flows reflect the creation, transformation, exchange, transfer or extinction of economic value; they typically involve changes in the volume, composition, or value of an institutional unit's assets and liabilities. Mirroring the diversity of the economy, economic flows have specific natures as wages, taxes, interest, capital flows, etc., that most of which record the ways in which a unit's assets and liabilities are changed.
  - 4.7 Economic flows consist of transactions and other flows. A transaction is an economic flow that is an interaction between institutional units by mutual agreement or an action within an institutional unit that it is analytically useful to treat like a transaction, often because the unit is operating in two different capacities. The value of an asset or a liability may be affected by economic flows that do not satisfy the requirements of a transaction. Such flows are described as "other flows". Other flows are changes in the value of assets and liabilities that do not result from transactions. Examples are losses due to natural disasters and the effect of price changes on the value of assets and liabilities. In the case of external accounts, these flows occur between a resident and a non-resident institutional unit.

4.8 There is a discussion of the different types of economic flows in section B of this chapter.

# 2. Balancing items

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- 4.9 Economic flows are grouped together into accounts with outflows (which may be called debit entries, expenditures or changes in assets) on the left-hand side and inflows (credit entries, revenues, or changes in liabilities or net worth) on the right-hand side, <u>Economic flows are grouped together into accounts with credit entries on one side and debit entries on the other side.</u> <u>A</u> balancing item is an accounting construct obtained by subtracting the total value of the entries on one side of an account (credits, revenues or changes in liabilities) from the total value of the entries on the other side (debits, expenditures or changes in sets). It cannot be measured independently of the entries in the accounts; as a derived entry, it reflects the application of the general accounting rules to the specific entries on the two sides of the account. There is also a balancing item is not be balance sheet/international-investment position (IIP) where the difference between assets and liabilities is known as net worth/net IIP.
- 4.10 Balancing items are constructed because they convey interesting economic information. Many of the key aggregates of the SNA/BPM actually emerge as balancing items. Balancing items are discussed in section D.

# 3. Grouping stocks and flows into accounts

- 4.11 The accounts and tables of the SNA/BPM contain information relating to the economic actions or events that take place within a given period of time (between residents and non-residents) and the effect of these events on the stocks of (external) assets and liabilities between the beginning and end of that period.
- 4.12 The flows and stocks are grouped according to the classification hierarchy of the SNA/BPM, shown in annex I. The classification of transactions and other flows has five headings in SNA/BPM at the highest level, dealing with transactions in products (goods and services in balance of payments), transactions showing how income is distributed and redistributed within the SNA/BOP, transactions in non-produced assets, transactions in financial assets and liabilities, and other accumulation entries. In the accumulation accounts, the hierarchy may show both the transaction and the type of asset it applies to.
- 4.13 The flows and stocks are entered in the accounts of the institutional units involved and thus in the accounts of the sectors into which the institutional units are grouped. Institutional units and sectors are the subject of chapter 5/4. In general, flows and stocks are entered in the accounts of the institutional units that own or owned the goods and assets involved, in the accounts of units that deliver or take delivery of services, or in the accounts of units that provide labour and capital or use them in production. For some purposes, an institutional unit participating in production is viewed as one or more establishments and establishments may be grouped into industries. Establishments and industries are defined and discussed in chapter 6.
- 4.14 The flows and stocks of external assets and liabilities are entered in the accounts of the institutional units that

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which the institutional units are grouped. Institutional units and sectors are the subject of chapter 4. Commented [ED9]: This paragraph will not be included in the 2025 SNA 4. Accounting rules 4.15 All entries in the accounts have to be measured in monetary terms of money, and therefore the elements from which the entries are built up must be measured in monetary terms of money. In some cases, the amounts entered are the actual payments that form part of flows that involve money; in other cases the amounts entered are estimated by reference to actual monetary values. Money is thus the unit of account in which all stocks and flows are recorded. 4.16 In principle, any lapse of time may be chosen as the accounting period. Periods that are too short have the disadvantage that statistical data are influenced by incidental factors, while long periods do not adequately portray changes going on in the economy. Merely seasonal effects can be avoided by having the accounting period cover a whole cycle of regularly recurrent economic phenomena. Most business and government accounting refers to complete years. In general, calendar or financial years or quarters are best suited for drawing up a full set of national accounts/external accounts. The SNA covers all economic activity in such a way that it is possible to derive accounts for individual groups of units or for all units in the economy. The BPM covers all economic activity between residents and 4.17 non-residents in such a way that it is possible to derive current/capital account items and financial flows/stocks (functional categories/institutional sectors) by partner economy. To permit this, the accounting Commented [ED10]: This sentence will not be included in rules ensure consistency with respect to valuation, timing, classification and grouping of flows and stocks. the 2025 SNA. These rules are summarized below to provide a context for the discussion of the nature of flows, stocks, and balancing items in sections B, C and D. Flows and stocks must be recorded consistently with respect to their valuation. Entries are at current value on the market (that is, the amount agreed upon by two parties) or at its closest equivalent. The value on the market may need to be adjusted to the coverage of the flow or stock as defined in the SNA/BPM and expressed appropriately given the nature of the flow or stock with respect to taxes and subsidies on products, transport costs and trade margins. Flows and stocks must be recorded consistently with respect to timing. Flows are recorded at the moment of accrual within the accounting period (that is, the moment economic value is created, transformed, exchanged, transferred or extinguished). Stocks are recorded at the moment to which the account relates, typically the beginning or end of the accounting period. Individual flow and stock entries must be recorded consistently with respect to their classification, both in respect of the categories in the classifications of transactions, other flows and assets and the categories in the classification of transactors as (sub)sectors or industries Depending on the character of the entry, a distinction should be made between revenues and expenditures (credits/revenues and debits/expenditures in balance of payments) or between assets and liabilities. In the process of grouping, netting is implicit for several items, but consolidation is not advised. Commented [ED11]: Not relevant for BPM

4.18 The basic accounting framework of the SNA/BPM is one of quadruple accounting. This implies that a transaction gives rise to two entries for each party to the transaction. There is vertical consistency within each unit and horizontal consistency between the two units for each type of entry. The principles of quadruple accounting are explained in more detail in section E in this chapter.

issue liabilities (e.g., debt securities) or hold assets (e.g., deposits) and thus in the accounts of the sectors into

# B. Flows

4.19

Economic flows are of two kinds. Most flows are The first kind consists of transactions. Flows included in macroeconomic statistics that do not meet the characteristics of transactions as described below are called "other flows". Transactions appear in all of the accounts and tables in which flows appear except the other changes in the volume of assets and liabilities account and the revaluation account. Other flows appear in

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only these two accounts. More meaning can be given to the definition of flows by describing the two kinds.

## 1. Transactions

- 4.20 A transaction is an economic flow that is an interaction between institutional units by mutual agreement or an action within an institutional unit that is analytically useful to treat like a transaction, often because the unit is operating in two different capacities.
- 4.21 Institutional units, referred to in the definition, are the fundamental economic units used in macroeconomic statistics. They are described and defined in chapter 5/4. The following are the main attributes of institutional units that are relevant to their engaging in transactions:
  - They are entitled to own goods or assets in their own right, and therefore are able to exchange them;
  - They are able to take economic decisions and engage in economic activities for which they are held to be directly responsible and accountable at law;
  - They are typically able to incur liabilities on their own behalf, to take on other obligations or future commitments and to enter into contracts.
- 4.22 The definition of a transaction stipulates that an interaction between institutional units be by mutual agreement. When a transaction is undertaken by mutual agreement, the prior knowledge and consent of the institutional units is implied. This does not mean, however, that both units necessarily enter a transaction voluntarily, because some transactions are imposed by force of law, such as payments of taxes or other compulsory transfers. Although individual institutional units are not free to fix the amounts of taxes they pay, there is nevertheless collective recognition and acceptance by the community of the obligation to pay taxes. Thus, payments of taxes are considered transactions despite being compulsory.
- 4.23 In the external accounts (and the institutional sector accounts for the rest of the world in the SNA), transactions are recorded between two institutional units, one of which is a resident of the compiling economy and the other a non-resident. By the nature of external accounts, intra-unit or internal transactions are not recorded.<sup>1</sup> The flows between the branch and its parent enterprise are shown as interactions between institutional units, with a branch recognized as a separate institutional unit (a quasi-corporation). Similarly, when a notional enterprise (a quasi-corporation) is created for holding land and associated buildings by non-resident owners, the flows between the non-resident owners and the notional enterprise are considered interactions between institutional units.
- 4.24 Transactions between two resident institutional units in external assets are domestic transactions. Such transactions, however, affect the external asset positions of the two resident units involved. The external asset position of one resident unit is reduced and the position in the same external asset of another resident unit is increased, and thus leads to a change in domestic sectoral breakdown if the two parties are in different sectors. Such transactions result in changes in structure of external asset positions and should be recorded in the external accounts as a reclassification of sectors of holding (i.e., in the other changes in financial assets and liabilities account).<sup>2</sup> If both units fall in the same institutional sector, such reclassification entries cancel each other out and thus have no effect on sectoral positions. Similarly, when financial instruments issued by residents are exchanged between non-residents, no transactions are recorded in the balance of payments and there is no change in overall external liabilities.<sup>3</sup>
- 4.25 To establish whether a transaction involving an external financial asset is a transaction between a resident and a non-resident, the compiler must know the identities of both parties. The information available on transactions in claims constituting external assets may not, however, permit identification of the two parties

<sup>&</sup>lt;sup>1</sup> In the national accounts, transactions cover also some actions within an institutional unit (intra-unit transactions) with the purpose of providing a more analytically useful picture of output, final uses, and costs. Examples include depreciation and depletion, changes in inventories, and production for own final use of goods by producers. For further details on intra-unit (internal) transactions refer to paragraphs xx, Chapter 4, 2025 SNA.

for own final use of goods by producers. For further details on intra-unit (internal) transactions refer to paragraphs xx, Chapter 4, 2025 SNA. <sup>2</sup> The resident-to-resident transaction between the buyer and seller is recorded in the national accounts. <sup>3</sup> As discussed in paragraph A3.4, national contributions for compiling financial flows data in currency and economic unions may be allocated along the debtor-creditor approach as a way to ensure bilateral symmetry.

to the transaction. That is, a compiler may not be able to ascertain whether a resident, who acquired or relinquished a claim on a non-resident, conducted the transaction with another resident or with a non-resident, or whether a non-resident dealt with another non-resident or with a resident. As a result, recorded external transactions may include not only those that involve assets and liabilities and take place between residents and non-residents but also those that involve financial assets of economies and take place between two residents and, to a lesser extent, transactions that take place between non-residents. (See also paragraphs xx, Annex 11 (BPM) on the additional issues associated with partner attribution of transactions in financial assets and liabilities may have to be taken into account for specific purposes, particularly as described in paragraph 14.21 (BPM).)

4.25-1 Some mutual agreements involve three parties. For example, guarantees involve the guarantor, the debtor, and the creditor. Transactions occurring between two parties (e.g., between the guarantor and debtor, or between the guarantor and creditor, or between the debtor and creditor) should always be identified and recorded as such. For one-off guarantees, the activation of the guarantee gives rise to transactions and, in some cases, other flows between each of the three pairs of the three parties. For each pair of parties, transactions in the external accounts are recorded if one party is a resident and another party is a nonresident.

4.26 Transactions take so many different forms that, even with these explanations, any general definition is inevitably rather imprecise. To give more precision, the various kinds of transactions have to be systematically described and classified. A first distinction is between monetary and non-monetary transactions. Other distinctions, such as between transactions with and without a quid pro quo, are drawn within each of these kinds of transactions. Frequently the individual, identifiable transactions of everyday economic life are simply grouped together in the accounts; sometimes they are subdivided and rearranged in order to form the transaction categories of the SNA/BPM.

#### Monetary transactions

- 4.27 A monetary transaction is one in which one institutional unit makes a payment (receives a payment) or incurs a liability (receives an asset) stated in units of currency. In the SNA/BPM, all flows are recorded in monetary terms, but the distinguishing characteristic of a monetary transaction is that the parties to the transaction express their agreement in monetary terms. For example, a good is purchased or sold at a given number of units of currency per unit of the good, or labour is hired or provided at a given number of units of currency per hour or day.
- 4.28 All monetary transactions are interactions between institutional units; that is, all monetary transactions are two-party transactions. The following is a list of common monetary transactions:
  - Purchases of goods and services,
  - Acquisitions of securities,
  - Wages and salaries,
  - Interest, dividends and rent,
  - Taxes,
  - Social assistance benefits in cash.

#### Transactions with and without a recompense

- 4.29 The purchases of goods and services, the acquisitions of securities, wages and salaries, and interest, dividends, and rent are two-party transactions in which one party provides a good, service, labour or asset to the other and receives a recompense of commensurate value in return. This kind of transaction is sometimes called a "something for something" transaction or a transaction with a quid pro quo. Such transactions are sometimes called exchanges.
- 4.30 Taxes and social assistance benefits are examples of two-party transactions in which one party provides a

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good, service or asset to the other but does not receive a recompense in return. This kind of transaction, sometimes called a "something for nothing" transaction, or a transaction without a quid pro quo, is called a transfer in the SNA/BPM.

- The scope of the recompenses mentioned in describing exchanges and transfers does not cover entitlement 4.31 to contingent benefits or collective services. Such benefits are generally uncertain or not quantifiable, or both. Moreover, the amount of benefit that may eventually be received by an individual unit is not proportional to the amount of the previous payment and may be very much greater or smaller than the latter. Thus, payments such as a social insurance contribution or a non-life insurance premium may entitle the unit making the payment to some contingent future benefits, and a household paying taxes may be able to consume certain collective services provided by government units, but these payments are regarded as transfers rather than exchanges.
- 4 32 A distinction is made between current and capital transfers. A capital transfer is one in which the ownership of an asset (other than cash or inventories) is transferred or which obliges one or both parties to acquire, or dispose of, an asset (other than cash or inventories), or where a liability is forgiven by the creditor. Capital transfers redistribute wealth but leave saving unaffected. They include, for example, capital taxes and investment grants. Other transfers are described as current. Current transfers redistribute income. They include, for example, taxes on income and social benefits. A fuller description of transfers appears in chapter 9 (SNA) / chapter 13 (BPM).

# Rearrangements of transactions for statistical purposes

4.33 Monetary transactions may not always be recorded in the macroeconomic accounts in the same way as they appear to the institutional units involved. The values of these actual, or observed, transactions are already available in the accounts of the units concerned, but the SNA/BOP rearranges certain transactions to bring out the underlying economic relationships more clearly. The three kinds of rearrangements affect the channels through which the transactions are seen as taking place, the number of transactions that are seen as taking place, or the units that are seen as being involved. The three sections below illustrate the main characteristics of these rearrangements and the kind of analytical purpose they serve.

#### Rerouting transactions

- 4.34 Rerouting records a transaction as taking place through channels that differ from the actual ones or as taking place in an economic sense when it does not take place in fact. In the first kind of rerouting, a direct transaction between unit A and unit C is recorded as taking place indirectly through a third unit B, usually, however, with some change in the transaction category. In the second kind of rerouting, a transaction of one kind from unit A to unit B is recorded with a matching transaction of a different kind from unit B to unit A.
- 4 35 The recording of the payment of social security contributions is an example of the first kind of rerouting. In practice, employers typically deduct the contributions that the employees are obliged to make to social security funds from the employee's wages and salaries. In addition, the employers make contributions to social security funds from their own resources on behalf of the employees. Both contributions go directly from the employer to social security funds. However, in the SNA/BPM, the employers' contributions are treated as part of remuneration of employees and are recorded as being paid to the employee. The employee is then recorded as making a payment to social security funds consisting of both the employee's and employee's own contributions. Social security contributions are thus recorded strictly according to the general principles governing the recording of transactions in the SNA/BPM to bring out the economic substance behind arrangements adopted for administrative convenience. As a result of the rerouting, employers' social contributions are included as a part of labour cost. (See chapter 8 (SNA) / chapter 1. (BPM.)
- Similarly, the transfer elements of lotteries and other gambling are transactions through the gambling 4.36 operator, but they are rerouted to occur directly between those participating in the lottery or gambling, that is, between households and possibly to charities (See paragraph 9.xxx (SNA) / paragraph 9.xxx (BPM.)
- 4.37 An example of the second kind of rerouting (also referred to as imputation in BPM) is provided by the

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treatment of the retained earnings of foreign direct investment enterprises. The retention of some or all of the earnings of a foreign direct investment enterprise within that enterprise can be regarded as a deliberate investment decision by the foreign owners. Accordingly, the retained earnings are rerouted in the SNA/BPM by showing them as first remitted to the foreign owners as property income and then reinvested in the equity of the direct investment enterprise. (See paragraphs 8.xxx to 8.xxx (SNA) / paragraphs 12.xxx (BPM7)). Retained earnings of investment funds are also treated as if they were distributed to shareholders who are then deemed to reinvest them in the investment fund. (See paragraphs 8.xxx (SNA) / paragraphs 12.xxx (BPM7).)

- 4.38 Similarly, the property income earned on the reserves of eertain life insurance corporations is deemed to be paid out to policyholders and then paid back again as premium supplements even though in actuality the property income is retained by the insurance enterprises. As a result, the saving of persons or households includes the amount of the rerouted property income while the saving of insurance enterprises does not. This alternative picture of saving, which better reflects economic reality, is the purpose of the rerouting. (See paragraphs 8.xxx to 8.xxx (SNA) / paragraph 12.xxx and Annex 8 (BPM).)
  - 4.39 Another example of the second kind of rerouting relates to government having a non-resident entity that undertakes fiscal functions related to government borrowing or incurring government outlays abroad between the government and the non-resident entity related to these fiscal activities. In these cases, transactions are imputed in the accounts of both the government and the non-resident entity to reflect the fiscal activities of the government. (See chapter 30 (SNA) / paragraphs 8.24 to 8.26, 12.xx, and 13.xx (BPM).)
  - 4.40 A further example of this type of rerouting, i.e., the recording of implicit taxes or subsidies associated with a multiple exchange rate regime is discussed in paragraphs 8.98 e), 8.99 c) and 8.108 c) (SNA) / paragraph 3.xx (BPM).

#### Partitioning transactions

- 4.41 Partitioning records a transaction that is a single transaction from the perspective of the parties involved as two or more differently classified transactions. For example, the rental actually paid by the lessee under a financial lease is not recorded as a payment for a service; instead, it is partitioned into two transactions, a repayment of principal and a payment of interest. This partitioning of the rental payment is part of a treatment that implements an economic view of financial leasing in the SNA/BPM. Financial leasing is viewed as a method of financing the purchase of a fixed asset and a financial lease is shown in the SNA/BPM as a loan from the lessor to the lessee. (For a further elaboration, see SNA 2025 chapter 27 / chapter 5, BPM7-....)
- 4.42 Partitioning of transactions in assets may also be relevant in the case of non-financial assets which are used for two distinct purposes. An example is the purchase of a car by a household, which is partly used in production, such as providing taxi services to third parties, and partly used for own personal use. The former part is considered as gross fixed capital formation, while the latter part is to be recorded as final consumption expenditure.
- 4.43 Another example is the treatment of certain financial services. For example, the SNA/BPM prescribes partitioning interest payable by financial intermediaries on deposits and payable to financial intermediaries on loans into two components. One component represents interest as defined in the SNA/BPM while the remainder represents the purchase of financial intermediation services for which the intermediaries do not charge explicitly. The purpose of the partitioning is to make the service item explicit. In consequence, intermediate and final consumption of particular industries and institutional sectors as well as gross domestic product are affected. However, the saving of all the units concerned, including the financial intermediaries themselves, is not affected. (See paragraphs 7.xxx to 7.xxx (SNA) / paragraphs 11.xx (BPM).)
- 4.44 Likewise, when a financial derivative is settled with the delivery of the underlying asset, this single event should be broken down into a transaction in the financial derivative and a separate transaction in the underlying asset.
- 4.45 The recording in the SNA of transactions for wholesalers and retailers does not mirror the way in which those involved view them. The purchases of goods for resale by wholesalers and retailers are not recorded by these units explicitly, and they are viewed as selling, not the goods, but the services of storing and displaying a

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selection of goods in convenient locations and making them easily available for customers. This partitioning measures output for traders by the value of the margins realized on goods they purchase for resale.

4.46 Another example of partitioning transactions concerns the recording of package tours offered by tour operators, where it is recommended to unbundle the total amounts paid into the various service components. (See paragraph 11.xx (BPM).).

#### Reassigning transactions

- 4.47 Reassignment refers to the recording of a transaction arranged by a third party on behalf of others as taking place directly by the two principal parties involved. Many service activities consist of one unit arranging for a transaction to be carried out between two other units in return for a fee from one or both parties to the transaction. In such a case, the transaction is recorded exclusively in the accounts of the two parties engaging in the transaction and not in the accounts of the third party facilitating the transaction. Some service output may be recognized with the facilitator. For example, purchases a commercial agent makes under the orders of, and at the expense of, another party are directly attributed to the latter. The accounts of the agent only show the fee charged to the principal for the facilitation services rendered.
- 4.48 A second example is the collection of taxes by one government unit on behalf of another. The SNA/BPM follows the guidance of the Government Finance Statistics Manual (International Monetary Fund (IMF), 2014), known as GFSM 2014 as follows. In general, a tax is attributed to the government unit that
  - exercises the authority to impose the tax (either as a principal or through the delegated authority of the principal), and
  - has final discretion to set and vary the rate of the tax.
- 4.49 Where an amount is collected by one government for and on behalf of another government, and the latter government has the authority to impose the tax, set and vary its rate, then the former is acting as an agent for the latter and the tax is reassigned. Any amount retained by the collecting government as a collection charge should be treated as a payment for a service. Any other amount retained by the collecting government, such as under a tax-sharing arrangement, should be treated as a current grant. If the collecting government was delegated the authority to set and vary the rate, then the amount collected should be treated as tax revenue of this government.
- 4.50 Where different governments jointly and equally set the rate of a tax and jointly and equally decide on the distribution of the proceeds, with no individual government having ultimate overriding authority, then the tax revenues are attributed to each government according to its respective share of the proceeds. If an arrangement allows one government unit to exercise ultimate overriding authority, then all of the tax revenue is attributed to that unit.
- 4.51 There may also be the circumstance where a tax is imposed under the constitutional or other authority of one government, but other governments individually set the tax rate in their jurisdictions. The proceeds of the tax generated in each respective government's jurisdiction are attributed as tax revenues of that government.
- 4.52 Similar principles are applied for the payment of subsidies or social benefits.

#### Non-monetary transactions

- 4.53 Non-monetary transactions are transactions that are not initially stated in units of currency. The entries in the SNA/BPM therefore represent values that are indirectly measured or otherwise estimated. In some cases, the transaction may be an actual one and a value has to be estimated to record it in the accounts. Barter is an obvious example. In other cases, the entire transaction must be constructed and then a value estimated for it. Depreciation is an example.
- 4.54 The amounts of money associated with non-monetary transactions are entries whose economic significance is different from cash payments as they do not represent freely disposable sums of money. The various methods of valuation to be employed for non-monetary transactions are dealt with in the section on valuation in section E.

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4.55 Non-monetary transactions can be either two-party transactions or actions within an institutional unit. The two-party transactions consist of barter, remuneration in kind, payments in kind other than remuneration in kind and transfers in kind. These two-party transactions are discussed first, followed by a discussion of internal transactions.

4.56 Although two-party transactions in kind do exist in practice, in the SNA/BPM they are frequently recorded in the same way as a monetary transaction with an associated expenditure of the item provided in kind. This ensures that there is a change in wealth of the donor without the donor acquiring the product transferred while the recipient acquires the product without any change in wealth. There is further discussion on this in respect of current transfers in chapter 9 (SNA) / chapter 13 (BPM) and of capital transfers in chapter 11 SNA) / chapter 14 (BPM).

#### Barter transactions

4.57 Barter transactions involve two parties, with one party providing a good, service or asset other than cash to the other in return for a good, service or asset other than cash. As mentioned above, barter is an example of an actual transaction for which a value must be estimated. Barter transactions in which goods are traded for goods have always been important. The barter of goods may be systematically organized on proper markets or, in some countries, may occur only sporadically on a small scale. Barter between nations involving exports and imports also occurs.

#### Remuneration in kind

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- 4.58 Remuneration in kind occurs when an employee accepts payment in the form of goods and services instead of money or another financial asset. This practice is extensive in most economies for reasons ranging from the desire of employers to find captive markets for part of their output, to tax avoidance or evasion. Remuneration in kind takes various forms and the following list includes some of the most common types of goods and services provided without charge, or at reduced prices, by employers to their employees:
  - Meals and drinks,
  - Housing services or accommodation of a type that can be used by all members of the household to which the employee belongs,
  - · The services of vehicles provided for the personal use of employees,
  - Goods and services produced as outputs from the employer's own processes of production, such as free transport services provided to employees of transport companies.

Further, in addition to goods and services, some employees may be willing, or obliged, to accept part of their remuneration in the form of financial or other assets.

#### Payments in kind other than remuneration in kind

4.59 Payments in kind other than remuneration in kind occur when any of a wide variety of payments is made in the form of goods and services rather than money. For example, a doctor may accept payment in wine instead of money. Or, instead of paying rent or rentals in money, the user of land or fixed capital, respectively, may pay the owner in goods or services. In agriculture, for example, the "rent" may be paid by handing over part of the crops produced to the landlord. (This is known as share cropping.) Tax payments, also, may be paid in kind; for example, inheritance taxes may be paid by making donations of paintings or other valuables.

# Transfers in kind

4.60 As noted above, transactions in kind are normally recorded in the accounts as if they are monetary transfers followed by the expenditure by the recipient on the products concerned. This treatment applies to government international cooperation, gifts and charitable contributions. Government international cooperation, gifts, and

charitable contributions are often made in kind for convenience, efficiency, or tax purposes. For example, international aid after a natural disaster may be more effective and delivered faster if made directly in the form of medicine, food, and shelter instead of money. Charitable contributions in kind sometimes avoid taxes that would be due if the item in question were sold and the money given to the charity.

- 4.61 A special case of transfers in kind is that of social transfers in kind. These consist of goods and services provided by general government and non-profit institutions serving households (NPISHs) that are delivered to individual households. Health and education services are the prime examples. Rather than provide a specified amount of money to be used to purchase medical and educational services, the services are often provided in kind to make sure that the need for the services is met. (Sometimes the recipient purchases the service and is reimbursed by the insurance or assistance scheme. Such a transaction is still treated as being in kind because the recipient is merely acting as the agent of the insurance scheme.)
- 4.62 Social transfers in kind are recorded as an implicit transfer of income from government and NPISHs to households and a transfer of consumption goods and services. The measure of income after the transfer is called disposable income adjusted for social transfers in kind (rather than disposable income) and the measure of consumption is called actual final consumption (rather than final consumption expenditure).

#### Internal transactions

- 4.63 The SNA treats certain kinds of actions within a unit as transactions to give a more analytically useful picture of final uses of output and of production. These transactions that involve only one unit are called internal, or intra-unit, transactions.
- 4.64 Some households, all NPISHs and general government units, and the central bank operate as both producers and as final consumers. When an institutional unit engages in both activities, it may make the choice to consume some or all of the output itself after the production is completed. In such a case, no transaction takes place between institutional units, but it is useful to construct a transaction and estimate its value to record both output and consumption in the accounts.
- 4.65 For households, the principle in the SNA is that all goods produced by persons that are subsequently used by the same persons, or members of the same households, for purposes of final consumption are to be included in output in a manner analogous to that for goods sold on the market. This means that transactions are assumed in which the persons responsible for the production of the goods are deemed to deliver the goods to themselves as consumers, or members of their own households, and then values have to be associated with them in order to enter them in the accounts. The same holds for the production of services for own final use by households which are considered to be part of the SNA production boundary, owner-occupied housing services being the most important example.
- 4.66 Establishments owned by governments or NPISHs commonly provide education, health, or other kinds of services to individual households, or society at large, without charge or at prices that are not economically significant. The costs of providing these services are incurred by the governments or NPISHs, and the values are recorded as internal transactions: that is, as final expenditures by governments or NPISHs on outputs produced by establishments they own themselves. The same holds for the central bank. (As already explained, the acquisition of these services by households is recorded separately under social transfers in kind, another form of non-monetary transactions that take place between the government units or NPISHs and the households in question.)
- 4.67 The SNA recognizes several other transactions within enterprises to give a fuller view of production. For example, when enterprises produce fixed assets for their own use, the SNA records deliveries by the enterprises to themselves as the subsequent users. Also, when enterprises use fixed assets (whether ownaccount or purchased) during production, the SNA charges the decline in the value of the asset during the period of production as a cost.

4.68 The recording of deliveries between one establishment and another belonging to the same enterprise is discussed in paragraph 6.104. Commented [ED20]: This paragraph may not be included in BPM

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## Externalities and illegal actions

4.69 The sections above describe the kinds of actions that are considered transactions in the SNA/BPM. This section focuses on externalities and illegal actions, explaining why externalities are not considered transactions and distinguishing among kinds of illegal actions that are and are not considered transactions.

## Externalities

- 4.70 Certain economic actions carried out by institutional units cause changes in the condition or circumstances of other units without their consent. These are externalities; they can be regarded as unsolicited services, or disservices, delivered without the agreement of the units affected. It is an uncooperative action, usually with undesirable consequences, which is the antithesis of a market transaction.
- 4.71 It is necessary to consider, however, whether values should be assigned to such externalities. Economic accounts have to measure economic functions such as production or consumption in the context of a particular legal and socio-economic system within which relative prices and costs are determined. Further, there would be considerable technical difficulties involved in trying to associate economically meaningful values with externalities when they are intrinsically non-market phenomena. As externalities are not market transactions into which institutional units enter of their own accord, there is no mechanism to ensure that the positive or negative values attached to externalities by the various parties involved would be mutually consistent. Moreover, accounts including values for externalities could not be interpreted as representing equilibrium, or economically sustainable, situations. If such values were to be replaced by actual payments the economic behaviour of the units involved would change, perhaps considerably.
- 4.72 A typical example is the pollution by one producer of the air or water used by other units for purposes of production or consumption. If the producer is allowed to pollute without charge or risk of being penalized, the private costs of production of the polluter will be less than the social costs to the community. Some countries, at least at certain points in their history, may choose to frame their laws so that some producers are permitted to reduce their private costs by polluting with impunity. This may be done deliberately to promote rapid industrialization, for example. The wisdom of such a policy may be highly questionable, especially in the long run, but it does not follow that it is appropriate or analytically useful for economic accounts to try to correct for presumed institutional failures of this kind by attributing costs to producers that society does not choose to recognize. For example, the whole purpose of trying to internalize some externalities by imposing taxes or other charges on the discharge of pollutants is to bring about a change in production methods to reduce pollution. A complete accounting for externalities would be extremely complex as it is not sufficient merely to introduce costs into the accounts of the producers but would also necessitate introducing various other adjustments of questionable economic significance to balance the accounts.
- 4.73 This sort of example illustrates why some analyses are best carried out in the context of an extended account where some of the normal constraints and conventions of the SNA/BPM are relaxed. In the case of pollution, the System of Environmental-Economic Accounting (SEEA) has been developed precisely to explore this issue among other environmental topics.

#### Illegal actions

4.74 Macroeconomic statistics, including national accounts and external accounts, cover all economic phenomena irrespective of whether they are illegal or legal. Illegal actions that fit the characteristics of transactions (notably the characteristic that there is mutual agreement between the parties) are therefore treated the same way as legal actions. The production or consumption, including exports and imports, of certain goods or services, such as narcotics, may be illegal but market transactions in such goods and services have to be recorded in the accounts. It is important to note that the differences in the definition of illegal transactions between economies or within an economy over time would cause inconsistencies in the national/external accounts if illegal transactions were omitted. Furthermore, illegal transactions generally affect other legal transactions). If expenditures on illegal goods or services by households were to be ignored on grounds of principle, household saving would be overestimated and households presumed to obtain assets that they do not in fact acquire. Similarly, if exports and imports of illegal goods and services were to be ignored, not in fact acquire. Similarly, if exports and imports of illegal goods and services were to be ignored.

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to be seriously distorted if monetary transactions that in fact take place are excluded. It may be difficult to obtain high-quality estimates about illegal transactions, but in principle they should be included in the accounts if only to reduce error in other items, including balancing items.

- 4.75 However, many illegal actions are crimes against persons or property that in no sense can be construed as transactions. For example, theft can scarcely be described as an action into which two units enter by mutual agreement. Conceptually, theft or violence is an extreme form of externality in which damage is inflicted on another institutional unit deliberately and not merely accidentally or casually. Thus, thefts of goods from households, for example, are not treated as transactions and estimated values are not recorded for them under household expenditures.
- 4.76 If thefts, or acts of violence (including war), involve significant redistributions, or destructions, of assets, it is necessary to take them into account. As explained below, they are treated as other flows, not as transactions.

## 2. Other flows

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- 4.77 Other flows are changes in the value of assets and liabilities that do not result from transactions. The reason that these flows are not transactions is linked to their not meeting one or more of the characteristics of transactions. For example, the institutional units involved may not be acting by mutual agreement, as with an uncompensated seizure of assets. Or the change may be due to a natural event such as an earthquake rather than a purely economic phenomenon. Alternatively the value of an asset expressed in foreign currency may change as a result of an exchange rate change. In the context of external accounts, other flows are recorded only for financial assets and liabilities that represent claims on and liabilities to non-residents and gold bullion, because the international-investment-positionIIP relates only to external financial assets and liabilities.
- 4.78 The entries for other flows appear in one of the two accounts that comprise the other changes in assets and liabilities accounts. The other changes in the volume of assets and liabilities account includes changes that lead to a change in value of an asset because of a change in the quantity or physical characteristics of the asset in question. The revaluation account includes changes in the value of assets, liabilities, and net worth due to only changes in the level and structure of prices, which are reflected in holding gains and losses.

#### Other changes in the volume of assets and liabilities

- 4.79 Other changes in the volume of assets and liabilities fall into three main categories.
- 4.80 The first category relates to the appearance and disappearance of assets and liabilities other than by transactions. Some of these may relate to naturally occurring assets, such as subsoil resources, so that the entrances and exits come about as interactions between institutional units and nature. Others relate to assets created by human activity, such as valuables. For valuables, for example, the capital account records their acquisition as newly produced goods or imports in transactions, and it records transactions in existing goods already classified as valuables. It is the recognition of a significant or special value for goods not already recorded in the balance sheets that is considered an economic appearance to be recorded as an other flow. These valuables may not be in the balance sheets for any of several reasons. For example, they may antedate the accounts or were originally recorded as consumption goods.
- 4.81 Write-offs of claims by creditors, as well as monetization and demonetization of gold bullion, also typically feature under this first category. However, if debt forgiveness is provided, such as in a non-commercial setting, transactions are recorded. In the case of debt cancellations, it may sometimes be unclear whether they should be classified as transactions or other flows. In commercial settings, in the absence of specific information, debt cancellation can be treated as other changes in the volume of assets and liabilities. On the other hand, assumption of debts arising from the activation of guarantees and rescheduling of debts is typically the result of a mutual agreement between the parties involved, and, hence, should be classified as transactions. (See chapter 13 (SNA) / chapter 9 (BPM) for more details.)
- 4.82 A final example of the first category relates to the creation of crypto assets without a corresponding liability designed to act as a general medium of exchange, or designed to act as a medium of exchange within a

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platform or network only. These are treated as non-produced non-financial assets, whose creation is to be recorded as an other change in the volume of assets. See <a href="https://chapter.22">chapter 22</a> (SNA) / chapter 17 (BPM) for more information on the recording and classification of crypto assets.

- 4.83 The second category relates to the effects of externalities and disasters. One such event is one institutional unit's effectively removing an asset from its owner without the owner's agreement, an action that is not considered a transaction because the element of mutual agreement is absent. These events also include those that destroy assets, such as natural disaster or war. In contrast, transactions, such as depreciation or change in inventories, refer to normal rates of loss or damage.
- 4.84 The third category relates to changes in assets and liabilities that reflect changes in the classification of institutional units among sectors and in the structure of institutional units, or in the classification of assets and liabilities. For example, if an unincorporated enterprise becomes more financially distinct from its owner and takes on the characteristics of a quasi-corporation, it and the assets and liabilities it holds move from the household sector to the non-financial corporation are recorded under this heading.
- 4.85 Finally, changes in the status of existing financial claims and liabilities arising from the change in residence of individuals from one economy to another are treated as other changes in the volume of assets and liabilities. These flows result from a change in the classification of the owner's residence status, and hence, they should not be classified as transactions (See also paragraphs 9.xx to 9.xx (BPM).)

# **Revaluations (holding gains and losses)**

- 4.86 Positive or negative nominal holding gains accrue during the accounting period to the owners of assets and liabilities as a result of a change in their prices. Holding gains are sometimes described as "capital gains", but "holding gain" is preferred here because it emphasizes that holding gains accrue purely as a result of holding assets or liabilities over time without transforming them in any way. Holding gains include not only gains on "capital" such as fixed assets, land and financial assets but also gains on inventories of all kinds of goods held by producers, including work-in-progress, often described as "stock appreciation". Holding gains may accrue on assets held for any length of time during the accounting period, not only on assets held throughout the period and may thus appear for assets appearing on neither the opening nor closing balance sheet. In external accounts, revaluations are further classified into those that are due to exchange rate changes and those that are due to other price changes.
- 4.87 Nominal holding gains depend upon changes in the prices of assets and liabilities over time. The prices in question are the prices at which the assets may be sold on the market. Nominal holding gains may be further decomposed into neutral holding gains, which reflect changes in the general price level, and real holding gains which reflect changes in the relative prices of assets.

# C. Stocks

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4.88 Stocks, which in the case of financial assets and liabilities are also often referred to as positions, relate to the level of assets or liabilities at a point of time. In order to discuss stocks, it is necessary to define assets and liabilities, and these definitions depend crucially on the concepts of benefits and ownership. Once the definitions are clear, the way in which assets and liabilities are classified within a balance sheet are touched on as well as the way in which items enter and leave the balance sheet.

#### 1. Benefits

4.89 The heart of the SNA describes how labour, and non-financial assets, including land and other natural resources, are used to produce goods and services. These goods and services are used for the three economic activities recognized in the SNA, production, consumption and accumulation. An economic benefit is defined as denoting a gain or positive utility arising from an action. It implies a comparison between two states. This can be elaborated within the SNA so that benefits are seen as rewards for providing services, such as those

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of labour and capital to production and also the means of acquiring goods and services for production, consumption or accumulation in the current period or in future periods.

4.90 Sometimes the immediate benefit is in terms of goods and services directly, for example own account production or wages and salaries in kind. More often a benefit is in the form of the medium of exchange (money), for example as wages and salaries. Consumption is an activity that takes place in the current period only but may be financed from past benefits. Production and accumulation also involve benefits postponed to future periods. Thus, means of allowing benefits to be moved from one accounting period to another have to be recognized. These take the form of assets and liabilities where a benefit in one period is converted to a benefit in one or more future periods. Similarly goods and services, or current benefits, may be acquired by committing future benefits in the form of (financial) liabilities.

# 2. Ownership

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- 4.91 Two types of ownership can be distinguished, legal ownership and economic ownership. *The legal owner* refers to the institutional unity entitled in law and sustainable under the law to claim the benefits associated with goods, services, natural resources, financial assets or liabilities (which may be different from the economic owner).
- 4.92 Sometimes government may claim legal ownership of an item on behalf of the community at large. No item that does not have a legal owner that can claim the associated benefits, either on an individual or collective basis, is recognized in macroeconomic statistics.
- 4.93 The acts of production, consumption and accumulation involve varying degrees of risk. Two main forms of risk can be identified. The first sort refers to production. These arise because of such uncertainties as the demand for goods and services once produced, developments in the economy in general and technical innovation that affects the benefits to be earned from non-financial assets. The consequence is that benefits from non-financial assets and labour in the form of operating surplus and income from employment are not wholly predictable in advance, but embody a degree of risk.
- 4.94 The second type of risk refers to the process of transferring benefits between time periods. It arises because of uncertainty over interest rates and other financial developments in future periods, which in turn affects the comparative performance of different types of benefits.
- 4.95 When economic agents make decisions about consumption or accumulation, they have to make a judgement about the relative advantages of benefits being converted to goods and services in the current period as against conversion in a later period. Thus all economic activity involves both benefits and risks. Transferring benefits between time periods inevitably involves transferring risks also. An agent may opt for a lower but more certain benefit in future rather than a benefit that might be higher but is less certain. Of particular interest is the case when an agent swaps benefits and risks associated with production with those associated with financial assets and liabilities.
- 4.96 The economic owner refers to the institutional unit entitled to claim the benefits associated with the use of goods, services, natural resources, financial assets-or-liabilities in the course of an economic activity by virtue of accepting the associated risks.
- 4.97 Every item has both a legal owner and an economic owner, though in many cases the economic owner and the legal owner of an item are the same. Where they are not, the legal owner has handed responsibility for the risk involved in using the item in an economic activity to the economic owner along with associated benefits. In return the legal owner accepts another package of risks and benefits from the economic owner. In general within the SNA/BPM, when the expression "ownership" or "owner" is used and the legal and economic owners are different, the reference should be understood to be to the economic owner. Chapter 27 on contracts, leases, licences and permits, discusses a number of cases where legal and economic ownership are different.
- 4.98 When government claims legal ownership of an item on behalf of the community at large, the benefits also accrue to the government on behalf of the community at large. Thus government is both the legal and economic owner of these items.

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- 4.99 Especially in relation to natural resources, a government is typically the legal owner and grants rights or permissions to exploit the resources to another institutional unit. In such cases, the benefits may be shared between the government and the exploiter of the resources, and the economic ownership of the resources is split between the two entities involved, in line with the shares each entity appropriates.
- 4.100 In the case of multinational enterprise groups, the economic ownership of intellectual property products may be difficult to determine. Various arrangements, including the routing via special purpose entities, exist. The use of a special decision tree is recommended for the appropriate allocation and recording of these assets across the MNE. See chapter 23 (SNA) / chapter 15 (BPM) for more information.
- 4.101 The benefits inherent in financial assets and liabilities are seldom transferred from a legal owner to an economic owner in exactly the same state. They are usually transformed to new forms of financial assets and liabilities by the intermediation of a financial institution that assumes some of the risk and benefits while passing the balance on to other units.

# 3. The definition of an asset

- 4.102 Leading on from the above it is possible to define an asset as follows. An asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the item over a period of time. It is a means of carrying forward value from one accounting period to another.
- 4.103 All assets in the SNA/BPM are economic assets. Attributes such as skills, which are sometimes described in common parlance as an asset, are not recognized as such in the SNA/BPM because they <u>do not meet the criteria of an asset</u>, as defined in the above paragraphare not economic in nature in the sense described under ownership.

# 4. Types of assets and liabilities

- 4.104 A particularly important mechanism in the economy is the device whereby one economic unit exchanges a particular set of benefits with another economic unit. Benefits are exchanged by means of payments. From this a financial claim, and hence a liability, can be defined. There are no non-financial liabilities recognized in the SNA, thus the term liability necessarily refers to a liability that is financial in nature.
- 4.105 A liability is established when one unit (the debtor) is obliged, under specific circumstances, to provide a payment or series of payments to another unit (the creditor). The most common circumstance in which a liability is established is a legally binding contract that specifies the terms and conditions of the payment(s) to be made and payment according to the contract is unconditional.
- 4.106 In addition, a liability may be established not by contract but by long and well-recognized custom that is not easily refuted. In these cases, the creditor has a valid expectation of payment, despite the lack of a legally binding contract. Such liabilities are called constructive liabilities. An example relates to pensions provided by government as part of a social security scheme. In the context of the SNA/BPM, they are generally not recognized as being part of liabilities.
- 4.107 Whenever a liability exists, there is a corresponding financial claim that the creditor has against the debtor. Financial claims are financial instruments that give rise to an economic asset that has a counterpart liability, including shares and other equity in corporations. As such, a financial claim gives rise to the payment or series of payments due to the creditor by the debtor under the terms of a liability. Like the liability, the claims are unconditional. In addition, a financial claim may exist that entitles the creditor to demand payment from the debtor but whereas the payment by the debtor is unconditional if demanded, the demand itself is discretionary on the part of the creditor. Specific guidance on the recognition and the recording of pension entitlements and various types of insurance technical reserves is provided in chapter 12 and 24.
- 4.108 Financial assets consist of all financial claims, including shares or other equity in corporations, plus gold bullion held by monetary authorities as a reserve asset. Gold bullion held by monetary authorities as a reserve asset is treated as a financial asset (see paragraphs 6.xx-xx, BPM7 for the definition of reserve assets) even though the holders have no claim over other designated units. Shares are treated as financial assets even

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though the financial claim their holders have on the corporation is not a fixed or predetermined monetary amount.

- 4.109 The <u>IIPinternational investment position</u> covers financial assets and liabilities that have an international <u>external</u> character. All financial claims involve two parties, so they have an international <u>external</u> character if the claim is on a non-resident. Similarly, all liabilities involve two parties, so they have an international character if the obligation is to a non-resident. The gold bullion component of monetary gold is the only case of a financial asset with no counterpart liability; its external character arises from the historical role of gold in the international financial system. IIPInternational investment position is described in chapter 7 (BPM).
- 4.110 All items that meet the definition of an asset given above are included in the asset boundary of the SNA/BPM. Assets that are not financial assets are non-financial assets. In the case of non-financial assets, a distinction can be made between those that are produced and those that are non-produced. In the SNA/BPM balance sheet classification, a similar distinction has been applied, although natural resources, both produced and non-produced, have been grouped together to emphasize the special character of this group of non-financial assets.

# 5. The asset boundary

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- 4.111 Because assets represent a store of future benefits, all assets can be represented by a monetary value. This value represents the market's view of the total of the benefits embodied by the asset. Where a direct market view of this value is not available, it must be approximated by other means. There is a discussion of this topic in the annex to this chapter.
- 4.112 The only non-financial assets included in the asset boundary of an economy are those whose economic owners are resident in the economy. However, in the case of most natural resources and immobile fixed capital, which physically cannot leave the economy, a notional resident unit is established if the economic owner is actually a non-resident unit. In this way the assets in question do become those with resident economic owners and so are included within the asset boundary and are included on the balance sheet of the domestic economy. Portable non-financial assets that are physically located in an economy but are owned by non-residents are excluded from the balance sheet of the domestic economy. For example, planes belonging to a domestic airline are always assets of the domestic economy regardless of where in the world they happen to be. As noted in paragraph 4.93 (SNA) / paragraph 3.93 (BPM), the ownership of intellectual property products, especially within multinational enterprise groups, may be difficult to determine; more guidance is provided in chapter 23 (SNA) / chapter 15 (BPM).

## Contingent liabilities and provisions

- 4.113 A liability, as defined in paragraph 4.10000 above, is unconditional once the contract establishing the liability is agreed by both parties. If the liability is established not by a legal contract but by long and well-established custom, it is referred to as a constructive liability. Some liabilities may involve a legal contract but specify that one party is obliged to provide a payment or series of payments to another unit only if certain specified conditions prevail. Such liabilities are called contingent liabilities. In general, the SNA/BPM includes (legal) liabilities but not constructive and contingent liabilities. An exception is made for standardized guarantees where, although each individual arrangement involves a contingent liability, the number of similar guarantees is such that an actual liability is established for the proportion of guarantees likely to be called.
- 4.114 A corporation may set aside funds to cover, for example, unexpected events, default by their customers, or terminal costs related to the disposal of an asset. Such monies may be described as provisions. These are not treated as liabilities in the SNA/BPM, because they are not the subject of the sort of (legal) contract associated with a liability. Though financial institutions may regularly write off bad debts, for example, it would not be appropriate to regard the provisions set aside for this as assets of the borrowers. Even though they may be earmarked for specific purposes, the amounts designated as provisions are though they may be used rather than a category of financial assets and liabilities in and of themselves. More information on the treatment of

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provisions is provided in chapter 14 (SNA).

# 6. Entry and exit of assets from the balance sheet

- 4.115 All assets <u>owned by (notional) resident units</u> appear on the balance sheet of the domestic economy. The first level of classification of assets distinguishes four types of assets: produced non-financial assets (excluding produced natural capital); non-produced non-financial assets (excluding non-produced natural capital); natural capital, and financial assets (and liabilities). In view of arriving at an improved accounting for the role of the environment in economic developments, natural capital is separately identified, grouping together both produced and non-produced natural resources. For the other assets, the breakdown makes clear the difference in the process by which assets enter and leave the balance sheet.
- 4.116 Produced non-financial assets come into being via the production process or as imports. The same holds for produced natural capital, such as cultivated biological resources. Two exceptions exist. Historical monuments are included as produced assets even though they may have been constructed long before economic accounts existed. Occasionally a monument may be newly recognized as having value and thus enter the asset boundary as a produced asset other than through a current production process. Similar arguments apply to artefacts treated as valuables. Produced non-financial assets leave the asset boundary by being exhausted or by being sold to resident units that will not continue to use the asset in production as a source of future benefits or by being sold to non-resident units.
- 4.117 Non-produced non-financial assets, excluding non-produced natural capital, are of three types; contracts, leases and licences; crypto assets without a corresponding liability designed to act as a medium of exchange; and purchased goodwill and marketing assets. Contracts, leases and licences may represent an asset to the holder when the agreement restricts the general use or supply of products covered by the agreement and thus enhances the benefits accruing to the party to the agreement beyond what would accrue in the case of unrestricted supply. These assets come into existence when the agreement is made and the enhanced benefits become apparent. They leave the balance sheet when the conditions restricting access are lifted or when there is no longer a benefit to be earned from having restricted access to the asset. Crypto assets without a corresponding liability designed to act as a medium of exchange are considered as non-produced assets, because the miners solving cryptographic puzzles, and (partly) receiving crypto assets themselves. Goodwill and marketing assets are only recognized as assets in the SNA when they are evidenced by a sale.
- 4.118 Financial assets and liabilities come into being when a commitment is made by one unit to make a payment to another unit. They cease to exist when there is no longer a commitment for one unit to make payments to the other. This may be because the term of the agreement specified in the commitment has expired or for other reasons.

#### 7. Exclusions from the asset boundary

- 4.119 The coverage of assets in the integrated framework of national accounts is limited to those assets used in economic activity and that are subject to ownership rights, either individually or collectively; thus for example, natural resources that are not owned, are excluded.
- 4.120 Consumer durables are not regarded as assets in the integrated framework of national accounts, SNA because the services they provide are not within the production boundary. Because the information on the stock of durables is of analytical interest, though, it is suggested that this information appear as a memorandum supplementary item in the balance sheet but not be integrated into the totals of the table.
- 4.121 Human capital is also not treated by the SNA/BPM as an asset in the integrated framework of national accounts; see paragraphs 1.77 and 1.78. However, as explained in chapter 3435, it is encouraged to compile extended accounts on education and training, including experimental estimates of the value of human capital.
- 4.122 There are some environmental resources are excluded from the SNA-asset boundary in the integrated framework of national accounts. These are usually of the same type as those within the boundary but are of no economic value.

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# D. Balancing items

4.123 A balancing item is an accounting construct obtained by subtracting the total value of the entries on one side of an account from the total value for the other side. It cannot be measured independently of the other entries; as a derived entry, it reflects the application of the general accounting rules to the specific entries on the two sides of the account. It does not relate to any specific set of transactions, or any set of assets, and so it cannot be expressed in terms of its own price or quantity units.

# Balancing items in the flow accounts

- 4.124 Balancing items are not simply devices introduced to ensure that accounts balance. They are often used as key macroeconomic indicators to assess economic performance. They encapsulate a great deal of information and include some of the most important entries in the accounts, as can be seen by the examples of balancing items in the national accounts for the accounts containing flows reproduced below:
  - · Value added or domestic product,
  - Operating surplus,
  - Disposable income,
  - Saving.
  - Net lending /or net borrowing.
- 4.125 In the external accounts, some important measures derived as balances for the accounts containing flows are as follows:
  - · Balance on trade in goods,
  - Balance on trade in services,
  - · Balance on goods and services,
  - Balance on goods, services, and earned income,
  - Current account balance,
  - Net lending /net borrowing
    - from current and capital accounts
    - from financial account
  - Changes in net IIP arising from other flows (in total, and for each of other changes in volume, exchange rate changes, and other price changes)

# Balancing items in the balance sheets

- 4.126 Net worth, which is defined as the value of all the non-financial and financial assets owned by an institutional unit or sector less the value of all its outstanding liabilities, is the balancing item in the balance sheets. As is true for other balancing items in the SNA, net worth cannot be measured independently of the other entries, nor does it relate to any specific set of transactions.
- 4.127 As well as net worth appearing as a stock level, changes in net worth due to different sorts of transactions and other flows may also be derived. Just as the changes in the levels of any asset can be traced through changes in transactions and other flows throughout the period, so changes in total net worth can be exhaustively described according to the transactions and other flows that led to changes in the total level of assets and liabilities.]
- 4.128 In the external accounts, the main balancing item derived from stocks is the net <u>IIPinternational investment</u> position, which represents the total external financial assets minus total external liabilities.

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3.129, BPM6. Not relevant for SNA 4.129 This list is not comprehensive; other balancing items can be derived as needed for analysis. For example, balances on components in the financial account may be of interest, such as net direct investment or net portfolio investments, in the case of external accounts.

# E. Accounting rules

4.130 This section covers the quadruple entry accounting principle, valuation, time of recording, classification of accounting entries and grouping of transactions. The application of each of these to the individual flows and stocks is explained in detail in the chapters that describe the entries in the various tables and accounts of the sequence of economic accounts/balance of payments and IIP. The details on classifications of accounting entries are discussed, account by account, in chapters 7 to 14 (SNA) / 7 to 14 (BPM).

#### 1. Quadruple-entry accounting

- 4.131 The accounting system underlying the SNA/BPM derives from broad bookkeeping principles. To understand the accounting system for the SNA/BPM, three bookkeeping principles can be distinguished:
  - 1. Vertical double-entry bookkeeping, also known as simply double-entry bookkeeping used in business accounting,
  - 2. Horizontal double-entry bookkeeping, and
  - 3. Quadruple-entry bookkeeping.

# *Vertical double-entry bookkeeping – corresponding entries*

- 4.132 The main characteristic of vertical double-entry bookkeeping is that each transaction leads to at least two entries, traditionally referred to as a credit entry and a debit entry, in the books of the transactor. This principle ensures that the total of all credit entries and that of all debit entries for all transactions are equal, thus permitting a check on consistency of accounts for a single unit. Each transaction requires two entries. The external accounts for an economy are to be compiled on a vertical-double entry bookkeeping basis from the perspective of the residents of that economy.
- 4.133 Other flows have their counterpart entries directly in changes in net worth. As a result, vertical double-entry bookkeeping ensures the fundamental identity of a unit's balance sheet, that is, the total value of assets equals the total value of liabilities plus net worth. The total value of the assets owned by an entity minus the total value of liabilities provides net worth. In the external accounts, net <u>IIPinternational investment position</u> provides a measure of net financial claims with non-residents plus gold bullion held as monetary gold. These terms are discussed in paragraphs 7.xx (BPM).

#### Horizontal double-entry bookkeeping - counterpart entries

4.134 The concept of horizontal double-entry bookkeeping is useful for compiling accounts that reflect the mutual economic relationships between different institutional units in a consistent way. It implies that if unit A provides something to unit B, the accounts of both A and B show the transaction for the same amount: as a payment in A's account and as a receipt in B's account. Horizontal double-entry bookkeeping ensures the consistency of recording for each transaction category by counterparties. For example, dividends payable throughout the economy should be equal to dividends receivable throughout the economy once transactions with the rest of the world are taken into account. While the horizontal double-entry applies to the national accounts of a particular country (see paragraph 4.129 below), similar principles apply to external accounts at a worldwide level: for example, at the worldwide level, dividends payable by all economies should be equal to dividends.

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# Quadruple-entry bookkeeping

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4.135 The simultaneous application of both the vertical and horizontal double-entry bookkeeping results in a quadruple-entry bookkeeping, which is the accounting system underlying the recording in the SNA/BPMnational accounts and external accounts. Additionally, definitions, classifications, and accounting principles in the external accounts are derived from the viewpoint of conceptual symmetry as well as symmetric reporting by partner economies. The quadruple-entry system deals in a coherent way with multiple transactors or groups of transactors, each of which satisfies vertical double-entry bookkeeping requirements. A single transaction between two counterparties thus gives rise to four entries. In contrast to business bookkeeping, national accounts and external accounts deal with interactions among a multitude of units in parallel, and thus require special care from a consistency point of view. As a liability of one unit is mirrored in a financial asset of another unit, for instance, they should be identically valued, allocated in time and classified to avoid inconsistencies in aggregating balance sheets of two counterparties. The same is also true for all transactions and other flows that affect balance sheets of two counterparties.

# Types of accounting entries – SNA

- 4.136 The SNA uses the following conventions and terminologies for recording flows with the rest of the world. Imports, for instance, are a resourcercycule of the rest of the world used in the domestic economy and payments for imports represent a drawdown of wealth for the domestic economy but a financial resourcercycule for the rest of the world. By treating the rest of the world account as a pseudo-sector, the quadruple entry accounting principle can be applied and all stocks and flows within the economy and with the rest of the world are completely balanced. The external accounts show the consolidated positionaccounts for the rest of the world within the SNA. However, despite the reversal of the accounts of which items are shown, there is equality in coverage, measurement and classification between the two systems.
- 4.137 More generally, in the national accounts, credit entries in the accounts representing current transactions are denoted as revenues, while debit entries are referred to as expenditures. In the case of transactions in assets and liabilities, including capital transfers, reference is made to changes in assets and changes in liabilities (and net worth). The same holds for the accounts which reflect flows affecting the level of assets and liabilities other than transactions. The two sides of balance sheets are referred to as assets, and liabilities and net worth.

# Types of accounting entries – BPM

- 4.138 The external accounts use the following conventions and terminologies for recording flows. In the current and capital accounts, a credit/revenue denotes entries from exports, <u>primaryeaned</u> income receivable, transfers receivable, and disposals of non-produced non-financial assets. A debit/expenditure is used to record entries for imports, <u>primaryeaned</u> income payable, transfers payable, and acquisitions of non-produced nonfinancial assets.
- 4.139 In the case of transactions in financial assets and liabilities, the terms "net acquisition of financial assets" and "net incurrence of liabilities" are used. Financial account items are recorded on a net basis separately for each financial asset and liability (i.e., they reflect changes due to all credit and debit entries during an accounting period). The use of the terms "net acquisition of financial assets" and "net incurrence of liabilities" highlights the impact of the financial account on the <u>IIPinternational investment position</u>. The use of these terms also simplifies the interpretation of data. A positive change indicates an increase in assets or liabilities (a debit or debit notion, however, depends on whether the increase or decrease nease to rease the credit or debit notion, however, depends on whether the increase). Although the debit and credit presentation is not emphasized for the financial account transactions, it is important to recognize and maintain the accounting identities. For example, a credit is always conceptually matched with a corresponding debit, the latter relating to either an increase in an asset or a reduction in a liability (see Box 2.1, BPM7). The conventions for aggregation, consolidation, and netting assets against liabilities are described in Section F.

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Not relevant for SNA.

# 2. Valuation

## General rules

- 4.140 The power of the SNA and the BOP/IIP as analytical tools stem largely from their ability to link numerous, very varied economic phenomena by expressing them in a single accounting unit. The SNA and the BOP/IIP do not attempt to determine the utility of the flows and stocks that come within their scope. Rather, they measure the current exchange value of the entries in the accounts in monetary terms.
- 4.141 In line with the above, market prices refer to the current exchange value, that is, the values at which goods, services, labour or assets are exchanged, or else could be exchanged, for cash (currency or transferable deposits). Market prices are the basis for valuation of transactions in the SNA/BPM. This section describes the general principles for valuation of flows and positions.

## Valuation of transactions

- 4.142 Market prices for transactions are defined as amounts of money that willing buyers pay to acquire something from willing sellers; the exchanges are made between independent parties and on the basis of commercial considerations only, sometimes called "at arm's length." Thus, according to this strict definition, a market price refers only to the price for one specific exchange under the stated conditions. A second exchange of an identical unit, even under circumstances that are almost exactly the same, could result in a different market price. A market price defined in this way is to be clearly distinguished from a price quoted in the market, a world market price, a going price, a fair market price, or any price that is intended to express the generality of prices for a class of supposedly identical exchanges rather than a price actually applying to a specific exchange. Furthermore, a market price should not necessarily be construed as equivalent to a free market price; that is, a market transaction should not be interpreted as occurring exclusively in a purely competitive market situation. In fact, a market may be so narrow that it consists of the sole transaction of its kind between independent parties.
- 4.143 When a price is agreed by both parties in advance of a transaction taking place, this agreed, or contractual, price is the market price for that transaction regardless of the prices that prevail when the transaction takes place.
- 4.144 Actually oObserved exchange values in most cases will represent market prices as described in the preceding paragraph. Paragraphs 4.147 to 4.151 describe cases where actual exchange values may not represent market prices. Transactions that involve dumping and discounting represent market prices. Transaction prices for goods and services are inclusive of appropriate taxes and subsidies. A market price is the price payable by the buyer after taking into account any rebates, refunds, adjustments, etc. from the seller.
- 4.145 Transactions in financial assets and liabilities are recorded at the prices at which they are acquired or disposed of. Transactions in financial assets and liabilities should be recorded exclusive of any commissions, fees, and taxes whether charged explicitly, included in the purchaser's price, or deducted from the seller's proceeds. This is because both debtors and creditors should record the same amount for the same financial instrument. The commissions, fees, and taxes should be recorded separately from the transaction in the financial asset and liability, under appropriate categories. The valuation of financial instruments, which excludes commission charges (to be recorded as transactions in services), differs from the valuation of non-financial assets, which includes any costs of ownership transfer.
- 4.146 When market prices for transactions are not observable, valuation according to market-price-equivalents provides an approximation to market prices. In such cases, market prices of the same or similar items when such prices exist will provide a good basis for applying the principle of market prices. Generally, market prices should be taken from the markets where the same or similar items are traded currently in sufficient numbers and in similar circumstances. If there is no appropriate market in which a particular good or service is currently traded, the valuation of a transaction involving that good or service may be derived from the market prices of similar goods and services by making adjustments for quality and other differences.

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- 4.147 If there is no appropriate market from which the value of a particular item can be taken by analogy, its valuation may be derived from prices that are established in less closely related markets. Ultimately, some goods and services can only be valued by the amount that it would cost to produce them currently. Output valued in this way should include a mark-up that reflects the return to capital used in the production of the relevant goods and services.
- 4.148 More details on the methods for valuing transactions are provided in the annex to this chapter, while the valuation of specific types of flows is discussed in further detail in relevant chapters.

# Agricultural products sold from the farm

4.149 A significant qualification to the use of market-equivalent prices is necessary in the case of agricultural products sold directly from the farm. The so-called farm-gate price may be significantly lower than a price in the nearest market where prices can be observed since the latter include the costs of bringing the goods to market. Further, if only a small fraction of a crop gets to the market, it may command a higher price than would be the case if all the available crop were traded. Such considerations are to be understood by the qualification that observed market prices are appropriate only when similar products are traded in sufficient number and in similar circumstances. When these conditions do not hold, adjustments must be made to the observed prices.

#### Barter

- 4.150 The case of barter requires specific consideration. The products bartered must be valued when produced as well as when acquired for consumption or for capital formation. While it may often be the case that for small scale barter transactions entered into by the producer, there are no taxes on products payable (or if they are nominally payable the conditions of the barter means they are avoided and not paid), there is no automatic exclusion of bartered products from liability to taxes on products. Subsidies on bartered products are possible conceptually but unlikely to be significant. By the nature of barter, there are no wholesale or retail margins applicable to bartered products. Goods subject to barter may, however, have associated transportation costs. If the unit providing the goods for barter also provides the transport, this will, in general, mean that the barter "package" includes some transportation cost. If the unit receiving the goods must provide the transport, this may reduce the valuation of the goods to the recipient.
- 4.151 Barter transactions may concern new or existing goods acquired by one party to the barter in which case the value to that party will be the cost of acquisition (in the case of new goods) or the realizable value in the case of existing goods.
- 4.152 Barter transactions necessarily involve two units and (at least) two products. Each unit may place a different value on either item being bartered. In such a case, since the accounting rules of the SNA/BPM require a single value to be recorded for both parties, on pragmatic grounds a simple average of the different valuations (after allowing for any taxes and transportation costs) may be taken as the value of the transaction.
- 4.153 Barter transactions do not always take place simultaneously. When this is not the case, an account receivable/payable should be recorded even though neither part of the barter transaction takes place in monetary terms.

#### Quotation prices

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- 4.154 Market valuation also poses problems for transactions in goods in which the contracts establish a quotation period often months after the goods have changed hands. In such cases, the exchange value at the time of change of ownership should be estimated. The estimate should be revised with the aetually-observed exchange value, when known. The exchange value is given by the contract price even if it is unknown at the time of change of ownership.

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## Valuation of transfers in kind

4.155 When non-financial resources are provided without a quid pro quo, such resources should be valued at the prices that would have been received if the resources had been sold in the market. In the absence of an observable market price, the donor's view of the imputed value of the transaction will often be quite different from that of the recipient. The suggested rule of thumb is to use the value assigned by the donor as a basis for recording.

#### Acquisition of goods under financial lease

4.156 Acquisition of goods under financial lease should be valued at market prices at the time of acquisition, if such prices are available. When no price is determined, it may be necessary to use the estimated writtendown current acquisition values of fixed assets or the present value of expected future returns.

# Transfer pricing

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- 4.157 In some cases actually observed exchange values may not represent market prices. Examples are transactions involving transfer prices between affiliated enterprises, manipulative agreements with third parties, and certain non-commercial transactions, including concessional interest (that is, interest payable at a reduced rate as a matter of policy). Prices may be under- or over-invoiced, in which case an assessment of a market-equivalent price needs to be made. Although adjustment should be made when the actually observed exchange values do not represent market prices, this may not be practical in many cases. Adjusting the actual exchange values to reflect market prices will have consequences in other accounts. Therefore, when such adjustments are made, corresponding adjustments in other account should also be made, for example, if prices of goods are adjusted, associated income account or financial account transactions or both should also be adjusted. Moreover, the adjustments need to be made consistently in the accounts of both units involved in the transaction. This may be difficult to apply in practice in the case the relevant units are resident in different countries, and the statistical offices responsible for making the adjustments represent different countries as well.
- 4.158 Values put on an invoice may deviate systematically or to such a large extent from the prices paid in the market for similar items that it must be presumed that the sums paid cover more than the specified transactions. An example is so-called transfer pricing: affiliated enterprises may set the prices of the transactions among themselves artificially high or low in order to effect an unspecified income payment or capital transfer. Such transactions should preferably be made explicit if their value is considerable and would hinder a proper interpretation of the accounts. In some cases, transfer pricing may be motivated by income distribution or equity build-ups or withdrawals. Replacing book values (transfer prices) with market-value equivalents is desirable in principle, when the distortions are large and when availability of data (such as adjustments by customs or tax officials or from partner economics) makes it feasible to do so. Selection of the best market-value equivalents to replace book values is an exercise calling for cautious and informed judgment.
- 4.159 The exchange of goods between affiliated enterprises may often be one that does not occur between independent parties (for example, specialized components that are usable only when incorporated in a finished product). Similarly, the exchange of services, such as management services and technical knowhow, may have no near equivalents in the types of transactions in services that usually take place between independent parties. Thus, for transactions between affiliated parties, the determination of values comparable to market values may be difficult, and compilers may have no choice other than to accept valuations based on explicit costs incurred in production or any other values assigned by the enterprise. The valuation of management fees and other similar cases in the case of balance of payments is elaborated in paragraph 11.xx, BPM7.
- 4.160 All in all, because of all the complexities involved to arrive at a consistent recording of the adjustments, not to mention the availability of relevant information on the distortions in the actually observed exchange values, national accounts and external accounts often refrain from trying to approximate true market prices. Here, one can also add that the actually observed exchange values, which may be motivated by global tax avoidance

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or other reasons, also represent an economic reality of its own, albeit not one which is based on market prices and other commercial considerations.

# Concessional pricing

- 4.161 While some non-commercial transactions, such as a grant in kind, have no market price, other non-commercial transactions may take place at implied prices that include some element of grant or concession so that those prices also are not market prices. Examples of such transactions could include negotiated exchanges of goods between governments and government loans bearing lower interest rates than those with similar grace and repayment periods or other terms for purely commercial loans. Concessional lending by governments is described in chapter 30 (SNA). Other examples of concessional lending may relate to the provision of loans at reduced interest rates by employers to their employees. In the sequence of economic accounts/external accounts, adjustments for concessional lending are restricted to the latter; the provision of adjusted information on concessional lending in a non-market context by governments, central banks and international organizations is encouraged as supplementary items. See paragraphs 14.xxx (SNA / paragraphs 13.51 and 14.xx (BPM) for further guidance on the treatment and recording of concessional loans.
- 4.162 Transactions by general government bodies and private non-profit entities not engaged in purely commercial undertakings are often subject to non-commercial considerations. However, transfers involving provision of goods and services may also be provided or received by other sectors of the economy.

#### Valuation of assets and liabilities

- 4.163 As a general principle, stocks of assets and liabilities should be valued as if they were being acquired on the date to which the balance sheet relates. This implies that when they are exchanged on a market, assets and liabilities are to be valued using a set of prices that are current on the date to which the balance sheet relates and that refer to specific assets.
- 4.164 It is important though to make a clear distinction between the initial recognition of assets, and the subsequent valuation of assets. Regarding the initial recognition, i.e., the time at which the asset (or liability) enters the balance sheet, the valuation principles for valuing transactions are relevant. When it comes to the subsequent valuation, quite a number of exceptions have to be made to the above principle it is often not possible to use a set of prices that are current on the date to which the balance sheet relates, because the most obvious being when there are no active markets in which the relevant assets are traded. This is not only true for most non-financial assets, certainly when taking into account the second-hand nature and the partial depreciation of these assets, but also for various financial instruments. As a consequence of the unavailability of observable market or near-market prices, alternative valuation methods need to be applied to arrive at an appropriate valuation.
- 4.165 For valuing non-financial assets, two basic approaches can be distinguished, the first one based on the market prices for similar (second-hand) assets, and the second one based on the contribution of capital services, including depreciation, to the production process in the remaining service life of the asset. The latter approach is usually approximated by estimating the written-down replacement cost, adequately adjusted for changes in prices. To compile these estimates, the perpetual inventory method is applied, which if applied properly replicates the net present value of future capital services derived from the asset in question. This method is described further in chapter 17).
- 4.166 In the case of non-financial assets for which active second-hand markets exist, such as for generic transport equipment and dwellings, it can be assumed that the value derived from the capital services approach will closely follow the observable market prices of the relevant second-hand assets, as the economic agents can make an explicit choice between investing in new assets, or purchasing second-hand assets. However, most non-financial assets used in production are not generic, but specifically designed and constructed for a certain production activity. Moreover, the markets for these second-hand assets may be extremely thin. As a consequence, the observable market prices for these second-hand assets may be close to their scrap value, thus not providing a good representation of the capital services that can be derived from them in the remainder of the service life, the latter representing the value of the asset in an enterprise as a going concern. One could

also argue that the second-hand assets in these types of markets are not the same as the assets used in production, thus not being a good representation of the assets being valued.

- 4.167 Similar valuation issues may exist in the case of, for example, natural resources, the stocks of which are generally not traded in the market, so any values derived from occasionally traded stocks cannot be used for the valuation of similar assets because of the heterogeneity of the resources in question. In these cases, the value on the balance sheet can be approximated by the net present value of future benefits derived from these resources, using the residual value method, i.e., the output generated with the exploitation of the resources minus all costs associated with the exploitation. Exploitation rights are often provided by government for a series of rent payments. The (present value of) actual rent payments may not account for the full value of resource rents that can be derived from these assets, and the asset in question may clearly generate a future stream of resource rents, going well beyond the payments of rent to the (legal) owner. The unit having the rights to exploit the resources thus appropriates part of the resource rents, reflecting the future capital services derived from these assets by the unit having the exploitation rights. In these cases, the value of the resources in question is split between the legal owner and the unit exploiting the resources. (See also paragraphs 14.xxx (SNA).)
- 4.168 Finally, when it comes to applying the method of the net present value of future benefits, it is important to acknowledge that, because it may be difficult to determine the future earnings with the appropriate degree of certainty, and given that aAssumptions are also needed to be made about the asset's life length and the discount factor to be applied, Therefore, the other possible sources of valuation described in the preceding paragraphs should be exhausted before resorting to this method. It should be noted, however, that the method as such is theoretically sound as can often be verified for a number of financial assets. Further, if this method is used, some sensitivity testing of the assumptions made may be appropriate. In fact, the method most commonly used to derive estimates of depreciation and the capital stock of fixed assets associates a stream of future earnings with the decline in value of a fixed asset in use in production.
- 4.169 Many financial assets are traded in markets on a regular basis and therefore can be valued by directly using the price quotations from these markets. If the financial markets are closed on the balance sheet date, the market prices that should be used in the valuation are those that prevailed on the closest preceding date when the markets were open. Debt securities have a current market value as well as a nominal value, and it is recommended to compile supplementary data on the nominal values of positions of debt securities as well. (See paragraph 4.xxx for the definition of nominal value.)
- 4.170 Valuation according to market-value equivalent is needed for valuing financial assets and liabilities that are not traded in financial markets or are traded only infrequently. For these assets and liabilities, it will be necessary to estimate fair values that, in effect, approximate market prices. The present value of future cash flows can also be used as an approximation to market prices, provided an appropriate discount rate can be used.
- 4.171 For most non-negotiabletradable financial assets, particularly those with a face value applicable at some point in the future (e.g., loans, deposits, and other accounts receivable and payable), the present market value can be established as the face value discounted to the present by the market interest rate. In principle, therefore, if a reasonably robust estimate of the stream of future earnings to come from an asset can be made, along with a suitable discount rate, this allows an estimate of the net present value to be established. However, another principle for valuing stocks is the need for consistency in the valuation of debtor and creditor positions for financial instruments. This is one of the pragmatic reasons to apply nominal values for financial instruments, such as deposits and loans, which are not (actively) traded on the market. Moreover, conceptually, the nominal value of a debt instrument can also be calculated by discounting future interest and principal payments at the existing contractual interest rate(s) on the instrument; these interest rates may be fixed rate or variable rate. However, some would argue that such a valuation is somewhat inconsistent with a valuation at fair value of the relevant asset positions, while others would argue that nominal values, reflecting the actual payments of principal to be made in the future, including interest accrued to date, can be considered as a good approximation of the fair value. Nominal value is also considered useful because it shows actual legal liability and the starting point of creditor recovery behaviour. It is recognized, however, that nominal value provides an incomplete view of the financial position, particularly when the loans are nonperforming. Therefore, information on the nominal value of non-performing loans should be included as a memorandum or supplementary item. (See paragraph 14.xx to 14.xx (SNA) / paragraph 7.xx (BPM).). Loans

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that have become negotiable de facto should be reclassified under debt securities. (See paragraph 12.xx (SNA) / paragraph 5.xx (BPM).)

- 4.172 Positions on deposits and other accounts receivable/payable are also recorded at nominal value. They give rise to the same issues of nominal and fair values as loans. Deposits at banks and other deposit-taking corporations in liquidation should also be recorded at their nominal value until they are written off. If significant, however, such deposits should be shown separately as a supplementary item. The same treatment is applicable for any other cases of impaired deposits (i.e., where the deposit-taking corporation is not in liquidation but faces liquidity issues).
- 4.173 When securities are quoted on markets with a buy-sell spread, the midpoint should be used to value the instrument. The spread is an implicit service of the dealer, paid by buyers and sellers (see paragraphs 11.xx-11.xx, (BPM) / paragraphs xx.xx (SNA)). Similarly, positions in financial assets and liabilities denominated in foreign currency should be valued using the midpoint at close of business between the buying and selling rates on the reference date.
- 4.174 For a restricted group of financial instruments, the above valuation methods cannot be applied. Examples relate to unlisted equity and defined benefit pension entitlements, While for the latter the present value of future pension benefits is the generally accepted method for valuation, various approaches can be considered in the case of unlisted equity.
- 4.175 More details on the methods for valuing assets are provided in the annex to this chapter, while the valuation of specific types of assets is discussed in further detail in relevant chapters.
- 4.176 In conformity with the general rule, provision of assets, services, labour or capital in exchange for foreign cash is recorded at the actual exchange value agreed upon by the two parties to the transaction. Flows and stocks concerning foreign currency are converted to their value in national currency at the rate prevailing at the moment they are entered in the accounts, that is, the moment the transaction or other flow takes place or the moment to which the balance sheet applies. The midpoint between the buying and selling rate should be used so that any service charge is excluded.

#### Business accounting valuation

- 4.177 Business accounts, tax returns, supervisory data, and other administrative records are main sources of data for drawing up macroeconomic statistics. One should be aware, however, that none of these necessarily satisfies the valuation requirements of macroeconomic statistics and that accordingly adjustments may have to be made. In particular, in the interest of prudence, business accounting often adopts valuations that are not appropriate for the macroeconomic statistics. Similarly, valuations for tax purposes often serve objectives that differ from those of macroeconomic analysis. For example, the depreciation methods favoured in business accounting and those prescribed by tax authorities almost invariably deviate from the concept of depreciation employed in the SNA, particularly with their use of historical cost. (Further details on the commonalities and differences between the recording in macroeconomic statistics, particularly focusing on national accounts, and the recording in business accounting and public sector accounting are provided in chapters 28 and 30, 2025 SNA)
- 4.178 The valuation of financial assets and liabilities in data reported by enterprises or other respondents may be based on commercial, supervisory, tax, or other accounting standards that do not fully reflect the market prices of the assets and liabilities. In such cases, the data should be adjusted to reflect, as closely as possible, the market value of the financial assets and liabilities except when they are to be recorded at nominal values.

#### Valuation of partitioned flows

4.179 Where a single payment refers to more than one transaction category (as they are defined in the macroeconomic statistics), the individual flows need to be recorded separately. In such a case, the total value of the individual transactions after partitioning must equal the observed exchange value that actually occurred. For example, actual exchange values involving foreign currency include commission for currency conversion. The portion related to currency conversion should be recorded separately as transactions in

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services. As another example, the SNA/BPM recommends dividing interest transactions with financial corporations between two transaction categories, one showing interest as understood in the SNA/BPM and the other representing the implicit payment for financial intermediation services.

- 4.180 Partitioning is not limited to transactions; an example is real holding gains, which are separated for analytical reasons from neutral holding gains that are simply proportionate to changes in the general price level; see paragraph 4.87.
- 4.181 A less obvious mingling of transactions occurs when the provision of an asset and the related money payment or payments do not take place simultaneously. When the time gap becomes unusually long and the amount of trade credit extended is very large, the conclusion may be that implicitly an interest fee has been charged. This recording of interest becomes even more relevant in periods of high inflation and interest. In all these such extreme cases, the actual payment or payments should be adjusted for accrued interest in order to arrive at the correct value of the asset transferred. Such adjustments are generally not recommended for normal trade credit.

#### Valuation of rerouted transactions

4.182 Values of rerouted transactions will have to be derived from values of other observed transactions to which they are related. For example, values of transactions in reinvested earnings are derived from the direct investors' shares in the net saving of the (foreign) direct investment enterprise before reinvested earnings are distributed. (See paragraphs 8.xxx and 12.xxx (SNA) / paragraphs 8.15–8.16 and 11.33–11.47 (BPM).)

# Special valuations concerning products

- 4.183 Usually, the producer and the user of a given product perceive its value differently owing to the existence of taxes and subsidies on products, transport costs to be paid and the occurrence of distribution margins. In order to keep as close as possible to the views of the economic transactors themselves, the SNA records all uses at purchasers' prices including these elements, but excludes them from the value of output of the product.
- 4.184 Output of products is recorded at basic prices. The basic price is defined as the amount receivable by the producer from the purchaser for a unit of good or service produced as output minus any tax payable and plus any subsidy receivable on the product as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer. If it proves impossible to obtain the required information at basic prices, output may be valued at producers' prices. The producer's price is defined as the amount receivable by the producer form the purchaser for a unit of a good or service produced as output minus any value added tax (VAT), or similar deductible tax, invoiced to the purchaser. It also excludes any transport charges invoiced separately by the producer.
- 4.185 Use of products is recorded at purchasers' prices. The purchaser's price is defined as the amount payable by the purchaser, excluding any deductible VAT or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place.
- 4.186 The difference in value recorded for a product between when it is produced and the moment it is used for, say, final consumption expenditure can be considerable. Components of this difference may be:
  - a. Taxes less subsidies on products payable by the producer;
  - b. Trade and transport margins, including taxes less subsidies on products payable by wholesale and retail traders;
  - c. Transport, including taxes less subsidies on products, paid separately by the consumer;
  - d. Predictable quality increases producing additional output volume less current losses during storage;
  - e. Holding gains while the product is with the producer and with wholesale and retail traders.

As one can see from the above, the difference between the original basic price and ultimate purchasers' price

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of a particular good encompasses both pure price and pure volume elements. In practice, of course, the estimates do not keep track of individual products but are made at a more global level for groups of products.

- 4.187 Imports and exports of goods are recorded in the SNA/BPM at border values. Total imports and exports of goods are valued free-on-board (FOB, that is, at the exporter's customs frontier). As it may not be possible to obtain FOB values for detailed product breakdowns, the tables containing details on foreign trade show imports of goods valued at the importer's customs frontier (CIF, that is, cost, insurance and freight), supplemented with global adjustments to FOB values. CIF values include the insurance and freight charges incurred between the exporter's frontier and that of the importer. The value on the commercial invoice may of course differ from both of these.
- 4.188 As the overall balance of imports and exports must conform to actual circumstances, border valuation of goods has consequences for the recording of freight and insurance in the SNA/BPM. Usually, the values of both imports and exports for these service items have to be adapted to compensate for the special conventions on goods traded with the rest of the world. Further details on this treatment are in chapters 15 and 33 (SNA) / chapters 10 and 11 (BPM).
- 4.189 In relation to the valuation of exports and imports, it is generally acknowledged that a valuation at the observed exchange values, which is closely aligned to the invoice values, is the conceptually preferred method. Subject to further testing of the implementation in practice, it is intended to be introduced as the basic principle for valuing imports and exports in the next versions of SNA/BPM.

# Valuation of other flows

Other changes in the volumes of assets and liabilities

- 4.190 In order to determine the valuation of the other changes in the volume of assets and liabilities, it is usually necessary to value the asset before and after the change in volume and take the difference that is not explained by any transaction and holding gains and losses as the value of the other change in volume.
- 4.191 Other changes in the volume of financial assets and liabilities are recorded at the observable market prices of similar instruments. For writing-off of financial instruments that are valued at nominal values, the value recorded in the other changes in the volume of assets <u>and liabilities</u> account should correspond to their nominal value prior to being written off. For all reclassifications of assets and liabilities, values of both the new and old instruments should be the same.

# Holding gains and losses

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- 4.192 Holding gains and losses accrue continuously and apply to both non-financial and financial assets and liabilities. In general, they are estimated by deducting from the total change in the value of assets those that can be attributed to transactions and to other changes in volumes.
- 4.193 Since most financial assets are matched by liabilities, either within the domestic economy or with the rest of the world, it is important that holding gains in one are matched by holding losses in the other and vice versa. A holding gain occurs when an asset increases in value or a liability decreases in value; a holding loss occurs when an asset decreases in value or a liability decreases in value; a holding gains and losses during an accounting period shows the net changes of holding gains and holding losses for an asset and a liability separately. In practice, the value of holding gains and losses is calculated for each asset and liability between two points in time: the beginning of the period or when the asset or liability is acquired or incurred and the end of the period or when the asset or liability is sold or extinguished.
- 4.194 For loans, deposits, and other accounts receivable and payable sold at a discount, the transaction values recorded in the financial account may differ from the nominal values recorded in the balance sheets, or in the case of external accounts, in the <u>IIPinternational investment position</u>. Such differences are recorded as valuation changesholding gains and losses in the other changes in financial assets and liabilities account. (See also paragraph 13.xx (SNA) / paragraph 9.33\*\* (BPM7).)

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# 3. Time of recording

# Choice of time of recording

- 4.195 When discussing timing in the SNA/BPM, an essential distinction should be made between stock data as recorded in balance sheets, on the one hand, and flow data as recorded in the other accounts, on the other. Balance sheets, by definition, refer to specific points in time. In contrast, flows are aggregations, over some chosen accounting period, of individual transactions or other flows, which are themselves scattered over the accounting period.
- 4.196 Thus, the SNA/BPM does not show individual transactions or other flows, but there are four reasons why precise rules on their individual timing must be given. In the first place, rules have to be formulated to say in which accounting period is crucial to distinguish between changes in net worth/<u>IIPinternational</u> investment position due to transactions and those due to other changes (e.g., other changes in volume and holding gains or losses). This distinction is particularly important in situations of high inflation. Thirdly, the integrated nature of the system means that the stocks recorded on the balance sheet are influenced by the timing of flows. Finally, the quadruple accounting system requires that entries for a transaction are made by the counterparties at the same time. This ensures the consistency of accounts for each party.
- 4.197 One of the problems in pinning down the timing of transactions is that activities of institutional units often extend over periods in which several important moments can be distinguished. For instance, many commercial sales (in external accounts relating to exports and imports of goods) commence with the signing of a contract between a seller and a buyer, encompass a date of delivery (dates of crossing border in the case of exports/imports) and a date or dates on which payments become due and are only completed as of the date the last payment is received by the seller. Each of these distinct moments in time is to some extent economically relevant and may result in multiple transactions in national accounts/external accounts.
- 4.198 Similarly, in analysing government expenditure one can distinguish the day that a budget is voted upon by the legislature, the day on which the ministry of finance authorizes a department to pay out specified funds, the day a particular commitment is entered into by the departments, the day deliveries take place and finally the day payment orders are issued and cheques are paid. With regard to taxes, for example, important moments are the day or the period in which the liability arises, the moment the tax liability is definitively assessed, the day that it becomes due for payment without penalty and the day the tax is actually paid or refunds are made.
- 4.199 Clearly, making entries for all successive stages discernible within the activities of institutional units, although theoretically possible, would severely overburden the SNA/BPM. A choice has to be made, recognizing (a) the needs of macroeconomic analysis, (b) micro-economic views, and (c) commonly available sources. Often, in this respect, a distinction is drawn between recording flows on a cash basis, due-for-payment basis, the commitment basis and accrual basis. There may be other timing bases, such as physical movement or administrative process, used in some data sources. As explained in the following paragraphs, the SNA/BPM and other macroeconomic statistics recommend recording each transaction on an accrual basis.

## Choice for recording on an accrual basis

- 4.200 Cash accounting records only cash payments and records them at the times these payments occur. This method is widely used for certain business purposes. A practical advantage is the avoidance of problems connected with valuing non-monetary flows. Yet, cash accounting cannot be used generally for economic and national and external accounting as the times at which payments take place may diverge significantly from the economic activities and transactions to which they relate and it is these underlying activities and transactions that the SNA/BPM seeks to portray. Moreover, cash recording cannot be applied to the many non-monetary flows included in the SNA/BPM.
- 4.201 Due-for-payment recording shows flows that give rise to cash payments at the latest times they can be paid without incurring additional charges or penalties and, in addition to these, actual cash payments at the moments they occur. The period of time (if any) between the moment a payment becomes due and the

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moment it is actually made is bridged by recording a receivable or a payable in the financial accounts. Duefor-payment recording furnishes a more comprehensive description of monetary flows than does cash accounting. A disadvantage is, of course, that the recording is still limited to monetary flows.

4.202 Accrual accounting records flows at the time economic value is created, transformed, exchanged, transferred or extinguished. This means that flows that imply a change of ownership are entered when the change occurs, services are recorded when provided, output at the time products are created and intermediate consumption when materials and supplies are being used. In other words, the effects of economic events are recorded in the period in which they occur, irrespective of whether cash was received or paid or was due to be received or paid. When an economic event is accompanied by a settlement at a later date, such as a purchase of goods financed by a trade credit, the time lag is bridged by recording each event separately, with the corresponding entry at the time of the change in ownership being trade credit payable. [The SNA/BPM favours accrual accounting because:

- a. The timing of accrual accounting is in full agreement with the way transactions, other flows, and main economic aggregates (value added, external balance on goods and services, saving and net lending/net borrowing) are defined in the SNA/BPM. This agreement allows the profitability of productive activities to be evaluated correctly (that is, without the disturbing influence of leads and lags in cash flows) and a sector's net worth, or a country's <u>IIPinternational investment position</u>, to be calculated correctly at any point in time;
- Accrual accounting provides the most comprehensive information because all flows can be recorded consistently, including non-monetary transactions, imputed transactions, and other flows.

4.203 The change of economic ownership is central in determining the time of recording on an accrual basis for transactions in goods, non-financial assets, and financial assets. A change in ownership from an economic point of view means that all risks, rewards, and rights and responsibilities of ownership in practice are transferred. In general, a change in legal ownership also involves a change in economic ownership. In some cases, a change of economic ownership takes place even though the legal ownership remains unchanged (e.g., financial leases and transactions between an enterprise and its foreign branches). In other cases, there is no change in economic ownership, even though there is a change in legal ownership. For example, for repurchase agreements involving the provision of securities for cash, the risks and rewards attached to the securities remain with the original holder (as discussed in paragraph 12.xx (SNA) / paragraphs 5.xx–5.xx (BPM)) and the only transaction is a loan. Similarly, in the case of securities lending without cash collateral, there is no change in ownership 12.xx (BPM)).

4.204 Many transactions, such as everyday purchases of households in shops, are monetary transactions in which a product is delivered against immediate, or nearly immediate, payment in cash. In those instances there are no differences between the three methods discussed in the above. Accrual accounting is particularly relevant to the timing of various internal transactions (such as output that is added to the inventories of the producer), exchanges in which the parties deliver at differing times (such as sales with deferred payments) and obligatory transfers (taxes and flows connected with social security).

4.205 Usually, accrual accounting is the norm for the institutional units involved. Numerous transactions consist of an exchange between two enterprises of, say, goods for financial assets. In such an exchange, accounting entries will be made in the books of each enterprise, showing the same dates for the acquisition of the goods and the surrender of the financial assets, on the one hand, and for the acquisition of the financial assets and the surrender of the goods, on the other. Sometimes, however, the two parties involved in a transaction will not perceive it as occurring at the same moment. Furthermore, some transactors, in particular government units, do not keep records of purchases on an accrual basis. In these cases, the rules of consistency in the SNA/BPM require that efforts should be undertaken to correct basic statistics for major deviations and flaws. The application of the general rule of recording on an accrual basis to the most common circumstances is discussed below.

 Time of recording of transactions in goods and services
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 4.206
 The time of recording of the acquisition of goods is the moment when the economic ownership of those goods
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changes hands. When change of ownership is not obvious, the moment of entering in the books of the transaction partners may be a good indication and, failing that, the moment when physical possession and control is acquired. These subsidiary rules apply in particular to internal transactions or when a change of ownership is taken to occur under a financial lease or hire-purchase arrangement. Imports and exports of goods are recorded when change of ownership occurs. In the absence of sources specifying the date on which ownership changes, there is a strong presumption that the goods will cross the frontiers of the countries concerned either shortly before or soon after the change of ownership takes place. Trade statistics based on customs documents reflecting the physical movement of goods across the national or customs frontier may therefore often be used as an approximation. Similar rules of change in economic ownership apply to transactions in non-produced non-financial assets.

- 4.207 Services are recorded in the SNA/BPM when they are provided. Some services are special in the sense that they are characteristically supplied on a continuous basis. Examples are operating leasing, insurance and housing services (including those of owner-occupied dwellings). These services are recorded as provided continuously over the whole period the contract lasts or the dwelling is available.
- 4.208 Transactions in goods should be recorded as of the time that the change of economic ownership takes place. Goods are considered to change economic ownership when the parties enter the goods in their books and make a corresponding change to their financial assets and liabilities. For high-value capital goods such as ships, heavy machinery, and other equipment, ownership changes are recorded at the time agreed between the parties as to when ownership changes (see paragraph 10.xx, BPM7). When a contract for building and other construction is agreed in advance, progressive change of ownership occurs for the work-in-progress, which may take several months or years to complete. When the contract calls for stage payments (progress payments), the transaction values may often be approximated by the value of stage payments made each period (see paragraphs 5.xx and 10.xx, BPM7). A difference in timing between the change of ownership and payments may give rise to trade credit and advances.
- 4.209 The timing used in international merchandise trade statistics generally follows customs procedures, which are set up to record the movement of goods across borders. The time at which goods cross the border can be taken only as an approximation to the time when the change of economic ownership occurs. A customs-based collection system usually provides a choice of dates at which transactions may be recorded (e.g., lodgement of customs declaration, customs clearance of goods). The time of recording in the international guidelines for merchandise trade statistics is when the customs declaration is lodged. Ideally, for external accounts purposes, customs data should be adjusted (see paragraphs 3.xx–3.xx, BPM7). Likewise, an exchange record system that reflects payments may not coincide in timing with the change in economic ownership of the goods.
- 4.210 Goods on consignment (i.e., goods intended for sale but not actually sold when the goods cross the frontier) should be recorded only at the time economic ownership changes. Goods under financial lease arrangements are considered to change economic ownership at the inception of the lease (see paragraph 5.xx on the definition of a financial lease and paragraphs 7.xx and 10.xx for positions and transactions arising from financial leases). Goods sent abroad for processing under the ownership of the same party are not treated as if they change economic ownership. Goods may move between a parent and its branch abroad. In that case, possibilities exist that either the goods have changed economic ownership or they may have been sent for processing. The correct statistical treatment is to identify which location assumes the risks and rewards of ownership most strongly (e.g., from factors such as whether the goods under merchanting, purchases and resales are recorded at the time the change in economic ownership of goods occurs.

# Time of recording of transactions in services

4.211 Transactions in services are recorded when the services are provided. Some services, such as some transport or hotel services, are provided within a discrete period, in which cases, there is no problem in determining the time of recording. Other services are supplied or take place on a continuous basis. For example, construction services, operating leasing, and insurance services are recorded continuously as long as they are being provided. When construction takes place with a prior contract, the ownership of the structure is, effectively transferred progressively as the work proceeds. When services are provided over a period of time.

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there may be advance payments or settlements at later dates for such services (e.g., freight, insurance, port services). The provision of services should be recorded on an accrual basis in each accounting period (i.e., they should be recorded as they are rendered, not when payments are made). Entries for advance payments or settlements at later dates should be made in the appropriate accounts when they occur (as explained in paragraph 3.xx in the case of import of goods).

## Time of recording of distributive transactions

- 4.212 Distributive transactions are recorded at the moment the related claims arise. As a result, for example, remuneration of employees, interest, social contributions and benefits are all recorded in the period during which the amounts payable accrue. (See paragraphs 12.xx-12.xx for the recording of remuneration of employees associated with employee stock options.) With respect to some distributive transactions, the time of accrual depends on the unit's decision as to when to distribute earned income or make a transfer.
- 4.213 Interest is recorded as accruing on a continuous basis because the financial resources are provided for use on a continuous basis. For some financial instruments, the debtor does not make any payments to the creditor until the financial instrument matures, at which time a single payment discharges the debtor's liability; the payment covers the amount of funds originally provided by the creditor and the interest accumulated over the entire life of the financial instrument. Corresponding entries to the interest accruing in each period before maturity should be recorded as financial transactions that represent an additional acquisition of the financial asset by the creditor and an equal incurrence of a liability by the debtor.
- 4.214 Dividends are recorded at the moment the shares go ex-dividend. Three dates are associated with dividends:
  - a. the date they are declared;
  - b. the date they are excluded from the market price of shares, known as the ex-dividend date. The recipients of the dividends are determined from the register of shareholders at this time and subsequent shareholders do not have a right to the dividends; and
  - c. the date they are settled.
- 4.215 Although dividends sometimes may be related to the enterprise's profits in the previous period, in other cases, they are only loosely related or not at all. The price of shares includes declared dividends up to the exdividend date, thus the holder of the shares before the ex-dividend date owns the share and does not hold a separate debt instrument reflecting declared and unpaid dividends. Between the ex-dividend date and actual settlement, the amount payable is recorded as other accounts receivable/payable. Withdrawals from income of quasi-corporations, such as distributed branch profits, are recorded when they actually take place. Reinvested earnings are derived from retained earnings, and therefore they are recorded in the period in which retained earnings accrue. (See paragraphs 12.xx–12.xx (BPM) for issues in the calculation of reinvested earnings.)
- 4.216 Taxes and other compulsory transfers should be recorded when the activities, transactions, or other events occur that create the government's claim to the taxes or other payments. In principle, income taxes and social contributions based on income should be attributed to the period in which the income is earned. In practice, however, some flexibility may be needed so that income taxes deducted at the source and regular prepayments of income taxes may be recorded in the periods in which they are paid, and any final tax liability on income may be recorded in the period in which it is determined.
- 4.217 Some compulsory transfers, such as fines, penalties, and property forfeitures, are determined at a specific time. These transfers are recorded at the time the issuing unit has an unconditional claim on the funds; if a fine or penalty is subject to further appeal, an unconditional claim only exists once the appeal has been resolved
- 4.218 Determining the time of recording for grants and other voluntary transfers can be complex because there is a wide variety of eligibility conditions that have varying legal powers. In some cases, a potential grant recipient has a legal claim when it has satisfied certain conditions, such as the prior incurrence of expenses for a specific purpose or the passage of legislation. These transfers are recorded when all requirements and conditions are satisfied. In other cases, the grant recipient never has a legal claim on the donor, and the

**Commented [ED60]:** Based on paragraphs 3.44-3.47, *BPM6.* 

Not to be included in the 2025 SNA

**Commented [ED61]:** Paragraphs 4.212-219 are taken from BPM6 paragraphs 3.48-3.53

transfer should be attributed to the time at which the settlement is made (e.g., cash payment). In general, the time of recording of voluntary transfers is determined by the time at which there is a change in the economic ownership of the resources (such as goods, services, or financial assets) that are corresponding entries to transfers.

## Time of recording of transactions in non-produced non-financial assets

4.219 Transactions in non-produced nonfinancial assets are recorded at the time economic ownership of these assets changes. The treatment is similar to those for goods and financial assets, as discussed in paragraphs 4.xx and 4.xx–4.xx (BPM), respectively.

# Time of recording of transactions in financial assets and liabilities

- 4.220 Transactions in financial assets (including payments of cash) are recorded in the SNA/BPM when economic ownership changes. Some financial claims or liabilities defined in the SNA/BPM, in particular trade credits and advances, are the implicit result of a non-financial transaction and are not otherwise evidenced. In these cases, the financial claim is deemed to arise when its non-financial counterpart occurs. The same holds for financial transactions that the SNA/BPM records between a quasi-corporation and its owner/branch and its parent.
- 4.221 In some cases, both parties involved in a financial transaction may record it at varying dates in their own books because they acquire the documents evidencing the transaction at different times. This variation usually is caused by the process of clearing, the time cheques are in the mail, etc. The amounts involved in such "floats" are generally substantial in the case of transferable deposits and other accounts receivable and payable. Again, reasons of consistency require that the transactions are entered on the same date for both parties. If no precise date can be fixed, the timing of the change of economic ownership is determined according to the date on which the creditor receives his payment.
- 4.222 For securities, the transaction date (that is, the time of the change in ownership of the securities) may precede the settlement date (that is, the time of the delivery of the securities). Both parties should record the transactions at the time ownership changes, not when the underlying financial asset is delivered. Any significant difference between transaction and settlement dates gives rise to accounts payable or receivable. In practice, when the delay between the transaction and settlement is short, the time of settlement may be considered as an acceptable proxy, so that accounts receivable/payable would not arise. In cases of longer delays, however, accounts receivable/payable should be identified.
- 4.223 According to the accrual basis, repayments of debts are recorded when they are extinguished (such as when they are paid, or rescheduled, or forgiven by the creditor). When arrears occur, no transactions should be imputed, but the arrears should continue to be shown in the same instrument until the liability is extinguished. If the contract provided for a change in the characteristics of a financial instrument when it goes into arrears, this change should be recorded as a reclassification in the other changes in the financial assets and liabilities account. The reclassification applies to situations where the original contract remains, but the terms within it changes (for example, interest rates or repayment periods). If the contract is renegotiated or the nature of the instrument changes from one instrument category to another (for example, from bonds to equity), the consequences are to be recorded as new transactions. Consistent with the accrual principle, an overdue obligation to settle a financial derivative contract is not recorded as a transaction; however, the obligation is reclassified to a debt liability because of the change in the nature of the claim (see paragraph 5.xx (BPM)).
- 4.224 Data on arrears are important in their own right, and thus should be presented as supplementary items, where significant (or memorandum items in the case of Exceptional Financing, see Appendix 1). Although it is useful to identify some commonly important arrears (such as arrears on public and publicly guaranteed debt), flexibility is needed in determining which items of arrears are important to disseminate, depending on each economy's circumstances. Arrears are described further in paragraphs 5.xx–5.xx (BPM)
- 4.225 Activation of one-off (non-standardized) guarantees gives rise to financial transactions because this involves a creation of a new liability. The time of recording of flows arising from activation of one-off guarantees

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(including capital transfers and other changes in the volume of assets <u>and liabilities</u>, if applicable) is determined by the occurrence of the events activating the guarantee. The treatment of flows arising from the activation of one-off guarantees is described in more detail in paragraphs 25.xx to 25.xx (SNA) / paragraphs 8.42 to 8.45 (BPM).

4.226 Employee stock options (ESOs) are recognized at grant date. Remuneration of employees associated with employee stock options should be recorded as accruing over the period to which the option relates, which generally is the period between the granting and vesting dates. Sometimes, the options may cover the period before the granting date, which should also be taken into account when allocating the remuneration of employees. Recording of flows associated with ESOs are discussed in paragraphs 25.xx to 25.xx (SNA) / paragraphs 8.xx, 9.xx and 11.xx (BPM).

# Time of recording of output and intermediate consumption

- 4.227 The principle of recording on an accrual basis implies that output is recorded over the period in which the process of production takes place. Thus, additions to work-in-progress are recorded continuously as work proceeds. When the production process is terminated, the whole of the work-in-progress accumulated up to that point is effectively transformed into a stock of finished product ready for delivery or sale.
- 4.228 Similarly, the intermediate consumption of a good or service is recorded at the time when the good or service enters the process of production, as distinct from the time it was acquired by the producer.

#### Time of recording of changes in inventories, depreciation and depletion

- 4.229 Inventories may be materials and supplies held as inputs by producers, output as yet unsold, or products held by wholesale and retail traders. In all cases, additions to inventories are recorded when products are purchased, produced or otherwise acquired. Deductions from inventories are recorded when products are sold, used up as intermediate consumption or otherwise relinquished.
- 4.230 The timing of depreciation and depletion is inextricably linked with the question of its valuation. Depreciation and depletion are cost categories that accrue over the whole period the fixed asset or the natural resource in question is used for productive purposes. The exact proportioning to accounting periods depends on the rate of depreciation or depletion.

#### Time of recording of composite transactions and balancing items

- 4.231 Transactions that are measured as the balance of two or more other transactions follow the timing of the constituent basic flows. For example, implicit financial services on loans and deposits are recorded as interest on loans and deposits accrues.
- 4.232 The same rule for time of recording applies to balancing items. However, due to the variety of transactions and other flows covered, each with its own characteristics, some thought is needed in interpreting balancing items. For instance, in analysing the balancing item "saving" of non-financial corporations, one should be aware that the time when the operating surplus arises does not necessarily tally with the timing of the other factors, such as when dividends are payable.

#### Time of recording of other flows

- 4.233 Other changes in the volume of assets and liabilities are usually discrete events that accrue at precise moments or within fairly short periods of time, and should be recorded when the <u>eventschanges</u> occur.
- 4.234 Revaluations can occur continuously as prices and exchange rates change. Changes in prices and exchange rates often have a more continuous character, particularly in respect of assets with international character and assets for which active markets exist. In practice, nominal holding gains or losses will be computed between two points in time:

**Commented [ED64]:** Based on the text from paragraphs 3.58-3.59, *BPM6* 

**Commented [ED65]:** This subsection will not be included in BPM7.

**Commented [ED66]:** This subsection will not be included in BPM7.

- a. The moment at which:
- The accounting period begins; or
- · Ownership is acquired from other units (through purchase or a transaction in kind); or
- An asset is produced; and
- b. The moment at which:
- The accounting period ends; or
- The ownership of an asset is relinquished (through sale or a transaction in kind); or
- An asset is consumed in the production process.
- 4.235 One may wonder why nominal holding gains and losses are not calculated over a period beginning at the moment on which two units agree to a mutual exchange of assets instead of the period that starts with the moment on which the assets are acquired. After all, does not the signing of the contract fix prices, implying that the risk for any later price/exchange rate changes is being transferred? The SNA/BPM, however, regards commitments resulting from a contract as contingent until one of the parties has performed its obligation (by passing the ownership of some asset to the other party, providing a service or providing labour or capital). Also, a unit can incur holding gains and losses only on the assets or liabilities over which it has economic ownership. The combination of these two rules implies that during the period between the signing of the contract and the date on which the first party delivers, the second party cannot incur any price/exchange rate risks on this contract: the second party neither owns the assets to be delivered nor owns a claim on the first party to be recorded in the financial accounts.
- 4.236 Changes in structure and classification should be entered at the moment when, according to the rules adopted in the SNA/BPM, a unit or an asset is moved to a different category than that to which it was classified previously. Integrated stock-flow systems like the SNA or the integrated IIP require that all reclassifications are recorded and all entries for the reclassification are recorded at the same time.
- 4.237 In order to obtain statistical series that are more comparable over time, one might be tempted to stockpile major reclassifications for a number of years and enter them as one block at the end of this period. However understandable this procedure might be, it does not conform to the recommendations of the SNA/BPM, which aim at correct estimates on levels. Keeping records of reclassifications makes it possible in principle to reconstruct time series based on the situation in any accounting period.

## Timing adjustments for external transactions

- 4.238 Differences in the time of recording by partner economies may occur due to various factors. One of the intrinsic problems with recording external transactions is the difference in time zones. Differences in time of recording may also arise from delays in mail deliveries or settlement clearing processes. In most cases, data at some aggregate level rather than individual records are used in the compilation of external accounts. Several data sources may often only approximate the required basis. It is important to make timing adjustments where there are major divergences from the required basis.
- 4.239 In choosing among available statistical sources, compilers may wish to consider the advantage of using data for which the correct timing is already recorded. For example, records of actual drawings on loans are preferred to sources that quote authorization dates or program dates that may not be realized in fact. Some sources chosen by compilers as generally the most suitable may not have been specifically designed to yield information for the purpose of compiling external accounts.
- 4.240 Timing adjustments to international merchandise trade statistics may be necessary because these statistics may not reflect changes in economic ownership. Moreover, they may not always reflect physical movements correctly. Timing adjustments should be made when practices in customs statistics lead to distortions. For example, in the case of the purchase or sale of ships and aircrafts, information on the time at which the goods are entered in the books of the supplier or customer could be used. It is a good practice to identify the timing of large individual shipments or transactions (such as a ship or aircraft) to ensure that the goods flow and corresponding financing transactions are recorded in the same period.
4.241 A change in the economic ownership of goods can vary widely from the time at which the goods are recorded in trade statistics, if a lengthy voyage is part of the process of importing or exporting. If the unit value of trade changes substantially from the beginning to the end of the reporting period, the possible difference of one or more months between the shipment or receipt of goods and the change of ownership can be a source of error in the statement for a particular economy and a source of asymmetries between partner economies. Inquiries, perhaps on a sample basis, are required to ascertain specific practices, and timing adjustments should, in principle, be applied to correct the trade statistics for those classes of goods that are found to change ownership at times other than those at which the goods were recorded in the trade statistics.

- 4.242 Goods on consignment may often be recorded at the time the goods cross the frontier, on the assumption that a change of <u>economic</u> ownership has occurred or will shortly occur. If that treatment is followed and there is no change of ownership, adjustments will have to be made, preferably by revising the original entries. In practice, these adjustments may be made in the periods when the goods are returned, if goods returned involve minor cases.
- 4.243 Information based on exchange records provides data on a cash basis. For certain transactions, cash and accrual bases for recording may be the same, but for many they will differ. In particular, transactions in goods, services, and income may not coincide with the corresponding payments for settling the transactions. Alternative information should be used routinely to verify or adjust selected transaction categories. Compilers using an exchange record system should check each large settlement transaction. Information on interest from either the payments records or debt service schedule may not be appropriate for accrual accounting. Other possibilities of deriving interest accrual, such as using the data on positions and contractual interest rates, should be explored and implemented.

## **Balance sheet items**

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4.244 Stocks of assets and liabilities, as included in balance sheets, can be drawn up for any point in time. The SNA defines balance sheets for all sectors at the moment when one accounting period ends and a new accounting period begins. The closing balance sheet of one period is identical to the opening balance sheet of the next one, so there remain no price changes, reclassifications or other economic flows that are not duly recognized by the SNA. The same principles hold for the net <u>IIPinternational investment position</u>, as included in the external accounts.

#### 4. Unit of account and currency conversion

# Unit of account

- 4.245 Values of non-financial and financial transactions as well as the values of stocks or positions of (financial) assets and liabilities may be expressed initially in a variety of currencies or in other standards of value, such as Special Drawing Rights (SDRs). The conversion of these values into a reference unit of account is a requisite for the construction of consistent and analytically meaningful accounts.
- 4.246 National and external accounts can be compiled in the domestic currency as well as in another currency. Data in domestic currency are needed because several other macroeconomic and micro data are compiled in domestic currency, except when a foreign currency is used as a legal tender. Economic analysis often uses data from several macroeconomic statistical systems. Conversely, data in an international unit of account (a foreign currency) may be needed for international liquidity management and to address special issues for high inflation, significant exchange rate fluctuations, and multiple exchange rates. In addition, a standard or international unit of account is necessary to allow for aggregation on a global or regional basis and to facilitate international comparisons.
- 4.247 For compiling the external accounts, a standard unit of account is required for global presentation and analysis. It is preferable that the unit of account be a stable one; that is, values of transactions expressed in that unit should not be significantly affected by changes (relative to the unit of account) in values of currencies in which those transactions occur. Transactions expressed in a unit that is stable in this sense nonetheless may reflect price changes resulting from other causes; that is, a series expressed in a so-called stable unit of account is not the equivalent of a volume measure or constant price series. The theoretical ideal of a widely

Commented [ED67]: Based on paragraphs 3.63-3.66, BPM6.

Most probably, not the full details of these paragraphs will be included in the 2025 SNA.

**Commented [ED68]:** This subsection (paragraphs 4.245-4.261) is based on paragraphs 3.92-3.108, *BPM6* 

recognized and perfectly stable standard unit of account simply does not exist in practice.

#### Domestic versus foreign currency

- 4.248 For an economy, a domestic currency is distinguished from foreign currency. Domestic currency is that which is legal tender in the economy and issued by the monetary authority for that economy; that is, either that of an individual economy or, in a currency union, that of the common currency area to which the economy belongs. All other currencies are foreign currencies.
- 4.249 Under this definition, an economy that uses as its legal tender a currency issued by a monetary authority of another economy such as U.S. dollars or of a common currency area to which it does not belong should classify the currency as a foreign currency, even if domestic transactions are settled in this currency. The term "currency" should be understood in the broad sense (i.e., currency includes not only banknotes and coins but all means of payments issued by financial institutions in an economic territory). Unallocated gold accounts and other unallocated accounts in precious metals giving title to claim the delivery of gold or precious metal are treated as denominated in foreign currency. The treatment of unallocated accounts in other commodities will need to be decided at the time such cases arise in the future.
- 4.250 SDRs are considered to be foreign currency in all cases, including for the economies that issue the currencies in the SDR basket. Any other currency units issued by an international organization, except in the context of a currency union (see paragraph 5.221 (SNA) / paragraph 4.221 (BPM)), are considered foreign currency.

## Currency of denomination and currency of settlement

- 4.251 A distinction should be made between the currency of denomination and the currency of settlement. The currency of denomination is determined by the currency in which the value of flows and stocks is fixed as specified in the contract between the parties. Accordingly, all cash flows are determined using the currency of denomination and, if necessary, converted into the domestic currency or another unit of account for the purpose of settlement or compilation of accounts. The currency of denomination is important for distinguishing transaction values and holding gains and losses.
- 4.252 The currency of settlement may be different from the currency of denomination. Using a currency of settlement that is different from the currency of denomination simply means that a currency conversion is involved each time a settlement occurs. The currency of settlement is important for international liquidity and measurement of potential foreign exchange drains. The currency of settlement is also important for defining reserve assets (see paragraph 6.64 (BPM)).
- 4.253 The currency of denomination of equity and investment fund shares is generally the domestic currency of the economy in which the issuer is resident. However, when equity is issued in a currency other than the domestic currency, then that currency is the currency of denomination.
- 4.254 Debt instruments with both the amount to be paid at maturity and all periodic payments (such as coupons) indexed to a foreign currency are classified and treated as being denominated in that foreign currency.
- 4.255 Some financial assets and liabilities are denominated in more than one currency. However, if the amounts payable are linked to one specific currency, then the liability should be attributed to that currency. Otherwise, compilers are encouraged to disaggregate such multicurrency instruments by the component currencies.
- 4.256 Determining the currency of denomination is not always clear in financial derivative contracts to purchase or sell foreign currency using domestic currency. The decisive factor in determining the currency of denomination for these contracts is the exposure to currency movements. If settlement of a financial derivative contract is linked to a foreign currency, even though payment is required in domestic currency, then the financial derivative is to be classified as denominated in foreign currency.

#### Currency conversion principles

4.257 Flows denominated in a foreign currency are converted to their value in the domestic currency at the rate

prevailing when the flows take place, and positions are converted at the rate prevailing on the balance sheet date. The midpoint between the buying and selling rates should be used at the time of transaction (for transactions) and at the close of business on the reference date for positions, with the difference between buying or selling prices and midpoint prices to be treated as service charges. The valuation in the domestic currency of a purchase or sale on credit denominated in a foreign currency may differ from the value in domestic currency of the subsequent cash payment because the exchange rate changed in the interim. Both transactions should be valued at their current market values as of the dates they actually occurred, and a holding gain or loss resulting from the change in the exchange rate should be recorded for the period or periods in which the gain or loss occurs.

- 4.258 In principle, the actual exchange rate applicable to each transaction should be used for currency conversion. The use of a daily average exchange rate for daily transactions usually provides a good approximation. If daily rates cannot be applied, average rates for the shortest period should be used. Some transactions occur on a continuous basis, such as the accrual of interest over a period of time. For such flows, therefore, an average exchange rate for the period in which the flows occur should be used for currency conversion.
- 4.259 Derived measures relating to a period are calculated by subtracting one type of flow from another. In principle, therefore, derived measures of flows in one currency (e.g., domestic currency) should not be directly converted into another currency (e.g., foreign currency). First, the underlying flows themselves should be converted from the domestic currency into the foreign currency. Then, the derived measures in foreign currency can be calculated from the relevant flows denominated in foreign currency. It is possible that a derived measure, such as saving and the current external account balance, denominated in one currency may be different or even with the opposite sign from that denominated in another currency. In addition to the variations in exchange rates, the variations in the timing of underlying flows cause the differences in a derived measure denominated in different currencies.
- 4.260 Under a multiple exchange rate regime, two or more exchange rates are applicable to different categories of transactions; the rates favour some categories and discourage others. Such rates incorporate elements similar to taxes or subsidies. Because the multiple rates influence the values and the undertaking of transactions expressed in domestic currency, net proceeds implicitly accruing to authorities as a result of these transactions are calculated as implicit taxes or subsidies. The amount of the implicit tax or subsidy for each transaction can be calculated as the difference between the value of the transaction in domestic currency at the actual exchange rate applicable and the value of the transactions. For conversion of positions of external financial assets and liabilities in a multiple rate system, the actual exchange rate applicable to specific assets or liabilities in the beginning or end of the accounting period is used.
- 4.261 Parallel (unofficial) or black market rates cannot be ignored in the context of a multiple rate regime and can be treated in different ways. For instance, if there is one official rate and a parallel market rate, the two should be handled separately. Transactions in parallel markets should be converted using the exchange rate applicable in that market. If there are multiple official rates and a parallel rate, the official rates and the parallel rate should be treated as distinct markets in any calculation of a unitary rate. Transactions effected at the parallel rate usually should be converted separately at that rate. In some instances, however, parallel markets may be considered effectively integrated with the official exchange rate regime. Such is the case when most or all transactions in the parallel market rate sanctioned by the authorities or when the authorities actively intervene in the official aparallel market rates. If only limited transactions in the parallel market rate should not be included both the official and parallel market rates. If only limited transactions in the parallel market rates and sparallel market are sanctioned by the authorities on the official market are sanctioned by the authorities on the official market are sanctioned by the authorities. If only limited transactions in the parallel market market rates. If only limited transactions in the parallel market are sanctioned by the authorities, the parallel rate should not be included in the calculation of a unitary rate.

# 5. Aggregation, netting, consolidation

# Aggregation

- 4.262 The immense number of individual transactions, other flows, and assets and liabilities within the scope of the SNA/BPM have to be arranged in a manageable number of analytically useful groups. In the SNA/BPM, such groups are constructed by crossing two or more classifications.
- 4.263 As a minimum, in SNA, a classification of institutional sectors or industries is crossed with the classification

of transactions, other accumulation entries or assets. Additionally, revenues must be distinguished from expenditures and assets from liabilities. In order to accommodate more detailed analysis, the classes thus generated may be further subdivided: examples are specifications of kind of product or asset, of function and of transaction partners.

- 4.264 The classification of transactions, other flows, and stocks, or positions, of financial assets and liabilities is aimed at developing aggregates that group similar items and separate those items that have different characteristics. Aggregates and classifications are closely linked in that classifications are designed to produce the aggregates thought to be most useful.
- 4.265 Aggregates are summations of elementary items in a class of transactions, other flows, or positions. For example, remuneration of employees is the sum of all flows that are classified as remuneration of employees. For financial assets and liabilities, the aggregation of stock or flow data is usually done across all institutional units within a subsector or sector. Aggregation is hierarchical in the sense that upper-level aggregates are derived directly by summing the lower-level aggregates.
- 4.266 Individual units may have the same kind of transaction both as a credit and a debit for example, they may pay as well as receive interest or may acquire foreign currency as well as sell the foreign currency. Similarly, individual units may have the same kind of financial instrument both as an asset and as a liability for example, they may have a claim in the form of debt securities as well as a liability in the form of debt securities.
- 4.267 Since the classifications in the SNA/BPM contain a number of levels made explicit in the codes for the various transactions, other flows and assets, corresponding levels of aggregation may be distinguished.
- 4.268 Although conceptually the value for each aggregate is the sum of the values for all elementary items in the relevant category, in practice other estimation methods are frequently used. In the first place, information on elementary transactions, other flows and assets may be incomplete or even non-existent. Secondly, the data obtained from different primary sources are usually not fully consistent due to variations in definitions and coverage, so adjustments at the aggregate level are necessary to reconcile them.

## Netting

- 4.269 Individual units or sectors may have the same kind of transaction both as an expenditure (debit/expenditure in balance of payments current and capital accounts) and as a revenue (credit/revenue in balance of payments current and capital accounts) (for example, they both pay and receive interest) and the same kind of financial instrument both as an asset and as a liability (for example, they may have a claim in the form of debt securities as well as a liability in the form of debt securities). Aggregations or combinations in which all elementary items are shown for their full values are called gross recordings (e.g., all interest credits/revenues are aggregated separately from all interest debits/expenditures). Aggregations or combinations whereby the values of some elementary items are offset against items on the other side of the account or which have an opposite sign are called net recordings (e.g., transactions of financial assets are netted with the transactions in liabilities of the same financial instrument).
- 4.270 The SNA/BPM recommends gross recording apart from the degree of netting that is inherent in the classifications themselves. In fact, netting is already a feature of many of the recommendations of the SNA/BPM. It mostly serves to highlight an economically important property that is not apparent from gross data.
- 4.271 Netting is implicit in various transaction categories, the most outstanding example being "changes in inventories", which underlines the analytically significant aspect of overall capital formation rather than tracking daily additions and withdrawals. Similarly, with few exceptions, the financial account and other changes in assets accounts record increases in assets and in liabilities on a net basis, bringing out the final consequences of these types of flows at the end of the accounting period. All balancing items also involve netting. To avoid confusion, the SNA/BPM uses the words "gross" and "net" in a very restrictive sense. Apart from a few headings ("net worth", "net lending or net borrowing" and, in the case of external accounts, "net <u>IIIPinternational investment position</u>"), the SNA classifications employ the word "net" exclusively to indicate the value of variables after deduction of depreciation and depletion.

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**Commented [ED71]:** This paragraph still needs to be removed in view of the comments and suggestions from the global consultation.

**Commented [ED72]:** This subsection may come across as being slightly duplicative. However, after careful consideration, it has been decided to have slightly different sets of paragraphs in BPM7 and the 2025 SNA, respectively. See the comments to the relevant paragraphs.

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4.272 The external accounts follow gross recording in the current and capital accounts. For goods under merchanting, both purchases and resales of goods are shown on a gross basis, although both entries are shown under exports with a negative sign for purchases (this is elaborated further in paragraph 10.xx, *BPM7*). Gross recording is applicable in particular to income on reverse investment where the direct investment enterprise owns less than 10 percent of the voting power in the direct investor (reverse investment is described in paragraphs 6.xx-6.xx, *BPM7*). Acquisitions and disposals of non-produced, non-financial assets are recorded on a gross basis. Capital transfers receivables and payables are also recorded separately on a gross basis, because they are important in the context of cross-border analysis. At the same time, the gross recording allows the derivation of net flows, if needed, provided that a sufficient level of detail is available.

- 4.273 In the case of flows in financial assets and liabilities, the term "net" may have dual meanings (summing all debits and credits for a financial asset type or a liability type and netting of an asset against a liability). To avoid confusion, the following conventions are adopted:
  - In the case of flows, net recording always refers to aggregations for which all debit entries of a
    particular asset or a particular liability are netted against all credit entries in the same asset type or
    in the same liability type (e.g., acquisitions of foreign currency are netted against the sales of the
    foreign currency; bond issues are netted against redemption of bonds).
  - When net is used together with a category of financial instrument (net financial instrument), such as "net financial derivatives," netting of a financial asset against the same type of liability is understood.
  - Titles of some derived measures, such as "net lending/borrowing" and "net <u>IIPinternational</u> investment position", also use the term "net" (see paragraph 4.270 (SNA) / paragraph 3.270 (BPM).

4.274 In the case of flows of financial assets and liabilities, the terms "net changes in assets" and "net changes in liabilities" are used to reflect the nature of the financial flows. Financial flows reflect changes due to all credit and debit entries during an accounting period. That is, financial flows are recorded on a net basis separately for each financial asset and liability. The use of the terms "net changes in assets" and "net changes in liabilities" brings the financial account into line with the convention used in the accumulation accounts. These are general terms that apply to both the financial account and other changes in financial assets and liabilities, a positive change indicates an increase in stocks and a negative change indicates a decrease in stocks. The interpretation of increase or decrease under the credit or debit notion, however, depends on whether the increase or decrease refers to assets or liabilities (a debit for an asset is an increase while a debit for a liability is a decrease). While the debit and credit presentation is not emphasized for financial account transactions, it is important to recognize and maintain the accounting identities; for example, a credit is always conceptually matched with a corresponding debit, the latter relating to either an increase in an asset, or reduction in a liability.

- 4.275 In some cases, a clear distinction between assets and liabilities may not be feasible (such as for financial derivatives in the form of forward contracts, which could change between assets and liabilities). In such cases, it may not be possible to apply the net recording principle, which requires separate presentation of transactions in assets and transactions in liabilities. For such financial instruments, net transactions in assets and liabilities combined may have to be recorded.
- 4.276 The external accounts follow net recording in the financial account and other changes in financial assets and liabilities account. Net recording, as explained above, means aggregations or combinations that show net changes (increases less reductions) in a particular financial asset or a liability category on the same side of the balance sheet. Financial assets (changes in financial assets) should not be netted against liabilities (changes in liabilities), except in certain circumstances as explained in paragraph <u>3-1484.275</u>.
- 4.277 Transactions and other flows in financial assets and liabilities are recorded as net changes in financial assets and net changes in liabilities, respectively. The net recording principle should be applied at the lowest level of classification of financial instruments taking into account the functional, institutional sector, maturity, and currency classifications, as applicable. Generally, the net recording principle should be applied within a given standard component of assets or liabilities

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**Commented [ED77]:** Based on paragraph 3.115, *BPM6*. Not to be included in the 2025 SNA

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4.278 In general, net recording of flows in financial assets and liabilities is recommended in the external accounts from both the analytical and pragmatic perspectives. Net acquisition of external financial claims and net incurrence of external liabilities are generally of more analytical interest than the gross flows. Gross reporting of data may not be possible for different classes of units and for some financial instruments. Furthermore, transactions in some financial assets and liabilities often have to be derived from balance sheet data because gross transactions are not available. Nonetheless, gross flows may be a relevant factor in analysing aspects of the payments positions or financial markets (e.g., securities transactions) of economies, and such data can be used in supplementary presentations when appropriate. For example, for direct investment, equity increases and equity decreases may be of analytical interest and may be shown separately in supplementary presentations.

4.279 Similar to the recording of flows of financial assets and liabilities, stocks, or positions of the same type of a financial instrument held as both a financial asset and a liability should be recorded separately, so that assets are recorded under assets and liabilities are recorded under liabilities. For example, holding of short-term debt securities as assets is presented separately from the liability for short-term debt securities.

## Consolidation

- 4.280 Consolidation is a special kind of cancelling out of flows and stocks that should be distinguished from other kinds of netting. It involves the elimination of those transactions or debtor or creditor relationships that occur between two transactors belonging to the same institutional sector or subsector. Consolidation should not be seen as a sheer loss of information; it entails an elementary specification by the transaction partner. Consolidation may be most relevant for financial corporations and general government. There is more detail on this in chapters 30 and 37. For certain kinds of analysis, information on the transactions of these (sub)sectors with other sectors and the corresponding "external" financial position is more significant than overall gross figures. As a rule, however, the entries in the SNA/BPM are not consolidated. Because the external accounts reflect transactions involving residents and non-residents and external financial assets and liabilities, including other flows associated with them, consolidation is not relevant for external accounts of an individual economy
- 4.281 The rule of non-consolidation takes a special form regarding the transaction categories "output" and "intermediate consumption". These transactions are to be recorded throughout at the level of establishments. This implies specifically that the accounts for institutional sectors and for industries should not be consolidated in respect of output delivered between establishments belonging to the same institutional unit.
- 4.282 Accounts for a currency union, economic union, or other regional arrangement may be compiled by eliminating all transactions and asset-liability relationships that occur between member economies of the region. In other words, in the relevant accounts, a transaction of one economy is paired with the same transaction as recorded for another member economy and both transactions are eliminated. For example, if a unit in one economy owns a bond issued by a unit in another member economy, then the stocks of bonds held as assets and liabilities are reported excluding the matched positions between the units of the member economy in level exclude the interest payable by residents of the debtor economy to residents of the creditor economy in the region or currency union. Similarly, sales of goods and services between consolidated economies are also eliminated. (For further information, see Appendix 3, Regional Arrangements: Currency Unions, Economic Unions, and Other Regional Statements (BPM).)

# F. Symmetry of reporting

4.283 Symmetry of reporting by counterparties is important to ensure consistency, comparability, and analytical usefulness of national and external accounts. The quadruple-entry accounting system discussed in paragraphs 4.123 – 4.127 underlies symmetry of reporting. The internationally agreed guidelines for definitions, classifications, time of recording and valuation principles, and the quadruple-entry accounting system provide a basis for conceptual consistency of international reporting both parties or economies involved in a transaction or financial position. Correct application of these guidelines and principles is important for bilateral comparisons, global balances, and regional and global aggregates. While symmetry rules apply to

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all financial instruments, they do not fully apply to functional categories of financial positions and transactions, as used in external accounts. For example, transactions and stocks in reserve assets are reflected in the liabilities of counterparts in the rest of the world under other functional categories, particularly portfolio and other investment.

- 4.284 National and external accounts group the flow and stock data of individual units into sectoral and national aggregates. The accounts can also be prepared for a region and the world as a whole. Without applying strict consistency rules, it would be impossible to give proper interpretation to various aggregates. These requirements apply whether or not the data consolidate flows and stocks of the units they cover, and whether or not they show any subgroups of units within the overall total. However, consolidation is clearly impossible without consistency in the basic data, and the requirements of consistency are more obvious when disaggregation of sectors is used.
- 4.285 Micro-level data on the basis of which the national and external accounts are compiled do not necessarily meet the consistency requirements needed for (inter)national accounts. Differences in valuation, timing, and classification may occur in many cases. Inconsistency in valuation may often occur for barter transactions. Different valuation bases may have been used by creditors and debtors for some financial assets, such as non-performing loans. Timing differences may occur not only due to differences in timing zones and delays in check-clearing systems, but also because units' perceptions of the timing of changes in ownership and recognition of revenues and expenditures may vary.
- 4.286 Significant achievements have been made at the national and international levels to come to more uniform business accounting standards. Accordingly, disparities between individual micro accounts have tended to fall. Business accounting standards are geared toward individual accounts, however, and therefore do not necessarily ensure consistency across units. Current business accounting standards prescribe that loans be treated differently depending on whether they appear as a credit or a debit. This approach cannot be applied in a consistent horizontal double-entry bookkeeping system. Tax and supervisory regulations are a second source for harmonization of accounting practices. In so far as these rules differentiate between specific sections of the economy, however, they also may be a cause for discrepancies between micro accounts.

## Annex: Methods to value transactions and stocks

4.287 This annex starts with an overview of the various methods for valuing transactions, in order of preference, although not all methods are applicable for each and every type of transaction. Subsequently, the methods to value stocks of assets and liabilities are described. The latter does not concern the initial recognition, i.e., the time at which the assets enter the balance sheets, as the valuation of these flows is already covered under transactions.

## Methods for valuing transactions

Observed exchange values (or observed market prices)

4.288 Values based on the prices actually observed in the exchange of goods, services and assets, are generally considered as the most appropriate measure in line with the valuation principles for macroeconomic statistics. From a conceptual point of view, exceptions could be made for distorted transfer prices between affiliated enterprises and concessional pricing (see paragraphs 4.147 – 4.152), although in practice adjustments are not made, mainly for reasons of feasibility and (international) consistency, and to rely on the source data provided.

## Market-equivalent prices

- 4.289 In quite a number of cases, actual exchange values are not available. Market prices could then be approximated by using the prices of similar goods, services and assets. This valuation method is particularly relevant in the following areas:
  - · barter transactions;
  - consumption of goods produced for own final use;
  - housing services from owner-occupied dwellings; and
  - exceptional cases of own-account capital formation of assets, for which a full range of the assets are
    regularly traded on the market (e.g., dwellings, cloud services providers building their own servers,
    or other cases in which equipment is constructed by producers).
- 4.290 An important prerequisite for applying this valuation method is the homogeneity, or comparability, of the relevant goods, services and assets. Where homogeneity does not exist, it is also considered acceptable to apply, for example, hedonics to adjust for different characteristics in the goods and services under consideration, although these hedonic valuation methods may be rather complicated, requiring significant amounts of source data. Moreover, the goods, services and assets which are used to arrive at a market-equivalent price should be traded under the same market conditions as the goods, services and assets under consideration. For example, using data on rentals for dwellings, which are subsidised by government, is not considered appropriate for arriving at market-equivalent prices for owner-occupied housing services in a competitive market. Finally, the markets for the goods, services and assets which are used for the comparison should be well-established, and not too thin, which sometimes may be problematic for e.g., certain types of dwellings in the case of estimating owner-occupied housing services.

#### Indirect valuation

4.291 There are a few cases, in which the transactions have to be based on what is here referred to as an "indirect valuation" method. One example concerns the imputation of reinvested earnings. In this case, the valuation is based on the net saving of direct investment enterprises before "distribution" of the reinvested earnings. Instead of referring to this as an example of indirect valuation, one could also argue that the reinvested earnings are derived, although indirectly, from observed exchange values. Other examples of indirect valuation relate to the measurement of non-life insurance output, as the difference between premiums, including supplements, minus claims, or the derivation of implicit financial services on loans and deposits as

the difference between bank interest and SNA interest. (See chapter 7 for more details.)

#### Sum-of costs

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- A method, which is frequently applied in the system of national accounts, is the sum-of-costs method. According to this method, it is assumed that market prices, or exchange values, can be approximated by summing up the costs of production, as follows:
  - intermediate consumption;
  - remuneration of employees;
  - other taxes less subsidies on production;
  - rents payable on the use of non-produced non-financial assets;
  - · depreciation and depletion; and
  - return on capital used in production.

# 4.293 This method is applied in various circumstances, in particular in the following cases:

- non-market output of government, NPISHs and the central bank;
- own-account production of fixed assets; and
- although less frequently, other goods produced for own final use, for which it is not feasible to make an estimate on the basis of similar goods traded on the market.
- 4.294 Regarding renumeration of employee, also the labour input of the owner of the unincorporated enterprise and his/her family members may need to be estimated. As the remuneration for this labour input is not explicitly known, because of it being implicitly included in mixed income, an estimate of the relevant labour input could be based on wage rates paid for similar types of work.
- 4.295 Regarding the extent of capital services, i.e. depreciation, depletion and return to capital, all non-financial assets used in the production of the relevant goods and services should be included, thus not only fixed assets but also inventories and non-produced non-financial assets. Having said that, one may assume that natural resources such as mineral and energy resources produced on own account are typically not used in the relevant production processes. Furthermore, in the case of measuring the output of government services, by convention, due to significant issues regarding data availability, city parks and historical monuments, and undeveloped land, are to be excluded from the scope of assets to which a return to capital should be applied.
- 4.296 For the return to capital, it is recommended to use a rate of return from an opportunity costs perspective. Such a rate could be approximated by applying a mark-up for normal net operating surplus. A more prudent approach is to use a rate based on the interest rate paid for the borrowing of funds, which may differ across institutional sectors and/or industries, given differences in the perceived risks attached to borrowing funds to the relevant economic agents. The latter approach would be preferable for non-market producers, who do not aspire to make profits.
- 4.297 Beyond the sequence of economic integrated framework of national accounts, the sum-of-costs is also often used for valuing the output of unpaid household services for own final use. Here, the conceptually preferable option for valuation is to look at the market prices of similar goods and services, but it may not be that easy to find relevant information on the quantities of the services produced, and also to collect data on comparable services produced for the market, adequately adjusted for quality and productivity. For these reasons, in practice, the output of these services produced by households for own final use is valued using the sum-of-costs approach.
  - 4.298 Importantly, when applying the sum-of-costs method for unpaid household services, a value for the labour input, adequately adjusted for quality and productivity, has to be imputed. An issue is whether to estimate

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the labour input with replacement costs (i.e., the labour costs of similar occupations in the market) or with opportunity costs (i.e., the costs foregone when producing unpaid household services). The latter may be relevant in the case a household is unconstrained in its allocation of time between selling its labour services and other usages of time, and/or in the case one wants to arrive at a welfare-measure of consumption. For this ese reasons, the use of replacement costs is considered the most appropriate way of valuation for arriving at an approximation of the market price, consistent with the national accounts.

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## Short summary of methods for valuing transactions

4.299 Apart from the relatively exceptional case of indirect valuation, the preferred methods for valuing transactions can be summarised as follows:

- In the case of goods, services and assets, which are transacted on the market via monetary settlement, the values actually exchanged are the basis for valuation.
- In the case of goods, services and assets, which are transacted via barter type, and also the
  consumption of goods produced for own final use, usually prices can be derived from market
  transactions of similar goods, services and assets.
- In the case of unpaid household services produced for own final use, a distinction should be made between housing services from owner-occupied dwellings, which are included in the production boundary of the SNA versus other services which are not included in the production boundary:
  - For the former services, the preferred method is to use market-equivalent prices which can be derived from market transactions of similar services. However, as this often concerns relatively heterogeneous products and assets, adequate adjustments need to be made to account for this heterogeneity.
  - For the other unpaid household services, market-equivalent prices may also be used. However, as it may be hard to find relevant data on the quantities of services provided, the default option is to use the sum-of-costs method.
- In the case of own-account capital formation of assets, the default option is the application of the sum-of-costs method. However, when the assets are relatively homogeneous and regularly traded on the market (e.g., dwellings), preference is given to market-equivalent prices, adequately adjusted for heterogeneity.
- Finally, in the case of non-market output of government and NPISHs, output and final consumption should be valued by using the sum-of-costs method.

## Methods for valuing stocks of assets and liabilities

4.300 In discussing each of the valuation methodologies for the valuation of stocks of assets and liabilities, a distinction is made between non-financial assets and financial assets, as the relevance of the various methodologies can differ quite significantly for these two types of assets. Moreover, when it comes to the valuation of financial instruments, it should be noted that the consistency in valuing assets and liabilities is an important prerequisite in the system of national accounts.

#### Observed market prices

- 4.301 The most obvious way to arrive at current (market) prices for positions recorded on the balance sheet at a certain point in time is the use of prices observed in the market. Preferably, the relevant markets should be trading in considerable volumes, with prices listed at regular intervals. However, if traded from time to time, recent market transactions could also be used as an approximation of the current market price.
- 4.302 Unfortunately, this valuation method, which is preferable from a conceptual point of view, can only be applied in a limited number of cases, mainly relating to financial assets, first and foremost for securities

traded on a market, like the stock exchange, in which each asset traded is completely homogeneous, is often traded in considerable volume, and has its market price listed at regular intervals. It should also be noted that for debt securities, users often request supplementary information on the nominal value (see below) of the liabilities, in addition to the valuation at market prices. For example, in the case of government debt, the principal method of valuation is at nominal value, as this reflects, in addition to accrued interest, the actual repayments to be made in the future.

4.303 As already noted, this valuation method is conceptually sound, provided that the relevant assets are (relatively) homogenous, and regularly traded in active markets with regular price quotations. If the latter conditions are not met, other valuation methods may need to be applied.

#### Market-equivalent prices

- 4.304 The alternative for directly observed prices is to approximate current prices by using observable market prices of similar assets. This valuation method could also include expert estimates, which are typically based on information from the market as well.
- 4.305 Valuing assets at market-equivalent prices can be applied for less homogenous non-financial assets which are regularly traded on the market, such as dwellings and certain types of generic (second-hand) transport equipment. Of importance, especially in the case of dwellings, is the need to account for the various characteristics which are relevant for the market price setting. Moreover, it is important to realise that the market prices of dwellings and other real estate are a combination of the structure and the underlying land, which is less suitable for national accounts, in which these two elements are separated. Notwithstanding this separate recording, market prices could be used as a benchmark for arriving at appropriate estimates for the sum of the two elements. For more details, see the <u>Eurostat-OECD Compilation Guide on Land Estimations</u>.
- 4.306 Expert estimates made for insurance purposes, for tax purposes, etc. may be the only viable option for valuing valuables, unless the valuable has been acquired relatively recently. In addition, expert estimates could also provide a source of information for valuing real estate in the absence of appropriate markets.
- 4.307 This valuation method may become less appropriate in the case of second-hand "special purpose" fixed assets, and/or in the case the markets are relatively thin. A combination of these two elements may lead to a market price close to scrap value, not representing the value of such an asset used in an enterprise as a going concern. Valuation according to the written-down replacement costs (see below) is then considered more appropriate.

#### Valuation based on past expenses

- 4.308 If market(-equivalent) prices are not available, the next best method to arrive at an appropriate value for assets is a valuation based on past expenses. Here, one can distinguish two basic methods, depending on whether or not the assets in question are subject to depreciation: (i) historical acquisition price; and (ii) written-down replacement costs. The costs in the case of the latter method do not only concern direct expenditures on purchases of capital goods, but may also relate to expenditures made for the own-account production of fixed assets, typically valued using the sum-of-costs method.
- 4.309 A valuation of assets based on past expenses can be applied to a considerable number of assets, but in practice it is most often used in the case of non-financial assets. The use of the first method could be used for e.g., the valuation of valuables, but it may also be a valid alternative for some financial instruments. However, in case the acquisition has taken place further in the past, the acquisition price may need to be adjusted for price changes, certainly in cases where significant price changes have been observed in the period since the acquisition.
- 4.310 The second method is most commonly used for valuing fixed assets, through the application of the perpetual inventory method. The method can be considered superior to market(-equivalent) prices, if the market prices for second-hand assets cannot be considered as representative for the future capital services, which can be derived from the continued use of the asset in production. A problem in the application of this method relates to the information needed for the application of this estimation method. Most importantly, apart from long

time series on past expenditures on the purchases, including price developments, of the assets in question, information is needed on the service life; the age-price or the age-efficiency profile; and discard patterns. More detailed guidance is provided in the <u>OECD Manual on Measuring Capital (2009, 2<sup>nd</sup> edition)</u>

#### Nominal value

- 4.311 Valuation at nominal values is typically applied to financial instruments which are not traded via markets, such as deposits, loans and other accounts receivable/payable. Nominal value at any moment in time reflects the value of the instrument at creation and subsequent economic flows, such as transactions, exchange rate and holding gains and losses other valuation changes other than market price changes, and other volume changes. It typically comprises the outstanding principal amount including any accrued interest.
- 4.312 Nominal value should be distinguished from such notions as fair value, amortized value, face value, book value, and historic cost.
  - a. Fair value is a market-equivalent value. It is defined as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction. It thus represents an estimate of what could be obtained if the creditor had sold the financial claim.
  - b. Amortized value reflects the amount at which the financial asset or liability was measured at initial recognition minus the principal repayments. Excess payments over the scheduled principal repayments reduce the amortized value whereas payments that are less than the scheduled principal repayments or scheduled interest increase the amortized value. On each scheduled date, amortized value is the same as nominal value, but it may differ from the nominal value on other dates due to the accrued interest being included in the nominal value.
  - c. Face value is the undiscounted amount of principal to be paid to the holder at maturity. It is also known as "par value" or simply "par." Before maturity, the market value of a bond may be greater or less than face value, depending on the interest rate payable and the perceived risk of default. As bonds approach maturity, market value approaches face value. For example, if interest rates are higher than the bond's coupon rate, then the bond is sold at a premium (above par).
  - d. Book value in business accounts generally refers to the value recorded in the enterprise's records. Book values may have different meanings because their values are influenced by timing of acquisition, company takeovers, frequency of revaluations, and tax and other regulations.
  - e. Historic cost, in its strict sense, reflects the cost at the time of acquisition, but sometimes it may also
    reflect occasional revaluations.
- 4.313 The use of nominal value is partly influenced by pragmatic concerns about data availability and the need to maintain symmetry between debtors and creditors. In addition, because loans are not intended for negotiability, without an active market, estimating a market price can be somewhat subjective. Nominal value is also useful because it shows actual legal liability and the starting point of creditor recovery behaviour. In some instances, loans also may be traded, often at discount, or a fair value may exist or would be possible to estimate. It is recognised that nominal value provides an incomplete view of the financial position, particularly when the loans are non-performing. Therefore, it is recommended to include, as a supplementary item, information on the nominal value of non-performing loans. Loans that have become negotiable de facto should be reclassified under debt securities.

# Indirect valuation

4.314 Financial assets and related liabilities can also be approximated with a method which could be referred to as "indirect valuation". This method is often applied for unlisted equity. In this case, the intrinsic value of a corporation is considered a valid starting point for the valuation of the equity invested, More guidance on the valuation of unlisted equity, including alternative methods, is provided in chapter 14. Net present value of future returns

- 4.315 In cases that the above valuation methods cannot be applied, the (net) present value of future benefits is considered as a viable alternative. This method is typically used in the following areas:
  - defined benefit pension entitlements;
  - unlisted equity in the case other methods are considered less appropriate; and
  - natural resources.
- 4.316 The details of actuarial methods for estimating pension entitlements are not further elaborated here. Extensive guidance is available elsewhere, see e.g., <u>Technical Compilation Guide for Pension Data in National Accounts</u>. For estimating the value of unlisted equity using the present value of (expectations about) future profits, reference is made again to chapter 14.
- 4.317 For natural resources, and possibly other non-financial assets, the method comes down to estimating the discounted value of future benefits derived from these assets, which often need to be approximated by the so-called "residual value method", calculated using the following formula:

output at basic prices (related to the extracted resources)

• less

- · intermediate consumption
- remuneration of employees
- other taxes less subsidies on production

equals

· gross operating surplus

plus

specific taxes less subsidies on extraction

equals

· gross operating surplus for the derivation of resource rent

less

- depreciation
- return to capital used in production

equals

- resource rent (= depletion plus return to natural resource)
- 4.318 In the case of non-financial assets, using the method of the present value of future benefits can only be used if there is a direct link between the future benefits and the asset in question, in the sense that one can assume that there are no other assets which may have generated the residual income. Furthermore, it requires forecasting a future path of income streams, which may be quite challenging. For this purpose, assumptions need to be made on the asset life; the future path of extractions and, in the case of renewable resources, the regeneration potential of the asset in question; and the expected flows of income associated with the extractions. The question of which discount rate is appropriate in which circumstances is also an important question to answer. Because of these issues, the method is often considered as a last resort option, to be applied only for certain classes of assets, such as natural resources.
- 4.319 Another issue, alluded to in section E of this chapter, concerns the way in which the ownership of the natural resources is accounted for. Often government, usually the legal owner of mineral and energy resources,

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provides extraction rights to private corporations, for a series of annual payments of royalties, either or not paid in advance for a certain period of time. In doing so, the government may not appropriate the full resource rent that can be derived from the relevant resource by the extractor. Moreover, as these rights are often not transferable, so without a price being established in a market, there is no observable value of the rights. However, the private corporation as a going concern still derives value from having the rights to extract, in the form of part of the resource rents being appropriated. It is therefore recommended to apply the split-asset approach, according to which the assets in question are recorded in the accounts of the legal owner and the extractor, in proportion to the share of the resource rent appropriated.

- 4.320 More detailed guidance on the recording and compilation of estimates for natural resources is provided in the System of Environmental Economic Accounting (SEEA) 2012 Central Framework-2012, as well as the forthcoming compilation guidance developed by the OECD Expert Group on Natural Capital.
- 4.321 The method of the (net) present value of future benefits could be applied to other types of assets as well. However, in these cases, the written-down replacement costs method is usually to be preferred. This also holds for assets produced in-house, the past investment expenditures of which are often on the sum-of-costs method.
- 4.322 Going beyond the sequence of economic accounts, the (net) present value method could also be applied for estimating the value of human capital. Again the choice is between this method and the written-down acquisition costs. Both methods have their advantages and disadvantages. Regarding the latter method, the relevant expenditures may be relatively easy to collect. However, service lives and depreciation patterns will have to rely on a set of assumptions. Another complication is the measurement of unpaid labour input (e.g., studying at home), which would need to rely on the income foregone. For the application of the (net) present value method, one needs to agree on which income to use, in addition the more general complexities of forecasting the future incomes, in this case over quite lengthy periods of time. In the end, no firm recommendation is made on the preferred method, before having gained more practical experience on the application of both methods. See chapter 34 for a more detailed discussion of human capital.

Short summary of methods for valuing stocks of assets and liabilities

- 4.323 In summary, the following can be noted in relation to the valuation of assets and liabilities, thereby distinguishing between financial assets and liabilities versus non-financial assets.
- 4.324 In the case of financial assets and corresponding liabilities, market(-equivalent) prices are the preferable option for valuation. However, its application is relatively limited, as most financial instruments are non-negotiable and not traded on active markets with regular price quotations, the obvious exception relating to tradable securities. For non-tradeblenegotiable financial instruments, one could use market prices from recent market transactions. However, as this methodology cannot generally be applied, a valuation at nominal values is considered the most viable option. A special case is unlisted equity, for which various methodologies can be considered; see chapter 14 (SNA) / chapter 7 (BPM). Another exception concerns the estimation of defined benefit pension entitlements, which are based on actuarial type of calculations using the net present value of future benefits.
- 4.325 For non-financial assets, in the absence of market(-equivalent) prices, two valuation methods are applied most frequently, either the written-down replacement cost method or the (net) present value of future earnings. The former method is typically applied to fixed assets used in the production of goods and services, while the latter method is often the only alternative for arriving at an approximation of the value of natural resources. In addition, expert estimates may be the only viable option for estimating the value of valuables.

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# Chapter 5 (2025 SNA) / Chapter 4 (BPM7): Residence, iInstitutional units and sectors, economic territory and residence

## (Update to 2008 SNA Chapter 4: Institutional units and sectors / BPM6 Chapter 4: Economic Territory, Units, Institutional Sectors, and Residence)<sup>1</sup>

# A. Overview

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5.1 This chapter is concerned with the definition and description of institutional units and the way in which they are grouped to make up the sectors and subsectors in macroeconomic statistics. This section discusses the key concepts of an institutional unit, its residence and the economic territory. This is followed by the main principles for allocatingsectoring institutional units to institutional sectors. In addition, attention is paid to the concept of population. Section B provides further guidance on corporations, while sectors, including the subsectors distinguished, as follows: non-financial corporations (D), financial corporations (E), general government (F), households (G) and non-profit institutions serving households (H). The chapter ends with some details about the rest of the world, i.e., the accounts for transactions and positions between residents and non-residents, while section J contains more detailed guidance related to the concepts of economic territory and residence.

## 1. Institutional units

5.2 An institutional unit is an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities. The main attributes of institutional units may be described as follows:

- An institutional unit is entitled to own goods or assets in its own right; it is therefore able to
  exchange the ownership of goods or assets in transactions with other institutional units;
- b. It is able to take economic decisions and engage in economic activities for which it is itself held to be directly responsible and accountable at law;
- It is <u>typically</u> able to incur liabilities on its own behalf, to take on other obligations or future commitments and to enter into contracts;
- d. Either a complete set of accounts, including a balance sheet of assets and liabilities, exists for the unit, or it would be possible and meaningful, from an economic viewpoint, to compile a complete set of accounts if they were to be required.
- 5.3 There are two main types of units in the real world that may qualify as institutional units, namely natural persons or groups of natural persons in the form of households, and legal or social entities.
- 5.4 For the purpose of macroeconomic statistics, a household consists of a single natural person having a separate living accommodation, or a group of natural persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food. As well as<u>In addition to</u> individual households, there are units described as institutional households that comprise groups of natural persons staying in hospitals, retirement homes, convents, prisons, etc. for long periods of time.

<sup>&</sup>lt;sup>1</sup> The chapter is drafted as a joint SNA/BPM chapter following the structure of 2008 SNA Chapter 4. After global consultation and approval by the AEG/BOPCOM, only those issues that are relevant from the external sector statistics perspective will be included in BPM7; likewise, only those issues that are relevant to national accounts will be included in the 2025 SNA.

5.5 The individual members of multiperson households are not treated as separate institutional units. Many assets are owned, or liabilities incurred, jointly by two or more members of the same household while some or all of the income received by individual members of the same household may be pooled for the benefit of all members. Moreover, many expenditure decisions, especially those relating to the consumption of food, or housing, may be made collectively for the household as a whole. It may be impossible, therefore, to draw up meaningful balance sheets or other accounts for members of the household on an individual basis. For these reasons, the household as a whole rather than the individual persons in it must be treated as the institutional unit. Also, members of institutional households are not treated as separate institutional units, if they have little or no autonomy of action or decision in economic matters.

- 5.6 The second type of institutional unit is a legal or social entity that engages in economic activities and transactions in its own right, such as a corporation, non-profit institution (NPI) or government unit. A legal or social entity is one whose existence is recognized by law or society independently of the natural-persons, or other entities, that may own or control it. Such units are responsible and accountable for the economic decisions or actions they take, although their autonomy may be constrained to some extent by other institutional units; for example, legally constituted corporations are ultimately controlled by their shareholders. Some unincorporated enterprises belonging to households or government units may behave in much the same way as legally constituted\_corporations, and such <u>entitiesenterprises</u> are treated as quasi-corporations when they have complete sets of accounts.
- 5.7 In the legal sense, corporations may be described by different names: corporations, incorporated enterprises, public limited companies, public corporations, private companies, joint-stock companies, limited liability companies, limited liability partnerships, and so on. Conversely, some legal entities that are non-profit institutions may sometimes be described as "corporations". The status of an institutional unit cannot always be inferred from its name, and it is necessary to examine its objectives and functions. In macroeconomic statistics, the term corporation covers legally constituted corporations and also cooperatives, limited liability partnerships, notional resident units and quasi-corporations. The description of these various institutional units is given in section B.
- 5.8 Non-profit institutions (NPIs) are legal or social entities created for the purpose of producing goods and services but whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them. In practice, their productive activities are bound to generate either surpluses or deficits but any surpluses they happen to make cannot be appropriated by other institutional units. The articles of association by which they are established are drawn up in such a way that the institutional units that control or manage them are not entitled to a share in any profits or other income they generate. For this reason, they are frequently exempted from various kinds of taxes. A description of the treatment of NPIs within macroeconomic statistics is given in section C.
- 5.9 Government units are unique kinds of legal entities established by political processes that have legislative, judicial or executive authority over other institutional units within a given area. Viewed as institutional units, the principal functions of government are to assume responsibility for the provision of goods and services to the community or to individual households and to finance their provision out of taxation or other incomes; to redistribute income and wealth by means of transfers; and to engage in non-market production.

#### Box x.x Establishments and enterprises

#### Establishments

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An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added. The breaking up of enterprises into one or more establishments is useful because some enterprises are large and complex, with different kinds of economic activity undertaken in different locations. The establishment is particularly useful as a unit for production statistics. Because the establishments of a multi establishment enterprise are part of the same legal entity, financial transactions and positions cannot always be attributed to a particular location or activity, so the use of the institutional unit concept is appropriate for statistics covering financial transactions and positions, such as sector's financial balance sheets, the balance of payments and IIP. **Commented [ED1]:** This box is based on paragraphs 4.53-4.56, BPM6 and will only be included in BPM7, but not in the 2025 SNA, as the SNA has a complete chapter on enterprises, establishments and industries. 1

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# Enterprises An enterprise is defined as an institutional unit engaged in production. Investment funds and other corporations or trusts that hold assets and liabilities on behalf of groups of owners are also enterprises, even if they are engaged in little or no production. (As discussed in paragraphs 10.124–10.125, institutional units that holds see on held of their owners are providers of financial services to their owners.) An enterprise may be a corporation-(including a quasi-corporation), a nonprofit institution or an unincorporated enterprise (including a quasi-corporation). Corporate enterprises and nonprofit institutions are complete institutional units. An unincorporated enterprise, however, refers to a part of an institutional unit—a household or government unit—only in its capacity as a producer of goods and services. Local and global enterprise groups Groups of enterprises are sometimes identified in defining and classifying direct investment. Although enterprises are the basic unit of economic statistics, a single owner or group of owners may have control of more than one enterprise, so they may act in a concerted way and the transactions between the enterprises may not be driven by the same concerns as "arm's-length" transactions, that is, those with unrelated enterprises. Enterprise groups may be either global or local. A global enterprise group refers the multinational enterprise (<u>MNE</u>) and the set of legal entities—regardless of their economies of residence—that are under the control of the same ultimate controlling parent (<u>MNE</u> is the ultimate controlling parent—see paragraph 5.38); whereas the local (or territory-specific) enterprise group refers to an investor and the legal entities under that investor that are resident in the reporting economy. Business accounting may cover groups of related corporate entities (consolidated accounts) including entities that are resident in different economies. However, entities in different economies are not aggregated for macroeconomic statistics that have a focus on an economy. The concepts of global enterprise groups and local enterprise groups are used in the OECD Benchmark Definition of Foreign Direct Investment. The global enterprise group is also called a multinational enterprise group. Local enterprise groups may be used for compiling and presenting direct investment statistics. For example, if direct investment is initially channelled to a holding company and then on to a manufacturing subsidiary, then it may shed light to classify the direct investment in manufacturing rather than in a holding company operation, which is just the initial investment. The implications of combining entities in different institutional sectors need to be carefully considered. 2. Population Commented [ED2]: This subsection will not be included in BPM7 In the context of national accounts, data on population are important for deriving per capita figures for aggregates such as GDP and NDP. They also constitute the main elements for defining households. *The* 5.10 population of a country is most simply defined as all those natural persons who are resident in the economic territory at a given point in time. In this definition, the SNA and BPM concept of residence is used, that is natural-persons are resident in the country where they have the strongest links thereby establishing a centre of predominant economic interest. Generally, the criterion would be based on their

of a country is provided by sample-based surveys and by drawing on information on births and deaths and on net migration.

intended country of residence for one year or more. In most cases, the concept of residence is straightforward, being based on the dwelling a person occupies on a permanent basis, although there are some borderline

Generally, natural persons who are resident in a country for one year or more, regardless of their citizenship, should be included in the population measure. An exception is foreign diplomatic personnel and defence personnel, together with their families, who should be included as part of the population of their home country. The "one-year rule" means that usual residents who are living abroad for less than one year are included in the population but foreign visitors (for example, holidaymakers) who are in the country for less than one year are excluded from the measured population. Further elaboration on the application on the

Annual population is typically estimated from less frequent population censuses. Censuses usually count the

number of people present on a specified night or the number of people who usually live in a dwelling, even if they are not present when the census is enumerated. However, a census is often conducted only every five or ten years and sometimes less frequently. In years between censuses, updated information on the population

residence criterion in special cases is given in section Jfurther below

# 3. Residence and economic territory

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- 5.13 The residence of each institutional unit is the economic territory with which it has the strongest connection, in other words, its centre of predominant economic interest. The concept of economic territory is consistent across macroeconomic statistics. Some key features are as follows. In its broadest sense, an economic territory can be any geographic area or jurisdiction for which statistics are required. The connection of entities to a particular economic territory is determined from aspects such as physical presence and being subject to the jurisdiction of the government of the territory. The most commonly used concept of economic territory may be larger or smaller than this, as in a currency or economic union or a part of a country or the word.
- 5.14 The economic territory includes the land area, airspace, territorial waters, including jurisdiction over fishing rights and rights to fuels or minerals. In a maritime territory, the economic territory includes islands that belong to the territory. The economic territory also includes territorial enclaves in the rest of the world. These are clearly demarcated land areas (such as embassies, consulates, military bases, scientific stations, information or immigration offices, aid agencies, central bank representative offices with diplomatic immunity, etc.) located in other territories and used by governments that own or rent them for diplomatic, military, scientific, or other purposes with the formal agreement of governments of the territories where the land areas are physically located. More detailed guidance on economic territory is provided in section J.
- 5.15 Economic territory has the dimensions of physical location as well as legal jurisdiction. The concepts of economic territory and residence are designed to ensure that each institutional unit is a resident of a single economic territory. The use of an economic territory as the scope of economic statistics means that each member of a group of affiliated enterprises is resident in the economy in which it is located, rather than being attributed to the economy of location of the head office.
- 5.16 In general, an institutional unit is resident in one and only one economic territory determined by the unit's centre of predominant economic interest. Exceptions may be made for multiterritory enterprises that operate a seamless operation over more than one economic territory. Although the enterprise has substantial activity in more than one economic territory, it cannot be broken up into separate branches or a parent and branch(es) because it is run as an indivisible operation with no separate accounts or decisions. Such enterprises are typically involved in cross-border activities and include shipping lines, airlines, hydroelectric schemes on border rivers, pipelines, bridges, tunnels and undersea cables. If it is not possible to identify a parent or separate branches, it is necessary to prorate the total operations of the enterprise into the individual economic territories. For more information on these special cases, reference is made to BPM7refer to paragraphs 5.72-5.
- 5.17 An institutional unit has a centre of predominant economic interest in an economic territory when there exists, within the economic territory, some location, dwelling, place of production, or other premises on which or from which the unit engages and intends to continue engaging, either indefinitely or over a finite but long period of time, in economic activities and transactions on a significant scale. The location need not be fixed so long as it remains within the economic territory. The Aactual or intended location for one year or more is used as an operational definition; while the choice of one year as a specific period is somewhat arbitrary, it is adopted to avoid uncertainty and facilitate international consistency.
- 5.18 The concept of residence is consistent across macroeconomic statistics. Some key consequences follow:
  - a. The residence of individual natural persons is determined by that of the household of which they form part and not by their place of work. All members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise spend periods of time abroad. If they work and reside abroad so long (usually taken to be one year or more) that they acquire a centre of economic interest abroad, they cease to be members of their original households;
  - b. Unincorporated enterprises that are not quasi-corporations are not separate institutional units from their owners and, therefore, have the same residence as their owners;
  - c. Corporations and NPIs may normally be expected to have a centre of economic interest in the economic territory in which they are legally constituted and registered. Corporations may be resident in economic territories different from their shareholders and subsidiary corporations may

be resident in economic territories different from their parent corporations. When a corporation, or unincorporated enterprise, maintains a branch, office or production site in another economic territory in order to engage in production over a long period of time (usually taken to be one year or more) but without creating a subsidiary corporation for the purpose, the branch, office or site is considered to be a quasi-corporation (that is, a separate institutional unit) resident in the economic territory in which it is located;

- d. Owners of land and other natural resources, buildings and immovable structures in the economic territory of a country, or units holding long leases on either, are deemed always to have a centre of economic interest in that country, even if they do not engage in other economic activities or transactions in the country. All land and other natural resources, buildings and immovable structures are therefore owned by residents. If the legal owner is actually non-resident, an artificial unit, called a notional resident unit, is created for statistical purposes (see paragraphs 5.65-5.71);
- Extraction of subsoil resources and exploitation of licenses can only be undertaken by resident
  institutional units. An enterprise that will undertake extraction is deemed to become resident when
  the requisite licences or leases are issued, if not before (such as in the case of exploration licenses);
- f. For entities such as many special purpose units/vehicles, that have few if any attributes of location, the location is determined by their place of incorporation (see paragraphs 5.86 and 5.87).

Further elaboration of the concept of residence for a number of borderline cases is given in section J.

## 4. Sectoring and economic behaviour

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- 5.19 The institutional sectors of the SNA/BPM group together similar kinds of institutional units. Corporations, NPIs, government units and households are intrinsically different from each other in that their economic objectives, functions and behaviour are different.
- 5.20 Institutional units are allocated to sector according to the nature of the economic activity they undertake. The three basic economic activities recorded in the SNA are production of goods and services, consumption to satisfy human wants or needs and accumulation of various forms of capital. Corporations, with the exception of the central bank, undertake either production or accumulation (or both) but do not undertake (final) consumption. Government as well as the central bank undertake production (but mainly of a different type from corporations), accumulation and final consumption on behalf of the population. All households undertake consumption on their own behalf and may also engage in production and accumulation. NPIs are diverse in nature. Some behave like corporations, some are effectively part of government and some undertake activities similar to government but independently of it.
- 5.21 Fundamental to the distinction between corporations and government is the basis on which production is undertaken. Corporations, again with the exception of the central bank, produce for the market and aim to sell their products at economically significant prices. Prices are said to be economically significant if they have a significant effect on the amount that producers are willing to supply and the amounts purchasers wish to buy. These prices normally result when the producer has an incentive to adjust supply either with the goal of making a profit in the long run (or at a minimum, covering capital and other costs) and consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged. There is more extensive discussion one the definition of economically significant prices and the meaning of market and non-market production in chapters 7 and 30.
- 5.22 Corporations are divided between those mainly providing financial services and those mainly providing goods and other services. The two groups are known as financial corporations and non-financial corporations respectively. The distinction is made because of the special role that financial corporations play in the economy.
- 5.23 The economic objectives, functions and behaviour of government units are quite distinct. They organize and finance the provision of goods and services, to individual households and the community at large and

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therefore incur expenditures on final consumption. They may produce most of these goods and services themselves but the products are usually either provided free or at prices determined by considerations other than purely market forces. Although classified as a financial corporation, the same holds for the central bank. Government units are also concerned with distribution and redistribution of income and wealth through taxation and other transfers. Government units include social security funds.

- 5.24 The economic objectives, functions and behaviour of households are different again. Although primarily consumer units, they can also engage in production. Often this production activity is relatively small scale and includes informal and subsistence activities. When the production units of households are not legal entities (and cannot be treated as such)<sub>a</sub> they are described as unincorporated enterprises. They remain part of the same institutional unit as the household to which they belong.
- 5.25 NPIs are institutional units created for the purpose of producing or distributing goods or services but not for the purpose of generating any income or profit for the units that control or finance them. Nevertheless, some NPIs deliver goods and services to customers at economically significant prices and, when they do, these NPIs are treated in the same way as corporations in macroeconomic statistics. Other NPIs that produce goods and services but do not sell them at economically significant prices are either government units, if controlled by government, or they are treated as a special group of units called non-profit institutions serving households (NPISHs). The latter units are in effect non-governmental social institutions.
- 5.26 The digitalization of economic activities (e.g., financial/non-financial services) has a significant impact on the way in which these activities are performed. Apart from the emergence of new products, such as the services of digital intermediation platforms, cloud computing, etc., this phenomenon does not affect the classification of economic activities into institutional (subsectors and industries. Relevant units should continue to be classified in line with their economic activities, functions and behaviour. The same holds for the classification of units involved in economic activities arising from technological innovations in the financial corporations sector, often referred to as Fintech. Chapter 22 SNA/Chapter 16 BPM contains a more extensive discussion on the impact of digitalization for the measurement of the economy.

# 5. The total economy

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5.27 The total economy is defined as the entire set of resident institutional units. The resident institutional units that make up the total economy are grouped into five mutually exclusive institutional sectors. Sectors are groups of institutional units and the whole of each institutional unit must be classified to one or other sector of the SNA. The full sequence of economic accounts of the SNA may be constructed for a single institutional unit or a group of units. The attributes of an institutional unit described in paragraph 5.2 explain why it is not possible to compile a full set of accounts for only part of a unit. However, it is possible, useful and common practice to compile some accounts for sub-divisions of corporations, discriminating on the basis of the type of production the parts undertake. This is the subject of chapter 6. For the present chapter attention focuses on the allocation of complete units to one sector or another.



#### Figure 5.1 (2025 SNA)/Figure 4.1 (BPM7): Illustrative allocation of units to institutional sectors (= Figure 4 from Guidance Note G.2, also reflecting changes in the treatment of the central bank)

# 6. An overview of institutional sectors

- 5.28 All resident institutional units are allocated to one and only one of the following five institutional sectors:
  - The non-financial corporations sector;
  - The financial corporations sector;
  - The general government sector;
  - The non-profit institutions serving households sector;
  - The households sector.
- 5.29 The conceptual basis for the allocation of a unit to the appropriate sector can be seen in the top half of figure 5.1 (i.e., above the horizontal dotted line). The boxes for the sectors of the total economy, plus the box for the rest of the world, appear with double borders. Once non-resident units and households are set aside, only resident legal and social entities remain. Three questions determine the sectoral allocation of all such units. The first is whether the unit is a market or non-market producer. This depends on whether the majority of the unit's production is offered at economically significant prices or not. Due to its important role in the financial system, an exception to this general rule is made for the central bank. Although predominantly producing non-market services, the central bank is grouped together with market producers of financial services.
- 5.30 The second question determining sectoral allocation applies to non-market units other than the central bank, all of which are allocated either to general government or to the NPISH sector. The determining factor is whether the unit is part of, or controlled by, government. The criteria to establish control are discussed in section C below.
- 5.31 The third question determining sectoral allocation applies to market units, and also the central bank, all of which, including market NPIs, are allocated to either the non-financial corporations sector or the financial corporations sector. In the context of sectors as elsewhere in macroeconomic statistics, the term "corporation" is used to encompass all market producers, including cooperatives, limited liability partnerships, notional resident units and quasi-corporations as well as legally constituted corporations.
- 5.32 The non-financial corporations sector includes non-profit institutions (NPIs) engaged in the market production of goods and non-financial services: for example, hospitals, schools or colleges that charge fees that enable them to recover their current production costs, or trade associations financed by subscriptions from non-financial corporate or unincorporated enterprises whose role is to promote and serve the interests of those enterprises. The non-financial corporations sector is described further in section D.
- 5.33 The financial corporations sector includes the central bank and all resident corporations whose principal activity is providing financial services including financial intermediation, insurance and pension fund services, and units that provide activities that facilitate financial intermediation. In addition, the sector includes NPIs engaged in market production of a financial nature such as those financed by subscriptions from financial enterprises whose role is to promote and serve the interests of those enterprises. The financial corporations sector is described further in section E.
- 5.34 The general government sector consists mainly of central, state and local government units together with social security funds imposed and controlled by those units. In addition, it includes all non-market producers that are controlled by government units or social security funds.
- 5.35 The non-profit institutions serving households sector consists of all resident NPIs, except those controlled by government, that provide non-market goods or services to households or to the community at large.
- 5.36 The households sector consists of all resident households. These include institutional households made up of persons staying in hospitals, retirement homes, convents, prisons, etc. for long periods of time. It is noted that the institutions where these persons are staying (e.g., hospitals, retirements homes, prisons) generally constitute separate institutional units, different from the institutional households. Furthermore, as already noted, an unincorporated enterprise owned by a household is treated as an integral part of the latter and not as a separate institutional unit unless the accounts are sufficiently detailed to treat the activity as that of a quasi-corporation.

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# 7. Subsectors

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5.37 Each of the five institutional sectors listed above may be divided into subsectors. No single method of subsectoring may be optimal for all purposes or all countries, so that alternative methods of subsectoring are recommended for certain sectors. Dividing the total economy into sectors enhances the usefulness of the accounts for purposes of economic analysis by grouping together institutional units with similar objectives and types of behaviour. Sectors and subsectors are also needed in order to be able to target or monitor particular groups of institutional units for policy purposes. For example, the household sector has to be divided into subsectors in order to be able to showobserve how different sections of the community are affected by, or benefit from, the process of economic development or government economic and social policy measures. Similarly, it may be important to treat corporations subject to control by non-residents as subsectors of the financial and non-financial corporate sectors not only because they are liable to behave differently from domestically controlled corporations but because policymakers may wish to be able to identify and observe those parts of the economy that are subject to influence from abroad. It would also enhance the possibilities of analysing the impact of foreign-controlled corporations on the generation and distribution of income, and capital formation. The division of sectors into subsectors depends upon the type of analysis to be undertaken, the needs of policymakers, the availability of data and the economic circumstances and institutional arrangements within a country.

#### Breakdowns of non-financial and financial corporations based on control

5.38 One common subsectoring, as shown in the bottom half of figure 5.1 (i.e., below the horizontal dotted line), is to identify those non-financial corporations and financial corporations that are controlled domestically and those that are foreign controlled (for the definition of control, see paragraphs 5.112 – 126 below). Domestically controlled corporations are further split into public corporations (those controlled by government) and others, which are known as national private corporations. In addition, "of which" items are included for domestically controlled public and private corporations that are part of a domestic multinational enterprise (<u>MNE</u>), i.e., those corporations whose ultimate controlling parent is resident in the same economy. An MNE is a legal entity that has at least one non-resident affiliate or branch, and exercises control over its affiliate(s) or branch(es) either directly—by owning over 50 percent of the voting power in the entity—or by indirect transmission of control. The MNE is the ultimate controlling parent—the direct investor at the top of the control chain. The MNE group consists of the MNE and the set of entities—regardless of their economies of residence—that are under the control of the same ultimate controlling parent (see section C, chapter 23, 2025 SNA/chapter 15, BPM7 for additional details on MNEs). For countries where the presence of special purpose entities (SPEs; see paragraphs 5.86 – 5.87 below) is significant, a separate identification of SPEs, as an "of which" item, is recommended as supplementary information.

#### Breakdowns of households

5.39 Distributional information on household income, consumption, saving and wealth is considered highly relevant to the analysis of well-being. Therefore, it is recommended to have, as a standard, additional breakdowns of the households' sector are recommended as a standard. As a minimum, compilers should aim to provide breakdowns according to income and wealth deciles, and, if possible, also for the top 5 per cent and the top 1 per cent. Alternative breakdowns, for example by main source of income, household type, housing status and by age of the reference person are also recommended, as supplementary items. Further details are provided in paragraphs 5.221 – 231 as well as chapter 32.

#### Non-profit institutions

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As described above, the SNA assigns NPIs to different sectors according to whether they produce for the market or not, regardless of motivation, status of employees or the activity they are engaged in. However, there is increasing interest in considering the full set of NPIs as evidence of "civil society" so it is recommended that NPIs within the corporate and government sectors be identified in distinct subsectors so that supplementary tables summarizing all NPI activities can be derived in a straightforward manner as and

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Tab 6 Chapter 5: Institutional units and sectors, economic territory and residence

when required.

# Other subsectoring

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The question of subsectoring is included in the more extensive consideration of each institutional sector in following sections. Particular subsectors are suggested for general government, non-financial corporations, financial corporations and households. An overview of the standard breakdowns in the system of national accounts is given in table 5.1 (2025 SNA)/Table 4.1 (BPM7).

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Table 5.1 (2025 SNA)/Table 4.1 (BPM7): Standard classification of institutional sectors in the system of national accounts (= updated version of Table 4.1 of BPM6) S1 Total economy S11 Non-financial corporations Classification based on control S1101 Public non-financial corporations Of which: Part of domestic multinational enterprise (MNEs) S1102 National private non-financial corporations Of which: Part of domestic multinational enterprise (MNEs) S1103 Foreign-controlled non-financial corporations1 Of which: Special purpose entities (SPEs) S12 Financial corporations Classification based on control S1201 Public financial corporations Of which: Part of domestic multinational enterprise (MNEs) S1202 National private financial corporations Of which: Part of domestic multinational enterprise (<u>MNEs</u>) S1203 Foreign-controlled financial corporations<sup>1</sup> Of which: Special purpose entities (SPEs) Classification based on type of financial services S121 Central bank<sup>2</sup> S122 Deposit-taking corporations, except the central bank S123 Money market funds (MMFs) S124 Non-MMF investment funds S125 Other financial intermediaries, except insurance corporations and pension funds S126 Financial auxiliaries S127 Captive financial institutions and money lenders S128 Insurance corporations S129 Pension funds S13 General government General government classification-alternative A S1311 Central government S1312 State government S1313 Local government S1314 Social security funds General government classification-alternative B S1321 Central government3 S1322 State government<sup>3</sup> S1323 Local government<sup>3</sup> S14 Households4 S15 Nonprofit institutions serving households S2 Rest of the world May be classified in the same way as resident institutional sectors, with the addition of: International organizations

Tab 6 Chapter 5: Institutional units and sectors, economic territory and residence

International financial organizations Central bank of currency union<sup>5</sup> Other

International nonfinancial organizations

1 While all foreign controlled corporations are foreign direct investment enterprises, the reverse is not true (see paragraph 5.126).

<sup>2</sup> Additional subsector may be identified for monetary authorities, where needed (see paragraph 5.154).

3 Including social security funds of this level of government.

4 Subsectors of the household sector will be based on income and wealth deciles.

 $5\ {\rm If}$  the reporting economy is a member state of a currency union.

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5.42 The institutional sector classification in the external accounts is shown in table 4.2. It follows the same sectors and subsectors as the SNA institutional sector classification shown in table 4.1, but with order and groupings to allow greater backward compatibility with the <u>BPMGBPM7</u> classification and a shorter list of sectors for economies in which it is not practical to implement the full classification. The full institutional sector detail is required for external accounts to be fully integrated with monetary, flow of funds, and other financial data. Domestic and foreign controlled corporations may be identified separately on a supplementary basis.

Table 4.2 (BPM7): Classification of institutional sectors in external accounts (= updated version of Table 4.2 of BPM6)

# Central bank Monetary authorities<sup>1</sup> Deposit-taking corporations except the central bank <sup>2</sup> Of which SPEs General government Other financial corporations (OFCs)<sup>2</sup> Money market funds (MMFs)<sup>1</sup> Non-MMF investment funds<sup>12</sup> Insurance corporations<sup>12</sup> Pension funds<sup>12</sup> Other financial intermediaries except insurance corporations and pension funds 12 Of which Central clearing counterparties<sup>1</sup> Captive financial institutions and money lenders, and financial auxiliaries12 Of which SPEs1 Nonfinancial corporations (NFCs)<sup>2</sup> Of which SPEs<sup>1</sup> Households and nonprofit institutions serving households Additional sectors for counterpart data. International organizations International financial organizations Central bank of currency union Other international organizations <sup>1</sup> These items are supplementary (i.e., countries are encouraged to compile these breakdowns when they are relevant to their 2 Supplementary "of which" items may be provided for public corporations. Note: Captive financial institutions and money lenders as well as financial auxiliaries are combined to reduce the compilation burden (they are not regarded being involved in financial intermediation). However, they can be separately identified in the countries where they have large cross-border transactions and positions. Households and non-profit institutions serving

bouseholds can also be compiled separately in the countries where compilers see its merit. Data for central clearing counterparties (CCPs) could be compiled as an "of-,which" item for countries that have large cross-border transactions and positions related to CCPs. Data for SPEs are "of which" items for deposit-taking corporations, OFCs and NFCs, but they could also be compiled for other institutional sectors if they play an important role in the country.

attribution of institutional sector. The economic owner of the asset, the creditor, is invariably one party to any change of economic ownership of the asset. Therefore, for assets, sector attribution by creditor and by transactor coincide. A claim on a resident debtor, however, may change ownership between a resident creditor and a non-resident creditor so that the domestic sector of the debtor may not coincide with that of the transactor. For instance, the issuer may be a resident in one institutional sector, the seller a resident in another institutional sector, and the buyer a non-resident.

5.44 Although the sector classification for liabilities is clearly according to the issuer, for the sector data in the

financial account, there are both practical and analytical considerations over whether the sector allocation should be determined according to the issuer or the seller. By convention, the sector of the debtor is the one that determines the classification of the change of ownership that has occurred, because the original nature of the liability is generally considered more significant than the identity of the resident seller of the claim. The same issues apply for financial instruments issued by a resident that are sold by a non-resident holder to a resident buyer.

# 8. The rest of the world

- 5.45 On occasion it is convenient to refer to non-resident households or corporations as units that are resident in the rest of the world. Whenever accounts are drawn up for institutional sectors, as well as an account for the total economy, a further account is presented showing the relationship with the rest of the world. In effect, therefore transactions and positions with the rest of the world are recorded as if the rest of the world is a de facto sixth sector.
- 5.46 For the purpose of reporting external sector statistics data, more disaggregated institutional sector breakdowns for the transactions and positions with non-residents will beare followed (see table 4.2)

# B. Corporations in macroeconomic statistics

# 1. Types of corporations

5.47 In macroeconomic statistics, the term corporation is used more broadly than in just the legal sense. In general, all entities that are:

- a. capable of generating a profit or other financial gain for their owners,
- b. recognized at law as separate legal entities from their owners who enjoy limited liability,
- c. set up for purposes of engaging in market production<sub>τ</sub> through the selling of all or most of their goods and/or services at economically significant prices,

are treated as corporations, however they may describe themselves or whatever they may be called. As well as legally constituted corporations the term corporations is used to include cooperatives, limited liability partnerships, notional resident units and quasi-corporations. Whenever the term corporation is used, the broader coverage rather than the narrow legal definition is intended unless otherwise stated. Each of the main components of the broader coverage is discussed in turn below.

#### Legally constituted corporations

- 5.48 Legally constituted corporations may be described by different names: corporations, incorporated enterprises, public limited companies, public corporations, private companies, joint-stock companies, limited liability companies, limited liability partnerships, and so on. A legally constituted corporation is a legal entity, created for the purpose of producing goods or services for the market, that may be a source of profit or other financial gain to its owner(s); it is collectively owned by shareholders who have the authority to appoint directors responsible for its general management.
- 5.49 The laws governing the creation, management and operations of legally constituted corporations may vary from country to country-so that, <u>Therefore</u>, it is not feasible to provide a precise, legal definition of a corporation that would be universally valid. It is possible, however, to indicate in more detail the typical features of corporations that are most relevant from the point of view of macroeconomic statistics. They may be summarized as follows:
  - a. A corporation is an entity created by process of law whose existence is recognized independently of the other institutional units that may own shares in its equity. The existence, name and address of a corporation are usually recorded in a special register kept for this purpose. A corporation may normally be expected to have a centre of predominant economic interest (that is, to be resident) in

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the country in which it is created and registered.

- b. A corporation that is created for the purpose of producing goods or services for sale on the market does so at prices that are economically significant. This implies that it is a market producer. (A description of economically significant prices and the difference between market and non-market production is given in chapters 7 and 30.)
- c. A corporation is fully responsible and accountable at law for its own actions, obligations and contracts, this being an essential attribute of an institutional unit in macroeconomic statistics. A corporation is subject to the tax regime of the country where it is resident in respect of its productive activities, income or assets.
- d. Ownership of a corporation is vested in the shareholders collectively. The amount of income actually distributed to shareholders as dividends in any single accounting period is decided by the directors of the corporation. Income is usually distributed to shareholders in proportion to the value, or amounts, of the shares or other capital participations they own. There may be different kinds of shares in the same corporation carrying different entitlements.
- e. In the event of a corporation being wound up, or liquidated, the shareholders are similarly entitled to a share in the net worth of the corporation remaining after all assets have been sold and all liabilities in debt instruments paid. If a corporation is declared bankrupt because its debt-related liabilities exceed the value of its assets, the shareholders are <u>usually</u> not liable to repay the excess liabilities. <u>However</u>, in cases of implicit guarantees or significant reputational risks, the owner may experience to have a negative equity (see paragraphs 14.xx 14.xx (SNA 2025) / paragraphs xx.xx xx.xx (BPM7).
- f. Control of a corporation is ultimately exercised by the shareholders collectively. A corporation has a board of directors that is responsible for the corporation's policy and appoints the senior management of the corporation. The board of directors is usually appointed by the collective vote of the shareholders.
- g. In practice, however, some shareholders may exert much more influence or control over the policies and operations of a corporation than others.
- h. The voting rights of shareholders may not be equal. Some types of shares may carry no voting rights, while others may carry exceptional rights, such as the right to make specific appointments to the board of directors or the right to veto other appointments made on a majority vote. Such exceptional rights may be held by the government when it is a shareholder in a corporation.
- Many shareholders with voting rights do not choose to exercise them, so that a small, organized minority of active shareholders may be in a position to control the policy and operations of a corporation.

#### Cooperatives, limited liability partnerships, etc.

5.50 Cooperatives are set up by producers for purposes of marketing their collective output. The profits of such cooperatives are distributed in accordance with their agreed rules and not necessarily in proportion to shares held, but effectively they operate like corporations. Similarly, partnerships whose members enjoy limited liability are separate legal entities that behave like corporations. In effect, the partners are at the same time both shareholders and managers.

#### **Quasi-corporations**

- 5.51 Some unincorporated enterprises function in all (or almost all) respects as if they were incorporated. These are termed quasi-corporations in macroeconomic statistics and are included with corporations in the non-financial and financial corporations sectors. A quasi-corporation is:
  - a. either an unincorporated enterprise owned by a resident institutional unit that has sufficient information to compile a complete set of accounts and is operated as if it were a separate corporation

and whose de facto relationship to its owner is that of a corporation to its shareholders, or

an unincorporated enterprise owned by a non-resident institutional unit that is deemed to be a resident institutional unit because it engages in a significant amount of production in the economic territory over a long or indefinite period of time.

#### 5.52 Three main kinds of quasi-corporations are recognized in macroeconomic statistics:

- Unincorporated enterprises owned by government units that are engaged in market production and that are operated in a similar way to publicly owned corporations;
- b. Unincorporated enterprises, including unincorporated partnerships or trusts, owned by households that are operated as if they were privately owned corporations;
- c. Unincorporated enterprises that belong to institutional units resident abroad, referred to as "branches".
- 5.53 The intent behind the concept of a quasi-corporation is clear: namely, to separate from their owners those unincorporated enterprises that are sufficiently self-contained and independent that they behave in the same way as corporations. If they function like corporations, they must keep complete sets of accounts. Indeed, the existence of a complete set of accounts, including balance sheets, for the enterprise is a necessary condition for it to be treated as a quasi-corporation. Otherwise, it would not be feasible from an accounting point of view to distinguish the quasi-corporation from its owner.
- 5.54 As a quasi-corporation is treated as a separate institutional unit from its owner, it must have its own value added, saving, assets, liabilities, etc. It must be possible to identify and record any flows of income and capital that are deemed to take place between the quasi-corporation and its owner. The amount of income withdrawn from a quasi-corporation during a given accounting period is decided by the owner, such a withdrawal being equivalent to the payment of a dividend by a corporation (that is, the amount of earnings retained within the quasi-corporation) is determined. A balance sheet is also needed for the quasi-corporation showing the values of its non-financial assets used in production and also the financial assets and liabilities owned or incurred in the name of the enterprise.
- 5.55 Experience has shown that countries have difficulty treating unincorporated enterprises owned by households as quasi-corporations. However, it is not useful to introduce additional criteria, such as size, into the definition of quasi-corporations owned by households. If an enterprise is not in fact operated like a corporation and does not have a complete set of accounts of its own, it cannot and should not be treated as a quasi-corporation however large it may be.
- 5.56 A quasi-corporation is also identified when preliminary expenses, including <u>for</u> mining rights, license fees, site preparation, building permits, purchase taxes, local office expenses, and lawyers' fees, are incurred by a non-resident unit, prior to establishing a legal entity. As a result of identifying a quasi-corporation in those cases, the preparatory expenses are recorded in the economy of the future operations as being resident-to-resident transactions that are funded by a (foreign) direct investment inflow. Because of the limited scale of these activities, assembly of acceptable data for these enterprises is often feasible, despite the lack of incorporation. If the project does not subsequently go into operation, the value of the direct investment is eliminated by an entry for other changes in the volume of assets or liabilities.

## Institutional units with cross-border elements

#### Branches

5.57 When a non-resident unit has substantial operations over a significant period in an economic territory, but no separate legal entity, a branch may be identified as an institutional unit. This unit is identified for statistical purposes because the operations have a strong connection to the location of operations in all ways other than incorporation.

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5.58 An unincorporated enterprise abroad should be treated as a quasi-corporation when indications of substantial operations can be identified separately from the rest of the entity. As with other quasi-corporations, either a complete set of accounts, including a balance sheet of assets and liabilities, for the unit exists or it would be meaningful from an economic point of view to compile them. The availability of separate records indicates that an actual unit exists and makes it practical to prepare statistics. In addition, all or most of the following factors tend to be present for a branch to be recognized:

- a. Production based in the territory is undertaken or intended for one year or more in a territory other than that of its head office:
  - If the production process involves physical presence, then the operations should be physically located in that territory. Some indicators of an intention to locate in the territory include purchasing or renting business premises, acquiring capital equipment, and recruiting local staff.
  - If the production does not involve physical presence, such as activities related to the ownership
    of patents, "virtual manufacturing", some cases of banking, insurance, or other financial
    services, the operations should be recognized as being in the territory by virtue of the
    registration or legal domicile of those operations in that territory.
- b. The operations are recognized as being subject to the income tax system, if any, of the economy in which it is located even if it may have a tax-exempt status.
- 5.59 The identification of branches has implications for the statistical reporting of both the parent and branch. The operations of the branch should be excluded from the institutional unit of its head office in its home territory and the delineation of parent and branch should be made consistently in both of the affected economies. Each branch, as described in the above paragraphs, is a (foreign) direct investment enterprise. Branches most commonly arise for financial and non-financial corporations, but it is also possible that households, non-profit institutions serving households (NPISHs), or governments (when government operations do not have diplomatic immunity) have branches.

# Construction projects

5.60 Some construction projects undertaken by a non-resident contractor may give rise to a branch. (known as direct investment enterprise in external accounts). Construction may be carried out or managed by a non-resident enterprise, without the creation of a local legal entity:

- a. For major projects (such as bridges, dams, power stations) that take a year or more to complete and that are managed through a local site office, the operations would usually satisfy the criteria for identification of a branch in paragraphs 5.57 5.58, and so would not be classified as international trade in services;
- b. n other cases, the construction operations may not satisfy the conditions for recognition as a branch, for example, for a short-term project or one undertaken from the home territory rather than from a local office. In those cases, the work provided to customers resident in the territory of those operations is classified as international trade in construction and included in services (i.e., an export of services by the home base and an import of services by the territory of operations).

# Production delivered from a base

- 5.61 Activities such as consulting, maintenance, training, technical assistance, and health care may be provided by a branch or from a home base. If operations are substantial enough to satisfy the criteria given in paragraphs 5.57 – 5.58, a branch would be recognized as a (foreign) direct investment enterprise. On the other hand, if a branch is not recognized in the territory, the operations will give rise to international trade in services. The residence of units providing services in this way is discussed in paragraph 5.273.
- 5.62 Mobile equipment, such as ships, aircraft, drilling platforms, and railway rolling stock, may operate across more than one economic territory. The criteria for recognition of a branch also apply in these cases. That is,

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if the operations in a territory outside the home base are substantial enough, they meet the definition of a branch. For example, a secondary base for servicing the fleet with long-term presence and its own accounts may satisfy the definition of a branch. If they do not satisfy the definition of a branch, the activities of the ship-operating enterprise are included in the economy where the operator is resident.

- 5.63 Similarly to mobile equipment, a multiterritory pipeline that passes through a territory, but is not operated by a separate legal entity in that territory, would be recognized as constituting a branch if there is a substantial presence, availability of separate accounts, and so on. In cases in which such operations are not separate institutional units (a) there may be payment of rent to a notional unit owning the land or a long-term lease of land, of the kind discussed in paragraphs 5.65 5.66; or (b) there may be a multiterritory enterprise of the type discussed in paragraphs 5.72 5.75.
- 5.64 When a branch is identified, there are (foreign) direct investment inflows to the territory, but the provision of goods or services to customers in that territory is a resident-to-resident transaction. In contrast, if the operations are not substantial enough to qualify as a branch, the provision of goods or services to customers in that territory are imports of that territory.

# Notional resident units for land and other natural resources, and buildings and structures owned by non-residents

- 5.65 Immovable assets such as land and other natural resources, and buildings and structures are treated as being owned by resident units except in one particular circumstance. If the legal owner is actually non-resident, an artificial unit, called a notional resident unit, is created for statistical purposes. The notional resident unit is recorded as owning the asset and receiving the rent or rentals that accrue to the asset. The legal owner owns the equity in the notional resident unit and then receives income from the notional resident unit in the form of property income paid abroad. This treatment is designed so that the relevant non-financial assets are always assets of the economy in whose territory they are located. Otherwise, the land would appear in another economy's national balance sheet. The only exception is made for land and buildings in extraterritorial enclaves of foreign governments (such as embassies, consulates and military bases) that are subject to the laws of the home territory and not those of the territory where they are physically situated. On the other hand, if an embassy is renting a building from a resident of the economy where it is physically located, a notional unit resident in the economic territory of the embassy created for statistical purposes (see paragraph 5.14 for the treatment of territorial enclaves).
- 5.66 A non-resident with a resource lease is classified as incurring rent and no notional unit is automatically created. However, it is usually the case that ownership of land and other natural resources such as subsoil assets, non-cultivated biological resources, water, and rights to use these assets through a lease or other permit over long periods are associated with a branch. In addition, preliminary expenses for an entity to be incorporated in the future are to be regarded as a notional (foreign) direct investment enterprise.
- 5.67 The operations of notional resident units include holding the asset, paying any associated expenses (such as insurance, repairs, and taxes), collecting rent or rental on the asset, and any other transactions associated with those functions. If the non-resident owner uses the property, the notional resident unit generates rent (in the case of unimproved land, mineral rights, and so on, see paragraph 11.85) or rental included in travel or operating leasing services (for land with buildings or other improvements, see paragraphs 10.99, 10.100, and 10.157) in kind to its owner. The corresponding entry to the rent or rental would be income payable in kind to the owner by the notional resident unit. The notional resident unit should also be treated as incurring expenses and taxes; payments by the non-resident owner to meet a loss arising from these costs therefore would be recorded as direct investment flows from the owner to the notional resident unit. Other transactions of the owner would not be attributed to the notional resident unit, for example, any borrowing or debt service. As a result of the limited nature of notional resident units, making acceptable estimates for their operations is generally feasible when they are significant.
- 5.68 When the ownership of land and other natural resources is associated with substantial operations, so that the requirements in paragraphs 5.57 5.58 are met, a branch is identified. In such cases, a notional resident unit is not identified because the branch already exists as a resident owner.
- 5.69 The notional resident unit that owns land or other natural resources may be contrasted with a branch, which

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has a full set of accounts. An example is a non-resident fishing operator having a 10-year fishing license for the waters of a territory. If the operator has a base in the territory, keeps separate records, and so on, then a branch is identified, and its accounts will show sales of fish and other transactions. Another example could be a commercial farm owned by a non-resident entity. In contrast, the only activity of a notional unit will be the supply of rent or rental services arising from the ownership of property.

- 5.70 When several partners own land, there may be a quasi-corporation, by virtue of the management of the land being separate from that of its individual owners. In that case, for statistical purposes, the non-resident partners would own a share in the quasi-corporation, so there would be no need to identify an additional notional resident unit. The notional resident unit for ownership of land is almost always a (foreign) direct investment enterprise (the exception being for land where an individual non-resident's voting power is below 10 percent which is included under other investment/other equity in balance of payments—see paragraph 6.xx, *BPM7*).
- 5.71 Some kinds of time-share accommodation arrangements may also give rise to a notional resident unit. For example, the acquisition of deeded ownership, or a similar arrangement, is equivalent to the establishment of a notional resident unit. [See paragraph 11.xx and Table 11.3 for a discussion of alternative time-share arrangements.]

# Multiterritory enterprises

- 5.72 Some enterprises may operate as a seamless operation over more than one economic territory. Although the enterprise has substantial activity in more than one economic territory, it is run as an indivisible operation with no separate accounts or decisions, so that no separate branches can be identified. Such enterprises may have operations including shipping lines, airlines, hydroelectric schemes on border rivers, pipelines, bridges, tunnels, and undersea cables. Some NPISHs also may operate in this way.
- 5.73 Governments usually require separate entities or branches to be identified in each economic territory for more convenient regulation and taxation. Multiterritory enterprises may be exempted from such requirements, but there may be arrangements, such as a formula for payment of taxation to the respective authorities.
- 5.74 In the case of a multiterritory enterprise, it is preferable that separate institutional units be identified for each economy. If that is not feasible because the operation is so seamless that separate accounts cannot be developed, it is necessary to prorate the total operations of the enterprise into the individual economic territories. The factor used for prorating should be based on available information that reflects the contributions to actual operations. For example, equity shares, equal splits, or splits based on operational factors such as tonnages or wages could be considered. Where taxation authorities have accepted the multiterritory arrangements, a prorating formula may have been determined, which should be the starting point for statistical purposes. Although the situation is somewhat different from the case of joint administration or sovereignty zones, the solution of prorating may be the same.
- 5.75 The proration of the enterprise means that all transactions need to be split into each component economic territory. The treatment may be quite complex to implement. This treatment has implications for other statistics and its implementation should always be coordinated for consistency. Compilers in each of the territories involved are encouraged to cooperate to develop consistent data, avoid gaps, and minimize respondent and compilation burden, as well as assist counterparties to report bilateral data on a consistent basis.

#### 2. Special cases

#### Groups of corporations

5.76 Large groups of corporations, or conglomerates, may be created whereby a parent corporation controls several subsidiaries, some of which may control subsidiaries of their own, and so on. For certain purposes, it may be desirable to have information relating to a group of corporations as a whole. However, each individual

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corporation should be treated as a separate institutional unit, whether or not it forms part of a group. Even subsidiaries that are wholly owned by other corporations are separate legal entities that are required by law and the tax authorities to produce complete sets of accounts, including balance sheets. Although the management of a subsidiary corporation may be subject to the control of another corporation, it remains responsible and accountable for the conduct of its own production activities.

5.77 Another reason for not treating groups of corporations as single institutional units is that groups are not always well defined, stable or easily identified in practice. It may be difficult to obtain data for groups whose activities are not closely integrated. Moreover, many conglomerates are much too large and heterogeneous for them to be treated as single units, and their size and composition may be continually shifting over time as a result of mergers and takeovers.

## Joint Ventures

- 5.78 A joint venture involves the establishment of a corporation, partnership or other institutional unit in which each party legally has joint control over the activities of the unit. The units operate in the same way as other units except that a legal arrangement between the parties establishes joint control over the unit. As an institutional unit, the joint venture may enter into contracts in its own name and raise finance for its own purposes. A joint venture maintains its own accounting records. Joint ventures are typically established for the purpose of executing a business undertaking in which the parties agree to share in the profits and losses of the enterprise as well as the capital formation and contribution of operating inputs or costs. Generally, there is no intention of a continuing relationship beyond the original purpose.
- 5.79 Whether a quasi-corporation is identified for the joint venture without a separate legal status depends on the arrangements of the parties and legal requirements. The joint venture is a quasi-corporation if it meets the requirements for an institutional unit, particularly by having its own records. Otherwise, if each of the operations are effectively undertaken by the partners individually, then the joint venture is not an institutional unit and the operations would be seen as being undertaken by the joint venture partners separately. If foreign investment is involved in such cases, there would usually be direct investment enterprises that undertake the joint venture operations of each of the partners.
- 5.80 Because of the ambiguous status of joint ventures, there is a risk that they could be omitted or double-counted, so particular attention needs to be paid to them.

#### Head offices and holding companies

5.81 Two quite different types of units exist that are both often referred to as holding companies. The first is the head office that exercises some aspects of managerial control over its subsidiaries. These may sometimes have noticeably fewer employees, and more at a senior level, than its subsidiaries but it is actively engaged in production. These types of activities are described in ISIC Rev. 4 in section M class 7010 as follows:

This class includes the overseeing and managing of other units of the company or enterprise; undertaking the strategic or organizational planning and decision making role of the company or enterprise; exercising operational control and manage the day-to-day operations of their related units.

Such units are allocated to the non-financial corporations sector unless all or most of their subsidiaries are financial corporations, in which case they are treated by convention as financial auxiliaries in the financial corporations sector.

5.82 The type of unit properly called a holding company is a unit that holds the assets of subsidiary corporations but does not undertake any management activities. They are described in ISIC Rev. 4 in section K class 6420 as follows:

This class includes the activities of holding companies, i.e. units that hold the assets (owning controllinglevels of equity) of a group of subsidiary corporations and whose principal activity is owning the group. The holding companies in this class do not provide any other service to the enterprises in which the equity is held, i.e. they do not administer or manage other units. Commented [ED17]: Based on paragraphs 4.45-4.46, BPM6

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Such units are always allocated to the financial corporations sector and treated as captive financial institutions even if all the subsidiary corporations are non-financial corporations.

- 5.83 To distinguish head offices and holding companies from other institutional units, information on the structure of the balance sheets could be used practically to identify head offices and holding companies as entities having at least 50 per cent of their assets consisting of equity vis-à-vis their subsidiaries.
- 5.84 A strict definition of holding companies (in the sense that holding companies do not provide any management services) should be used when classifying institutional units as holding companies. For units where information on variables like management control is not available, or only available at great cost in practice, it is recommended to base the distinction between head offices and holding companies on an employment criterion, as follows:
  - Head offices are actively engaged in production, although they may have noticeably fewer employees, and more at a senior level, than its subsidiaries. However, having zero employment is a clear indication that a unit is not a head office.
  - On the other hand, holding companies simply holding assets may do this with very few or without any
    employed personnel.
  - Employment thresholds for the delineation between head offices and holding companies should be
    determined taking into account national circumstances. In particular, national legislative requirements
    for the number of employees of holding companies should be taken into account. As a general indication,
    employment of three or more persons, or employment exceeding the national legal minimum
    employment, is a first indicator for a unit being a head office.
- 5.85 To determine the institutional independence of head offices and holding companies, the following principles apply:
  - The standard criteria for an institutional unit should always be applied thus also for head offices and holding companies.
  - · Head offices are always to be considered as separate institutional units.
  - · Holding companies owned by non-residents are always to be considered institutional units.
  - Holding companies that have multiple parents or shareholders is a sufficient qualification for a unit being an institutional unit.
  - For holding companies wholly owned by a single resident unit, "no employees and no remuneration of employees" is not a sufficient criterion to conclude that there is a lack of institutional independence; however, it can be used as an indicator to consider units for further investigation to consider their lack of independence.

# **Other special cases**

## Special purpose entities

- 5.86 A number of institutional units may be described as special purpose entities (SPEs). In macroeconomic statistics, the term SPEs is used exclusively for institutional units which align to the following definition:
  - a. An SPE, resident in an economy, is a formally registered and/or incorporated legal entity recognized as an institutional unit, with no or little employment up to maximum of five employees, no or little physical presence, and no or little physical production in the host economy.
  - b. SPEs are directly or indirectly controlled by non-residents.

**Commented [ED19]:** These paragraphs will probably not be included in BPM7, but reference to these paragraphs from SNA chapter will be added in BPM on the following lines.

"For additional details on head offices and holding companies, refer to paragraphs xx, 2025 SNA"

- c. SPEs are established to obtain specific advantages provided by the host jurisdiction with an objective to (i) grant its owner(s) access to capital markets or sophisticated financial services; and/or (ii) isolate owner(s) from financial risks; and/or (iii) reduce regulatory and tax burden; and/or (iv) safeguard confidentiality of their transactions and owner(s).
- d. SPEs transact almost entirely with non-residents and a large part of their financial balance sheet typically consists of cross-border claims and liabilities.
- 5.87 Some institutional units incorporated in the same economic territory as their parents may satisfy all the above criteria, with the exception that they are not directly or indirectly controlled by non-resident parents. Such "special purpose units" or "special purpose vehicles" are sometimes referred to as special purpose entities as well. These units are typically consolidated with their resident parents, because they lack autonomy of decision. In the case that they operate autonomously and can be considered as separate institutional units (e.g., some securitization vehicles), they should not be consolidated with their resident parents. However, these latter units are not considered as part of SPEs. The term special purpose units/vehicles is used to denote all such units, those owned by non-resident parents as well as those owned by resident parents.
- 5.88 For countries where the presence of SPEs is significant, a separate identification of SPEs, as an of which item, is recommended as supplementary information.
- 5.89 In external sector statistics, the identification of SPEs as supplementary ("of which") items for deposit-taking corporations, other financial corporations, and nonfinancial corporations sectors is strongly recommended in countries where the economic activity of such units is significant.
- 5.90 Whether a unit has all or none of the characteristics described in paragraph 5.86 (a-d), and whether it is described as an SPE or some similar designation or not, it is treated in macroeconomic statistics in the same way as any other institutional unit by being allocated to sector and industry according to its principal activity unless it falls into one of the three following categories:
  - a. Captive financial institutions,
  - b. Artificial subsidiaries of corporations,
  - c. Special purpose units of general government.

Each of these is described below. A list of the most common types of SPEs, including their (sub)sector classification, is presented in table x.x in chapter 23 SNA/chapter 15 BPM.

#### Captive financial institutions

- 5.91 A holding company that simply owns the assets of subsidiaries is one example of a captive financial institution. Other units that are also treated as captive financial institutions are units with the characteristics of SPEs as described above (not necessarily controlled by a non-resident parent), including some units used for holding and managing wealth for individuals or families, holding assets for securitization, raising or borrowing funds on behalf of related companies (such a company may be called a conduit), intra group lending companies, captive factoring and invoicing companies, captive financial leasing companies, etc..
- 5.92 The degree of independence from its parent may be demonstrated by exercising some substantive control over its assets and liabilities to the extent of carrying the risks and reaping the rewards associated with the assets and liabilities. Such units are classified in the financial corporations sector.
- 5.93 An entity of this type that cannot act independently of its parent and is simply a passive holder of assets and liabilities (sometimes described as being on auto-pilot) is not treated as a separate institutional unit unless it is resident in an economy different from that of its parent. If it is resident in the same economy as its parent, it is treated as an "artificial subsidiary" as described immediately below.
- 5.94 More guidance on the treatment of trusts and similar types of funds which hold and manage financial and non-financial assets on behalf of individuals or families is provided in paragraphs 5.103 – 5.111.

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#### Artificial subsidiaries of corporations

- 5.95 Within macroeconomic statistics, the term corporation is used to denote both those institutions legally recognized as corporations and other units treated in macroeconomic statistics as corporations, specifically quasi-corporations, branches and notional units. For the following four paragraphs, however, the term corporation is used in the sense of a corporation as a legal entity.
- 5.96 A subsidiary corporation, wholly owned by a parent corporation, may be created to provide services to the parent corporation, or other corporations in the same group, in order to avoid taxes, to minimize liabilities in the event of bankruptcy, or to secure other technical advantages under the tax or corporation legislation in force in a particular country. For example, the parent may create a subsidiary to which ownership of its land, buildings or equipment is transferred and whose sole function is to lease them back again to the parent corporation; the subsidiary may be the nominal employer of all the staff who are then contracted to other corporations in the group, the subsidiary may keep the accounts and records of the parent on a separate computer installation; the role of the subsidiary may be established to take advantage of favourable funding or regulatory treatments and so on. In some cases, corporations may create "dormant" subsidiaries that are not actually engaged in any production but which may be activated at the convenience of the parent corporation.
- 5.97 In general, these sorts of corporations do not satisfy the definition of an institutional unit because they lack the ability to act independently from their parent corporation and may be subject to restrictions on their ability to hold or transact assets held on their balance sheets. Their level of output and the price they receive for it are determined by the parent that (possibly with other corporations in the same group) is their sole client. They are thus not treated as separate institutional units but are treated as an integral part of the parent and their accounts are consolidated with those of the parent. As noted above, the accounts for those entities on auto-pilot are also consolidated with their parent corporation unless they are resident in an economy different from that where the parent is resident.
- 5.98 Quasi-corporations such as a partnership or trust may also be set up by a parent corporation for similar reasons to the subsidiary corporations just described. Within the SNA, these are also treated as an integral part of the parent and their accounts are consolidated with the parent, unless they are resident in another country.
- 5.99 A distinction must be made between artificial subsidiaries as just described and a unit undertaking only ancillary activities. As described in more detail in section D of chapter 6, ancillary activities are limited in scope to the type of service functions that virtually all enterprises need to some extent or another such as cleaning premises, running the staff payroll or providing the information technology infrastructure for the enterprise. Units undertaking only ancillary activities will in general not satisfy the conditions of being an institutional unit (for the same sort of reason as artificial subsidiaries do not) but they may sometimes be treated as a separate establishment of the enterprise if this is analytically useful.

#### Special purpose units of general government

- 5.100 Governments may set up special purpose units, such as special purpose vehicles (SPVs) for financial convenience (special purpose units/vehicles are discussed in paragraph 5.87). For example, the special purpose unit may be involved in fiscal or quasi-fiscal activities (including securitization of assets, borrowing, etc.). Resident special purpose units that function only in a passive manner relative to general government and that carry out fiscal and quasi-fiscal activities do not satisfy the criteria to be institutional units and are therefore not treated as separate institutional units in macroeconomic statistics; they are treated as part of general government regardless of their legal status. Resident special purpose units acting independently, acquiring assets and incurring liabilities on their own behalf, accepting the associated risk, are treated as separate institutional units and are classified to a sector according to their principal activity.
- 5.101 Special purpose units that are resident in a different country (called SPEs following paragraph 5.86) than their controlling government are always classified as separate institutional units in the economy where they are established. When such entities exist, care must be taken to reflect the fiscal activities of government accurately. All flows and stock positions between the general government unit and the SPEs should be

recorded in the accounts for general government and the rest of the world when they occur.

5.102 A government may create a SPE to undertake government borrowing...or incur government outlays..or collect revenue abroad for fiscal policy purposes. Even if there are no actual economic flows recorded between the government and the SPE related to these fiscal activities, flows and stock positions should be imputed in the accounts of both the government and the rest of the world to reflect the fiscal activities of the government undertaken by the SPE. (More detailed guidance is provided in chapter 30/BPM7 chapter 8.)

### Trusts and similar types of funds

- 5.103 Trusts are arrangements whereby an economic agent (a trustee) holds property (but not economic ownership) as its nominal owner for the good of one or more beneficiaries. Their job is to hold, manage and administer the funds in the trust on behalf of the settlor (the creator of the trust). Their fiduciary duty as a trustee requires them to act in the best interest of the beneficiaries of the trust. The duties of a trustee are laid out upon the creation of the trust, and while they may differ depending on the situation, some tasks are common. The trustee oversees the distribution of the trust's funds to the beneficiaries. While the assets remain a part of the trust, the trustee is responsible for any investments that are made, ensuring any assets included in the trust, taking care of the administration, and overseeing the payment of taxes.
- 5.104 Several kinds of trustees, and accordingly trusts, can be distinguished:
  - Charitable trustees manage funds left in a charitable trust and follow the instructions left by the creator
    of the trust;
  - Investment trustees manage the day-to-day operations of an investment account, helping it to grow over time;
  - Successor trustees are people who step in to manage a trust when the person who created the trust is unable to do so (through death or incapacitation);
  - Corporate trustees work with large firms that manage trusts for clients that pay them (other types of
    trustees are not always paid for their services like corporate trustes are); and
  - Bankruptcy trustees step in when a person or business declares bankruptcy and their assets need to be administered.
- 5.105 Looking more specifically at these trusts set up by households, the trustee is not the economic owner of the assets. The trustee may be the legal owner of the assets, but the accumulated assets in the trust constitute a separate fund and are not a part of the trustee's own assets, indicating that economic ownership is different from nominal/legal ownership. The main responsibilities of the trustee are to manage and administer the assets of the trust for the benefit of the beneficiaries. As such, they are typically not exposed to the risks and the rewards of the accumulated assets. On the other hand, the trust itself does not constitute a legal unit per se, although it is often considered as a separate unit.
- 5.106 The standard criteria for an institutional unit should be applied for treating a trust, or a similar type of fund, which is resident in the same economy as its beneficiaries. However, in cases where the family trust, or a similar type of fund, is resident in another economy than its beneficiaries, it would always be treated as a separate institutional unit. However, in practice, it may not be that easy and straightforward to apply the standard criteria to trusts which are resident in the same economy as their beneficiaries. Especially in relation to the concept of autonomy of decision, one may need to look for more pragmatic criteria to approximate this concept. One of these criteria is the allocation of risks and rewards. In the case the risks and rewards are run, for example, by the trustee, or fund manager, one may assume that the trust does not have any autonomy of decision in the case of a single beneficiary who takes all the risks and rewards are instead allocated to the beneficiary/investor or beneficiaries/investors, one may also assume that the trust or fund does not have any autonomy of decision in the case of a single beneficiary who takes all the risks and rewards of the investment strategy. On the other hand, in the case of a trust or fund with multiple beneficiaries, the decision making process will be more complex. Decisions may be made by the trustee, as an auxiliary service to the ultimate beneficiaries/investors.

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5.107 All in all, trusts and similar types of funds, should only be treated as separate institutional unit in the case that the trustee, or fund manager, is not exposed to the risks and the rewards, and instead the risks and rewards are assumed by multiple beneficiaries/investors. In the case of a single beneficiary/investor assuming the risks and rewards, the accumulated assets should be assigned to the sector of the beneficiary/investor. Trusts, or similar types of funds, with multiple beneficiaries/investors would generally be classified as S.127 Captive financial institutions and moneylenders, if the beneficiaries/investors are restricted to a particular group of entities, and not open to the public at large. If they would be open to other beneficiaries/investors as well, the trust, or fund, can be considered as part of S.123 Money market funds or S.124 Non-MMF investment funds. Non-resident trusts, or funds, with single beneficiaries/investors would always qualify as captive financial institutions (S.127). A decision tree for the treatment of trusts and similar types of funds is presented in figure 5.2 (2025 SNA)

**Commented [ED21]:** These paragraphs will probably not be included in BPM7, but reference to these paragraphs from SNA chapter will be added in BPM on the following lines.

"For additional details on trusts including the decision tree for the treatment of trusts and similar types of funds, refer to paragraphs xx, 2025 SNA"



## 3. Ownership and control of corporations

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- 5.112 Control and ownership are different concepts. The ownership of a listed corporation is diffused among the institutional units that own its shares in proportion to the shareholdings. It is possible for one single institutional unit, whether another corporation, a household or a government unit, to own all the equity or shares in a corporation but, in general, ownership of a listed corporation is diffused among several, possibly very many, institutional units. By contrast, control is defined as the ability to determine the general corporate policy of the corporation. The expression "general corporate policy" as used here is understood in a broad sense to mean the key financial and operating policies relating to the corporation's strategic objectives as a market producer.
- 5.113 A single institutional unit owning more than a half of the shares, or equity, of a corporation is able to control its policy and operations by outvoting all other shareholders, if necessary. Similarly, a small, organized group of shareholders whose combined ownership of shares exceeds 50 per cent of the total is able to control the corporation by acting in concert. There may be exceptional cases in which certain shareholders enjoy privileged voting rights, such as a "golden share" giving a right of veto, but in general an individual institutional unit or group of units owning more than half the voting shares of a corporation can exercise complete control by appointing directors of its own choice. The degree of autonomy exercised by the directors and managers of a corporation is, therefore, likely to vary considerably, depending upon the extent to which the ownership of its shares is concentrated in the hands of a small number of other institutional units do not have to be autonomous but they do have to be responsible, and accountable, for the decisions and actions they take.
  - 5.114 Because many shareholders do not exercise their voting rights, a single shareholder, or small number of shareholders acting together, may be able to secure control over a corporation, even though they may hold considerably less than half of the total shares. When ownership of shares is widely diffused among a large number of shareholders, control may be secured by owning considerably less than half of the total shares.
  - 5.115 However, it is not possible to stipulate a minimum shareholding below 50 per cent that will guarantee control in all cases. The minimum must vary depending upon the total number of shareholders, the distribution of shares among them, and the extent to which small shareholders take an active interest, etc. Therefore, in practice, private control (i.e., control by institutional units other than government units and public sector units) eontrol is determined to exist if an investor owns more than 50 percent of the voting power (i.e., more than half of equity) in a corporation. The control may be direct (through ownership of <u>50 percent or more voting power</u>) or indirect (through ownership of corporations that in turn have <u>control, since control can be passed down a chain of ownership as long as control exists at each stage of the chain)voting power</u>). In the case of governments controlling corporations, a broader set of indicators for control may need to be taken into consideration; see paragraphs 5.121 5.124 below.

### Subsidiary and associate corporations

5.116 It is common for corporations to own shares in other corporations, and certain interrelationships between corporations need to be specified for purposes of the SNA/BPM.

#### Subsidiary corporations

- 5.117 Corporation B is said to be a subsidiary of corporation A when corporation A controls more than half of the shareholders' voting power (i.e., more than half of equity) in corporation B.
- 5.118 Corporation A may be described as the parent corporation in this situation. As the relationship of a parent corporation to a subsidiary is defined in terms of control rather than ownership, the relationship must be transitive: that is, if C is a subsidiary of B and B is a subsidiary of A, then C must also be a subsidiary of A. If A has a majority shareholding in B while B has a majority shareholding in C. Nevertheless, A must be able to control C if it controls B. By analogy with families of

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natural persons, corporation B can be described as a first generation subsidiary of corporation A, and corporation C as a second generation subsidiary of A. Evidently, large families of corporations may be built up with any number of subsidiaries at each level or generation and also any number of generations. Very large families of corporations, described as conglomerates, are encountered in some countries. Conglomerates that include corporations resident in different countries are usually described as multinational enterprise groups.

#### Associate corporations

- 5.119 Corporation B is said to be an associate of corporation A when corporation A and its subsidiaries control between 10 per cent and 50 per cent of the shareholders' voting power in B so that A has some influence over the corporate policy and management of B.
- 5.120 By definition, a corporation is able to exert less influence over an associate corporation than over a subsidiary. Although some corporations may be able to exert considerable influence over their associates, this cannot be guaranteed. The relationship between associates is weaker than that between parent and subsidiary corporations, and groups of associates may not be well defined.

#### Government control of corporations

- 5.121 A corporation is a public corporation if a government unit, another public corporation, or some combination of government units and public corporations controls the entity, where control is defined as the ability to determine the general corporate policy of the corporation. The expression "general corporate policy" as used here is understood in a broad sense to mean the key financial and operating policies relating to the corporation's strategic objectives as a market producer.
- 5.122 Because governments exercise sovereign powers through legislation, regulations, orders and the like, care needs to be applied in determining whether the exercise of such powers amounts to a determination of the general corporate policy of a particular corporation and therefore control of the corporation. Laws and regulations applicable to all units as a class or to a particular industry should not be viewed as amounting to control of these units.
- 5.123 The ability to determine general corporate policy does not necessarily include the direct control of the day-to-day activities or operations of a particular corporation. The officers of such corporations would normally be expected to manage these in a manner consistent with and in support of the overall objectives of the particular corporation. Nor does the ability to determine the general corporate policy of a corporation include the direct control over any professional, technical or scientific judgments, as these would normally be viewed as part of the core competence of the corporation itself. For example, the professional or technical judgments exercised by a corporation set up to certify aircraft airworthiness would not be considered controlled in respect of individual approvals and disapprovals, though its broader operating and financial policies, including the airworthiness criteria, may well be determined by a government unit as part of the corporation's corporate policy.
- 5.124 Because the arrangements for the control of corporations can vary considerably, it is neither desirable nor feasible to prescribe a definitive list of factors to be taken into account. The following eight indicators, however, will normally be the most important and likely factors to consider:
  - a. Ownership of the majority of the voting interest. Owning a majority of shares will normally constitute control when decisions are made on a one-share one-vote basis. The shares may be held directly or indirectly, and the shares owned by all other public entities should be aggregated. If decisions are not made on a one-share one-vote basis, the classification should be based on whether the shares owned by other public entities provide a majority voice.
  - b. Control of the board or other governing body. The ability to appoint or remove a majority of the board or other governing body as a result of existing legislation, regulation, contractual, or other arrangements will likely constitute control. Even the right to veto proposed appointments can be seen as a form of control if it influences the choices that can be made. If another body is responsible

for appointing the directors, it is necessary to examine its composition for public influence. If a government appoints the first set of directors but does not control the appointment of replacement directors, the body would then be part of the public sector until the initial appointments had expired.

- c. Control of the appointment and removal of key personnel. If control of the board or other governing body is weak, the appointment of key executives, such as the chief executive, chairperson and finance director, may be decisive. Non-executive directors may also be relevant if they sit on key committees such as the remuneration committee determining the pay of senior staff.
- d. Control of key committees of the entity. Subcommittees of the board or other governing body could determine the key operating and financial policies of the entity. Majority public sector membership on these subcommittees could constitute control. Such membership can be established under the constitution or other enabling instrument of the corporation.
- e. Golden shares and options. A government may own a "golden share," particularly in a corporation that has been privatized. In some cases, this share gives the government some residual rights to protect the interests of the public by, for example, preventing the company selling off some categories of assets or appointing a special director who has strong powers in certain circumstances. A golden share is not of itself indicative of control. If, however, the powers covered by the golden share do confer on the government the ability to determine the general corporate policy of the entity in particular circumstances, then the entity should be in the public sector from the date of existence of such circumstances. The existence of a share purchase option available to a government unit or a public corporation in certain circumstances may also be similar in concept to the golden share arrangement discussed above. It is necessary to consider whether, if the circumstance in which the option may be exercised exists, the volume of shares that may be purchased under the option and the consequences of such exercise means that the government has "the ability to determine the general corporate policy of the entity" by exercising that option. An entity's status in general should be based on the government's existing ability to determine corporate policy exercised under normal conditions rather than in exceptional economic or other circumstances such as wars, civil disorders or natural disasters.
- f. Regulation and control. The borderline between regulation that applies to all entities within a class or industry group and the control of an individual corporation can be difficult to judge. There are many examples of government involvement through regulation, particularly in areas such as monopolies and privatized utilities. It is possible for regulatory involvement to exist in important areas, such as in price setting, without the entity ceding control of its general corporate policy. Choosing to enter into or continue to operate in a highly regulated environment suggests that the entity is not subject to control. When regulation is so tight as to effectively dictate how the entity performs its business, then it could be a form of control. If an entity retains unilateral discretion as to whether it will take funding from, interact commercially with, or otherwise deal with a public sector entity, the entity has the ultimate ability to determine its own corporate policy and is not controlled by the public sector entity.
- g. Control by a dominant customer. If all of the sales of a corporation are to a single public sector customer or a group of public sector customers, there is clear scope for dominant influence. The presence of a minority private sector customer usually implies an element of independent decision-making by the corporation so that the entity would not be considered controlled. In general, if there is clear evidence that the corporation could not choose to deal with non-public sector clients because of the public sector influence, then public control is implied.
- h. Control attached to borrowing from the government. Lenders often impose controls as conditions of making loans. If the government imposed controls through lending or issuing guarantees that are more than would be typical when a healthy private sector entity borrows from a bank, control may be indicated. Similarly, control may be implied if only the government was prepared to lend.

5.125 Although a single indicator could be sufficient to establish control, in other cases, a number of separate

indicators may collectively indicate control. A decision based on the totality of all indicators must necessarily be judgmental in nature but clearly similar judgements must be made in similar cases.

### Control by a non-resident unit

- 5.126 In general, control is determined to exist through (i) an immediate (foreign) direct investment relationship where the direct investor owns more than 50 per cent of the voting power in the (foreign) direct investment corporation; or (ii) an indirect (foreign) direct investment relationship arising from the ownership of voting power in one direct investment corporation that owns voting power in another corporation(s) indirectly through a chain of control.
- 5.127 It is important to distinguish between control and influence. In this respect, a distinction is made between corporations where over 50 per cent of the equity is held by non-residentsa direct investor (and thus controlled) versus those corporations where between 10 and 50 per cent of the equity is held abroad (i.e., significant degree of influence). All corporations with foreign holdings of 10 per cent or more are described as foreign direct investment enterprises and special treatment of their earnings is applied. Further details on this are given in chapters 8 and 33, 2025 SNA/chapter 12, BPM7. It is important to note, however, that while all foreign controlled corporations are foreign direct investment enterprises, the reverse is not true, for example even a publicly controlled corporation may be a foreign direct investment enterprise if, in addition to government controlling half of the equity, a further 10 per cent is owned by a non-resident.

## C. Non-profit institutions in macroeconomic statistics

- 5.128 Non-profit institutions are legal or social entities, created for the purpose of producing goods and services, whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them. In practice, their productive activities are bound to generate either surpluses or deficits but any surpluses they happen to make cannot be appropriated by other institutional units. The articles of association by which they are established are drawn up in such a way that the institutional units that control or manage them are not entitled to a share in any profits or other income they receive. For this reason, they are frequently exempted from various kinds of taxes.
- 5.129 NPIs may be created by households, corporations, or government but the motives leading to their creation are varied. For example, NPIs may be created to provide services for the benefit of the households or corporations who control or finance them; or they may be created for charitable, philanthropic or welfare reasons to provide goods or services to other persons in need; or they may be intended to provide health or education services for a fee, but not for profit; or they may be intended to promote the interests of pressure groups in business or politics; etc.

#### 1. The characteristics of NPIs

- 5.130 The main features of NPIs may be summarized as follows:
  - a. Most NPIs are legal entities created by process of law whose existence is recognized independently of the natural persons, corporations or government units that establish, finance, control or manage them. The purpose of the NPI is usually stated in the articles of association or similar document drawn up at the time of its establishment. In some countries, especially developing countries, an NPI may be an informal entity whose existence is recognized by society but does not have any formal legal status; such NPIs may be created for the purpose of producing non-market goods or services for the benefit of individual households or groups of households.
  - b. Many NPIs are controlled by associations whose members have equal rights, including equal votes on all major decisions affecting the affairs of the NPI. Members enjoy limited liability with respect

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to the NPI's operations.

- c. There are no shareholders with a claim on the profits or equity of the NPI. The members are not entitled to a share in any profits, or surplus, generated by the productive activities of the NPI, such profits being retained within the NPI.
- d. The direction of an NPI is usually vested in a group of officers, executive committee or similar body elected by a simple majority vote of all the members. These officers are the counterpart of the board of directors of a corporation and are responsible for appointing any paid managers.
- e. The term "non-profit institution" derives from the fact that the members of the association controlling the NPI are not permitted to gain financially from its operations and cannot appropriate any surplus that it may make. It does not imply that an NPI cannot make an operating surplus on its production.
- 5.131 In some countries NPIs are subject to preferential tax treatment, possibly to exemption from income tax, but this is not necessarily so and is not a determining factor in the identification of an NPI.
- 5.132 As in the case of producer units owned by government units, it is important to distinguish between NPIs engaged in market and non-market production as this affects the sector of the economy to which an NPI is allocated. NPIs do not necessarily engage in non-market production.

## 2. NPIs engaged in market production

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5.133 Market producers are producers that sell most or all of their output at prices that are economically significant, that is, at prices that have a significant influence on the amounts the producers are willing to supply and on the amounts purchasers wish to buy. Schools, colleges, universities, clinics, hospitals, etc. constituted as NPIs are market producers when they charge fees that are based on their production costs and that are sufficiently high to have a significant influence on the demand for their services. Their production activities must generate an operating surplus or loss. Any surpluses they make must be retained within the institutions as their status prevents them from distributing them to others. On the other hand, because of their status as "non-profit institutions" they are also able to raise additional funds by appealing for donations from natural-persons, corporations or government. In this way, they may be able to acquire assets that generate significant property income in addition to their revenues from fees, thereby enabling them to charge fees below average costs. However, they must continue to be treated as market producers so long as their fees are determined mainly by their costs of production and are high enough to have a significant impact on demand. Such NPIs are not charities, their real objective often being to provide educational, health or other services of a very high quality using their incomes from endowments merely to keep down somewhat the high fees they have to charge.

### Market NPIs serving enterprises

5.134 Some market NPIs restrict their activities to serving a particular subset of other market producers. Most market NPIs serving enterprises are created by associations of the enterprises whose interests they are designed to promote. They consist of chambers of commerce, agricultural, manufacturing or trade associations, employers' organizations, research or testing laboratories or other organizations or institutes that engage in activities that are of common interest or benefit to the group of enterprises that control and finance them. The NPIs often engage in publicity on behalf of the group, lobby politicians or provide advice or assistance to individual members in difficulty for one reason or another. The NPIs are usually financed by contributions or subscriptions from the group of enterprises concerned. The subscriptions are treated not as transfers but as payments for services rendered and these NPIs are, therefore, classified as market producers. However, as explained below, when chambers of commerce or similar organizations intended for the benefit of enterprises are controlled by government units, they are classified as non-market NPIs and allocated to the general government sector.

### 3. NPIs engaged in non-market production

- 5.135 The majority of NPIs in most countries are non-market rather than market producers. Non-market producers are producers that provide most of their output to others free or at prices that are not economically significant. Thus, NPIs engaged mainly in non-market production may be distinguished not only by the fact that they are incapable of providing financial gain to the units that control or manage them, but also by the fact that they must rely principally on funds other than receipts from sales to cover their costs of production or other activities. Their principal source of finance may be regular subscriptions paid by the members of the association that controls them or transfers or donations from third parties, including government or from property income.
- 5.136 NPIs engaged mainly in non-market production are divided into two groups: those NPIs controlled by government and those that are not. The former are included in the general government sector. The latter are described as "non-profit institutions serving households" (NPISHs) and constitute a separate sector in macroeconomic statistics.

## Government control of non-profit institutions

- 5.137 Control of an NPI is defined as the ability to determine the general policy or programme of the NPI. All NPIs allocated to the general government sector should retain their identity as NPIs in statistical records, to facilitate analysis of the complete set of NPIs. To determine if an NPI is controlled by the government, the following five indicators of control should be considered:
  - a. The appointment of officers. The government may have the right to appoint the officers managing the NPI either under the NPI's constitution, its articles of association or other enabling instrument.
  - b. Other provisions of enabling instrument. The enabling instrument may contain provisions other than the appointment of officers that effectively allow the government to determine significant aspects of the general policy or programme of the NPI. For example, the enabling instrument may specify or limit the functions, objectives and other operating aspects of the NPI, thus making the issue of managerial appointments less critical or even irrelevant. The enabling instrument may also give the government the right to remove key personnel or veto proposed appointments, require prior approval of budgets or financial arrangements by the government, or prevent the NPI from changing its constitution, dissolving itself, or terminating its relationship with government without government approval.
  - c. Contractual agreements. The existence of a contractual agreement between a government and an NPI may allow the government to determine key aspects of the NPI's general policy or programme. As long as the NPI is ultimately able to determine its policy or programme to a significant extent, such as by being able to renege on the contractual agreement and accept the consequences, by being able to change its constitution or dissolve itself without requiring government approval other than that required under the general regulations, then it would not be considered controlled by government.
  - d. Degree of financing. An NPI that is mainly financed by government may be controlled by that government. Generally, if the NPI remains able to determine its policy or programme to a significant extent along the lines mentioned in the previous indicator, then it would not be considered controlled by government.
  - e. Risk exposure. If a government openly allows itself to be exposed to all, or a large proportion of, the financial risks associated with an NPI's activities, then the arrangement constitutes control. The criteria are the same as in the previous two indicators.
- 5.138 A single indicator could be sufficient to establish control in some cases, but in other cases, a number of separate indicators may collectively indicate control. A decision based on the totality of all indicators will necessarily be judgmental in nature.

### NPIs serving households (NPISHs)

5.139 Non-profit institutions serving households (NPISHs) consist of non-market NPIs that are not controlled by government. They provide goods and services to households free or at prices that are not economically significant. Most of these goods and services represent individual consumption but it is possible for NPISHs to provide collective services.

# D. The non-financial corporations sector and its subsectors

- 5.140 Non-financial corporations are corporations whose principal activity is the production of market goods or non-financial services. The non-financial corporations sector is composed of the following set of resident institutional units:
  - All resident non-financial corporations (as understood in macroeconomic statistics and not just restricted to legally constituted corporations), regardless of the residence of their shareholders;
  - b. The branches of non-resident enterprises that are engaged in non-financial production on the economic territory on a long-term basis;
  - c. All resident NPIs that are market producers of goods or non-financial services.
- 5.141 Sectors are groups of institutional units, and the whole of each institutional unit must be classified to one or another sector even though that unit may be engaged in more than one type of economic activity. Some non-financial corporations or quasi-corporations may have secondary financial activities: for example, producers or retailers of goods may provide consumer credit directly to their own customers. As explained more fully below, such corporations or quasi-corporations are nevertheless classified as belonging in their entirety to the non-financial corporate sector provided their principal activity is non-financial. Sectors are groups of institutional units, and the whole of each institutional unit must be classified to one or other sector even though that unit may be engaged in more than one type of economic activity.
- 5.142 Two classification criteria are used to subsector the non-financial corporations sector. One criterion is to show NPIs separately from other units in the sector. These units other than NPIs may be described as for profit institutions (FPIs). The second criterion is that of control to show:
  - a. Public non-financial corporations,
    - Of which: public corporations which are part of a domestic multinational enterprise
  - b. National private non-financial corporations,

Of which: national private corporations which are part of a domestic multinational enterprise, and

- c. Foreign controlled non-financial corporations.
- 5.143 The criteria for control of corporations and NPIs by government and non-resident units are described in detail in section B. Corporations controlled by non-resident units are described as being foreign controlled.
- 5.144 The full subsectoring of the non-financial corporations sector can be seen as a two-way table as shown in table 5.2. The exact form of presentation of the subsectors will depend on both analytical and statistical considerations. It may be that the number of NPIs is such that some control categories are empty or sufficiently sparse that the detail cannot be shown for reasons of confidentiality. At the least, it is recommended to compile data for the left-most column based on control, to monitor the impact of globalization on the generation and distribution of income, and on the accumulation of assets and liabilities. It is also considered useful to distinguish the entries for the bottom row of table 5.2.

**Commented [ED24]:** Only limited details of this section will be included in BPM7.

Table 5.2 (2025 SNA): Subsectors of the non-financial corporations sector (= Updated version of Table 4.1 in the 2008 SNA)

| Non-financial corporations   | FPIs                                     | NPIs                                     |
|--|--|--|
| Public non-financial corporations  | Public non-financial FPIs                | Public non-financial NPIs                |
| Of which: Part of a domestic<br>multinational enterprise<br>Private non-financial corporations   | Private non-financial FPIs               | Private non-financial NPIs               |
| Of which: Part of a domestic<br>multinational enterprise<br>Foreign-controlled non-financial<br>corporations<br>Of which: Special Purpose Entities<br>(SPEs) | Foreign-controlled non-financial<br>FPIs | Foreign-controlled non-financial<br>NPIs |
| Total non-financial corporations   | Total non-financial FPIs                 | Total non-financial NPIs                 |

# E. The financial corporations sector and its subsectors

- 5.145 Financial corporations consist of all resident corporations that are principally engaged in providing financial services, including insurance and pension funding services, to other institutional units. In addition, due to its important role in the financial system, the central bank, although predominantly producing non-market services for the society as a whole, is also treated as a financial corporation. The financial corporations sector is composed of the following set of resident institutional units:
  - All resident financial corporations (as understood in macroeconomic statistics and not just restricted to legally constituted corporations), regardless of the residence of their shareholders;
  - b. The branches of non-resident corporations that are engaged in financial activity on the economic territory on a long-term basis;
  - c. All resident NPIs that are market producers of financial services.
- 5.146 Apart from the collective non-market services produced by the central bank, the production of financial services is the result of financial intermediation, financial risk management, liquidity transformation or auxiliary financial activities. Because the provision of financial services is typically subject to strict regulation, it is usually the case that units providing financial services do not produce other goods and services and financial services are not provided as secondary production.
- 5.147 One form of financial innovation has seen a substantial growth in activity of a kind traditionally carried out by, or through, financial corporations but that may also be done directly by non-financial enterprises themselves. For example, there is a tendency in some countries for producers or retailers of goods to provide consumer credit directly to their customers. Another example is the tendency for non-financial enterprises in some countries to raise funds themselves by selling their own obligations directly on the money or capital markets. However, the enterprise as a whole must continue to be classified as non-financial provide that:
  - A non-financial enterprise does not create a new institutional unit, such as a subsidiary corporation, to carry out the financial activity; and

- b. The financial activity remains secondary to the principal activity of the enterprise.
- 5.148 The same principle applies to the subsectoring of financial corporations. For example, many deposit-taking corporations also engage in financial auxiliary services. However, as a single institutional unit, the commercial bank as a whole, including its financial auxiliary type of activities, is classified in the subsector "deposit-taking corporations except the central bank". For the same reason, central bank or monetary authority-type functions carried out by agencies within the central government that are not separate institutional units from government are not allocated to the central bank subsector. This is discussed further in the following-section F and in chapter 30.
- 5.149 The financial corporations sector is divided into nine subsectors in the system of national accounts and external sector statistics, according to its activity in the market and the liquidity of its liabilities. These nine subsectors are shown in table 5.1 (2025 SNA)/table 4.1 (BPM7) and each is described later in this section.
- 5.150 The nine subsectors of financial corporations are arranged in the following ways in external accounts:
  - a. The standard components use three subsectors (shown in table 4.2, BPM7): the central bank, deposit-taking corporations except the central bank, and the other seven subsectors combined as "other financial corporations." Additional details can be compiled according to circumstances.
  - b. The functional category classification of debt positions between affiliated financial intermediaries is defined in terms of the first five subsectors of the financial sector—that is, the central bank, deposit-taking corporations except the central bank, money market funds (MMFs), non-MMF investment funds, and other financial intermediaries (except insurance corporations and pension funds). Such debt is excluded from direct investment, as discussed in paragraph 6.28.
- 5.151 Although the financial corporations sector and its subsectors are defined in terms of economic function, data sources may tend to follow regulatory definitions. Differences between regulatory and statistical definitions should be monitored, and adjustments made, where necessary.
- 5.152 As well as being subsectored according to the nature of the financial activity being undertaken, the financial corporations sector can also be subsectored in the same manner as the non-financial corporations sector to show which units are subject to public control (including, as an of which item, those which are part of a domestic multinational enterprise), which are national private corporations (including, as an of which item, those which are part of a domestic multinational enterprise), and which are foreign controlled. In addition, each of these subsectors could be broken down further, to show the difference between NPIs and FPIs. Thus in principle each of the rows in table 5.2 may be further disaggregated in the manner of table 5.1 though it is unlikely that all possible cross-classifications exist and a compressed subsectoring based on local circumstance and particular analytical interest may be sufficient. In this respect, it is recommended, however, to have a breakdown of the financial corporations sector as a whole into the subsectors based on control.
- 5.153 The recommended breakdown according to the nature of financial activity may not be sufficient to capture new developments in the financial world, in particular the expansion of financial institutions involved in nonbank financial intermediation. For this reason, further breakdowns of the subsectors of the financial corporations sector, as well as further details for a number of financial instruments, are encouraged as supplementary items. This is discussed further in chapter 29.
- 5.154 "Fintech" refers to technology-enabled innovation in financial services that could result in new business models, applications, processes, or products with an associated material effect on the provision of financial services. Countries where these activities are significant are encouraged to compile further breakdowns of relevant subsectors, as supplementary items. This is discussed further in chapter 22. In external accounts, identification of "of which" category for fintech companies within the subsector classification is recommended.

## 1. Central bank

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be included in BPM7

in BPM7

5.155 The central bank is the financial institution (or institutions) that exercises control over key aspects of the financial system. Their principal functions generally include conducting monetary policy, including by issuing currency and regulating money supply and credit; managing international reserves and the payments system; promoting financial stability, including regulation and macroprudential supervision; and acting as banker to government. In general, the following financial institutions are classified in this subsector:

- a. The national central bank, including where it is part of a system of central banks, which in most economies are separately identifiable institutions that are subject to varying degrees of government control, engage in differing sets of activities, and are designated by various names (e.g., central bank, reserve bank, national bank, or state bank).
- b. Currency boards or independent currency authorities that issue national currency that is fully backed by foreign exchange reserves.
- c. Central monetary agencies of essentially public origin (for example, agencies managing foreign exchange or issuing bank notes and coin) that keep a complete set of accounts but are not classified as part of central government.
- d. National agencies, including notional resident units, of centralized currency unions. (More details on the recording of transactions and positions of these units are provided in section I.)

As long as the central bank is a separate institutional unit, it is always allocated to the financial corporations sector even if it is primarily a non-market producer.

- 5.156 If an institutional unit is mainly engaged in central banking activities, the entire unit is classified in the central bank subsector. Many central banks regulate and/or supervise other deposit-taking corporations and sometimes also other financial corporations, and these central bank activities also are included in the central bank subsector. However, if such activities are performed by a separate institutional unit, or units, that are affiliated with the government or with other sectors and if they are mainly engaged in regulating or supervising financial units, they are classified as financial auxiliaries rather than as units in the central bank subsector.
- 5.157 A few economies do not have central banks. Typical central banking activities that are performed by general government and cannot be separated into specific institutional units are treated as part of general government and are not allocated to the central bank subsector.
- 5.158 In economies in which some central banking functions are performed wholly or partly outside the central bank, particularly holding reserve assets, consideration should be given to compiling supplementary data for the monetary authorities.

### 2. Deposit-taking corporations except the central bank

- 5.159 Deposit-taking corporations except the central bank have financial intermediation as their principal activity. To this end, they have liabilities in the form of deposits or financial instruments (such as short-term certificates of deposit) that are close substitutes for deposits. The liabilities of deposit-taking corporations are typically included in measures of money broadly defined.
- 5.160 In general, the following financial intermediaries are classified in this subsector:
  - a. Commercial banks, "universal" banks, "all-purpose" banks;
  - b. Savings banks (including trustee savings banks and savings and loan associations);
  - c. Post office giro institutions, post banks, giro banks;
  - d. Rural credit banks, agricultural credit banks;
  - e. Cooperative credit banks, credit unions;
  - f. Electronic money institutions with liabilities part of broad money;

- g. Specialized banks or other financial corporations if they take deposits or issue close substitutes for deposits; and
- h. Traveler's check companies that mainly engage in financial intermediation; and
- i. Offshore banks which are incorporated or registered in the country.
- 5.161 The liabilities of deposit-taking corporations to residents are typically included in measures of broad money, even though the SNA/BPM does not provide a definition of broad money, which may differ across constituencies (see paragraph ...). The money-issuing sector may be identified on a supplementary basis to assist in reconciliation with monetary data. It consists of the central bank plus deposit-taking corporations plus other institutions that issue liabilities included in the definition of broad money (e.g., money market funds).
- 5.1615.162 Electronic money institutions are entities authorized to issue electronic money, which is a payment instrument whereby monetary value is electronically stored on a physical device or remotely at a server, They should be classified as depository corporations, if they are a financial corporation and if the electronic money issued is included in broad money. Electronic money can usually be used for payments to third parties and is, therefore, a close substitute for transferable deposits. Monetary value stored on specific prepaid instruments does not represent electronic money if the instruments are designed to address specific needs only and can be used only in a limited way.

#### 3. Money market funds (MMFs)

- 5.1625.163 Money market funds (MMFs) are collective investment schemes that raise funds by issuing shares or units to the public. The proceeds are invested primarily in money market instruments, MMF shares or units, transferable debt instruments with a residual maturity of not more than one year, bank deposits and instruments that pursue a rate of return that approaches the interest rates of money market instruments. MMF shares can often be transferred by cheque or other means of direct third-party payment. Because of the nature of the instruments the schemes invest in, their shares or units may be regarded as close substitutes for deposits.
- 5.1635.164 Unit trusts or investment trusts primarily investing in similar instruments as the ones referred to in the above paragraph are also classified as money market funds, unless the investors are restricted to a particular group of entities. <u>Corporations taking care of the management and administration of MMFs are generally classified as financial auxiliaries.</u>

#### 4. Non-MMF investment funds

5.1645

Non-MMF investment funds are collective investment schemes that raise funds by issuing share or units to the public, and investing predominantly in longer-term financial assets, such as equity shares, bonds, mortgage loans, and non-financial assets. Investment fund shares or units are generally not close substitutes for deposits. They are not transferable by means of cheque or direct third-party payments. Investment funds can be open or closed ended. Open-ended funds or open funds are those whose shares or units are, at the request of the holders, repurchased or redeemed directly or indirectly out of the undertaking's assets. Closed-ended funds or closed funds are open for subscription only during a specified period at the launch of the scheme; thereafter investors can acquire shares only by buying them on a secondary market (directly or sometimes even on an exchange) from other investors. Closed-ended investment funds issue a limited number of shares or units. New shares or units are rarely issued once the fund has been launchedClosed-ended, closed, or exchange-traded funds are those with a fixed share capital, where investors entering or leaving the fund must buy or sell existing shares. Investment funds may be constituted as follows: (a) under the law of contract (as investment companies), or (d) otherwise with similar effect. Fund managers of investment funds are generally classified as financial auxiliaries (see paragraphs 5.171 – 5.173). 5.1655.166 Hedge funds are a kind of investment fund. Hedge fund is a term that covers a heterogeneous range of collective investment schemes, typically involving high minimum investments, light regulation, and a wide range of investment strategies, via leverage.

5.1665.167 \_\_\_\_Special purpose government funds, usually called sovereign wealth funds, are more likely to be classified as captive financial institutions (see paragraphs 5.174 - 5.175). The same holds for trusts set up to manage wealth of a limited group of beneficiaries (see paragraph 5.107).

5.1675.168 Unit trusts or investment trusts primarily investing in similar instruments as the ones referred to in paragraph 5.160 are also classified as non-MMF investment funds, unless the investors are restricted to a particular group of entities. Corporations taking care of the management and administration of MMFs are generally classified as financial auxiliaries.

- 5.1685.169 Funds thatwhich own, and rent out, dwellings and/or commercial property, are classified as providers of rental and other types of real estate services, and not as providers of financial services. As providers of non-financial services, they are classified in the non-financial corporations sector, and not as financial corporations. On the other hand, investment funds thatwhe primarily invest in debt and equity instruments in companies thatwhich own, and rent out, dwellings and/or commercial property would qualify as non-MMF investment funds. This also holds for investment funds thatwhe directly invest in real estate in other economies, in which case the investments are recorded as investments in equity of notional non-resident units. In the case of hybrid real estate investment funds, the units would need to be classified according to their principal activity, i.e., the activity which accounts for most of the value added. As value added from real estate activities is typically much larger than the fees related to investments in financial instruments, even though most administration and maintenance services may be outsourced to specialized entities, these hybrid funds will typically end up in the non-financial corporations sector.
- 5.1695.170 Investment funds thatwho directly invest in other non-financial assets, such as some crypto assets, gold and other valuable metals, or high-end wines and whiskies, are classified as non-MMF investment funds, because the main part of their returns on the invested assets will relate to holding gains, and does not consist of the production of non-financial services.
- 5.1705\_171 In the case of fund-of-funds, i.e., investment funds only investing in other funds, a distinction should be made between "fettered" fund-of-funds, which only invest in funds that are managed and administered by the same management company, versus "non-fettered" funds, which invest in any fund, even those managed by competing companies. In the latter case, the relevant funds should be treated as separate institutional units. In the former case, the fund-of-funds and the individual funds would typically share the same management company, which is to be classified in subsector S.126 Financial auxiliaries. However, this would not necessarily call for a consolidation of the fund-of-funds and the individual funds, because the latter may also have shareholders other than the fund-of-funds. A particular case, where a consolidation could be analytically useful, is one in which a fettered fund-of-funds invests in individual funds with no participation, as shareholders, by third parties.
- 5.1715\_\_\_\_\_\_In the case of asset management provided by commercial banks, regarding which the risks and rewards of the assets managed are with the investor(s), the assets should be consolidated with the accounts of the investor, if it concerns a single institutional unit (e.g., if the asset management is customised to the client, like in "managed accounts" of private banking services to wealthy clients), or a separate institutional unit, to be classified as either money-market funds or non-MMF investment funds, should be distinguished, assuming that the relevant assets (and liabilities) can be separated out of the accounts of the relevant banks. See also the decision tree in Figure 5.2.
- 5.1725.173 Also in line with the decision tree in Figure 5.2, investment funds which are set up and/or owned by another institutional investor, such as a pension scheme, should be consolidated with the investor, if the investment fund only serves a single investor, unless the fund clearly has autonomy of decision. In the case it concerns a non-resident fund, then it should be classified in subsector S.127 Captive financial institutions and money lenders. Autonomy of decision would primarily concern the degree of autonomy in making decisions on the investment policy, either or not restricted by more general policy guidance.

5. Other financial intermediaries, except insurance corporations and pension funds

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| <del>3.173<u>3.1</u></del> | 74<br>financia<br>other th<br>acquirit<br>interme | _Other financial intermediaries except insurance corporations and pension funds consist of<br>al corporations that are engaged in providing financial services by incurring liabilities, in forms<br>than currency, deposits or close substitutes for deposits, on their own account for the purpose of<br>ang financial assets by engaging in financial transactions on the market. It is a feature of a financial<br>diary that transactions on both sides of the balance sheet are carried out in open markets.   |   |
|----------------------------|---|--|---|
| <u>5.1745.1</u>            | 75  | In general, the following financial intermediaries are classified in this subsector:   |   |
|                            | a.  | Financial corporations engaged in the securitization of assets. Securitization involves raising funds<br>by selling a security backed by specific assets or income streams. For example, an originating<br>mortgage lender could sell a portfolio of loans to a securitization vehicle that issues securities sold<br>to investors. The originator may continue to provide administrative services, but the vehicle is the<br>legal owner of the portfolio. Such vehicles are included in "other financial intermediaries, except<br>insurance corporations and pension funds" if the entity is the legal owner of a portfolio of assets,<br>sells a new financial asset that represents an interest in the portfolio, and has or potentially has a<br>full set of accounts. However, in cases in which the originator issues asset-backed securities on its<br>own books, then securitization may take place without the creation of a separate entity. When the<br>portfolio is not transformed, or the vehicle does not bear market or credit risks, then it can be<br>combined with its parent (if resident in the same economy) or treated as a captive financial<br>institution (if in a different economy to that of its parent). | <b>Commented [ED28]:</b> Paragraph 4.78, BPM6 |
|                            | b.  | Underwriters, security and derivative dealers (operating on own account). In contrast, security brokers and other units that arrange trades between buyers and sellers but do not purchase and hold securities on their own account are classified as financial auxiliaries (see paragraph 5.173 (b));   |   |
|                            | c.  | Financial corporations engaged in lending, including the finance associates of retailers, who may<br>be responsible for financial leasing and both personal or commercial finance;   |   |
|                            | d.  | Central clearing counterparties. These organizations provide clearing and settlement transactions in securities and derivatives. Clearing refers to the process of offsetting obligations and entitlements vis-à-vis counterparties to transactions so that settlement – which involves the actual exchange of securities, derivatives, and funds – can occur more efficiently on a net basis. The central clearing counterparties involve themselves in the transaction and mitigate counterparty risk;   |   |
|                            | e.  | Specialized financial corporations that assist other corporations in raising funds in equity and debt markets and provide strategic advisory services for mergers, acquisitions, and other types of financial transactions. (These corporations are sometimes called "investment banks.") In addition to assisting with the raising of funds for their corporate clients, such corporations invest their own funds, including in private equity, in hedge funds dedicated to venture capital, and in collateralized lending. However, if such corporations take deposits or close substitutes for deposits, they are classified as deposit-taking corporations;  | Commented [ED29]: Paragraph 4.77 e, BPM6      |
|                            | f.  | Bank restructuring agencies; and   |   |
|                            | g.  | Specialized financial corporations that provide:   |   |
|                            |   | Short-term financing for corporate mergers and takeovers;  |   |
|                            |   | • Export/import finance;   |   |
|                            |   | • Factoring services;  |   |
|                            |   | • Venture capital and development capital firms.   |   |
| 6                          | Finan   | cial auviliaries   |   |
| <del>5.175<u>5.1</u></del> | associa<br>these tr                               | _Financial auxiliaries consist of financial corporations that are principally engaged in activities<br>ted with transactions in financial assets and liabilities or with providing the regulatory context for<br>ansactions but in circumstances that do not involve the auxiliary taking ownership of the financial   |   |

#### assets and liabilities being transacted.

5.1765.177 Corporations facilitating financial transactions, such as central clearing counterparties, stock exchanges, derivative exchanges, and repurchase agreement settlement institutions are <u>classified as</u> financial <u>auxiliariesintermediaries</u>, if they <u>do notgenerally</u> act as principals to the counterparties to the underlying transactions; <u>if they act as principals to the counterparties</u>, otherwise they are <u>classified as</u> financial <u>intermediaries</u>.

5.1775.178 In general, the following financial entities are classified in this subsector:

- Insurance brokers, salvage and claims adjusters (whether employed by the insurance company, an independent adjuster or a public adjuster employed by the policyholder), insurance and pension consultants;
- Loan brokers, securities brokers that arrange trades between security buyers and sellers but that do not purchase and hold securities on their own account, investment advisers, and so on (securities dealers that trade in securities on their own account are other financial intermediaries);
- c. Flotation corporations that manage the issue of securities;
- d. Corporations whose principal function is to guarantee, by endorsement, bills and similar instruments;
- Corporations that arrange derivative and hedging instruments, such as swaps, options and futures (without issuing them);
- f. Corporations providing infrastructure for financial markets such as securities depository companies, custodians, clearing offices facilitating transactions without acting as the counterparty (in contrast, central clearing counterparties, as discussed in paragraph 5.170 (d), are counterparties and thus classified as intermediaries rather than auxiliaries), and nominee companies;
- g. Managers of pension funds, investment funds including mutual funds and other-mutual funds, etc. (but not the funds they manage);
- h. Stock exchanges, insurance exchanges, and commodity and derivative exchanges; crypto exchanges that facilitate in buying and selling of different crypto assets;
- i.\_\_\_Foreign exchange bureaus;

## i.j. Crowd funding platforms;

- j.k.\_Non-profit institutions recognized as independent legal entities serving financial corporations;
- kel. Head offices of financial corporations that are principally engaged in controlling financial corporations or groups of financial corporations but that do not themselves conduct the business of financial corporations;
- <u>+m</u> Central supervisory authorities of financial intermediaries and financial markets when they are separate institutional units.
- m.n. eCorporationsFinancial digital platforms primarily involved in operation of electronic intermediating payment transactions mechanisms that do not incur liabilities against the instruments (if they do incur liabilities against the instruments, then they are other financial intermediaries except insurance corporations and pension funds) (see paragraph 22.80, Chapter 22, 2025 SNA/Chapter 16, BPM7); and
- o. ≠Resident offices of foreign <u>financial institutionsbanks</u> that do not accept deposits or extend credit on their own account; and
- n.p. Credit rating agencies.

### 7. Captive financial institutions and money lenders

5.1785.179 Captive financial institutions and money lenders consist of institutional units providing financial

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services, where most of either their assets or liabilities are not transacted on open financial markets. It includes entities transacting within only a limited group of units (such as with subsidiaries) or subsidiaries of the same holding corporation or entities that provide loans from own funds provided by only one sponsor. Other financial intermediaries, except insurance corporations and pension funds (discussed in paragraphs 5.169 - 5.170) are distinguished from captive financial institutions and money lenders in that the latter serve a limited group only for at least one side of their balance sheet.

5.1795.180 In general, the following financial corporations are classified in this subsector:

- a. Entities such as trusts, estates, or agencies accounts, where a restricted group of beneficiaries assumes the risks and rewards, or where the single beneficiary assuming the risks and rewards is resident in another country.
- b-a. Holding corporations that hold only the assets (owning controlling-levels of equity) of a group of subsidiary corporations and whose principal activity is owning the- group without providing any other service to the enterprises in which the equity is held, that is, they do not administer or manage other units.
- e.b. Special purpose units or conduits that qualify as institutional units and raise funds in open markets to be used by their parent corporation.
- d.c.\_Units which provide financial services exclusively with own funds, or funds provided by a sponsor to a range of clients and incur the financial risk of the debtor defaulting, including
  - Moneylenders.
  - Corporations engaged in lending (for example providing student loans, import/export loans) from funds received from a sponsor such as a government unit or non-profit institution.
  - Pawnshops that predominantly engage in lending.
- e.d. eConduits, intragroup financiers, and treasury functions when these functions are undertaken by a separate institutional unit. Conduits typically refer to entities that raise funds, which could be debt securities, shares or partnership interest, on open financial markets for passing on to other affiliated corporations. Often, the conduit's liabilities are guaranteed by a parent company.
- f.e. Entities such as Ftrusts and similar wealth-holding entities, estates, or agencies accounts that solely hold assets and liabilities, along with the associated property income, for a restricted group of investors or beneficiaries. In the case of a single <u>investor or</u> beneficiary/investor assuming the risks and rewards, the accumulated assets should be assigned to the sector of the <u>investor or</u> beneficiary/investor, unless the unit is resident in another economy than its beneficiary/investor.

## 8. Insurance corporations (ICs)

5.1805.181 Insurance corporations consist of incorporated, mutual and other entities whose principal function is to provide life, accident, sickness, fire or other forms of insurance to individual institutional units or groups of units or reinsurance services to other insurance corporations. Captive insurance is included, that is, an insurance company that serves only its owners. Deposit insurers, issuers of deposit guarantees and other issuers of standardized guarantees that are separate entities and act like insurers by charging premiums and have reserves, are classified as insurance corporations. More details on the recording of insurance are provided in chapter 24, 2025 SNA/Annex 8, BPM7.

### 9. Pension funds (PFs)

5.1815.182 Pension liabilities arise when an employer or government obliges or encourages members of households to participate in a social insurance scheme that will provide income in retirement. They may also arise from collective employer-independent schemes, such as schemes for self-employed persons. The social insurance scheme smay be organized by employers or by government, they may be organized by insurance corporations on behalf of employeres or separate institutional units may be established to hold and manage

the assets to be used to meet the pensions and to distribute the pensions. *The pension fund subsector consists* of only those social insurance pension funds that are institutional units separate from the units that create them. More details on the institutional unit test as well as the classification and recording of pension schemes are provided in chapter 24.

# F. The general government sector and its subsectors

### 1. Government units as institutional units

- 5.1825.183 Government units are unique kinds of legal entities established by political processes that have legislative, judicial or executive authority over other institutional units within a given area. Viewed as institutional units, the principal functions of government are to assume responsibility for the provision of goods and services to the community or to individual households and to finance their provision out of taxation or other incomes, to redistribute income and wealth by means of transfers, and to engage in non-market production. In general terms:
  - a. A government unit usually has the authority to raise funds by collecting taxes or compulsory transfers from other institutional units. In order to satisfy <u>one of</u> the basic requirements of an institutional unit in macroeconomic statistics, a government unit, whether at the level of the total economy, a region or a locality, must have funds of its own either raised by taxing other units or received as transfers from other government units and the authority to disburse some, or all, of such funds in the pursuit of its policy objectives. It must also be able to borrow funds on its own account;
  - b. Government units typically make three different kinds of final outlays:
    - The first group consists of actual or imputed expenditures on the free provision to the community of collective services such as public administration, defence, law enforcement, etc. that are organized collectively by government and financed out of general taxation or other income;
    - The second group consists of expenditures on the provision of goods or services free, or at
      prices that are not economically significant, to individual households. These expenditures
      related to, for example, education and health, are deliberately incurred and financed out of
      taxation or other income by government in the pursuit of its social or political objectives, even
      though individuals could be charged according to their usage;
    - The third group consists of transfers paid to other institutional units, mostly households, in order to redistribute income or wealth.
- 5.1835.184 Within a single territory there may be many separate government units when there are different levels of government, specifically central, state or local governments. In addition, social security funds also constitute government units. These different kinds of government units are described later when the subsectoring of the general government sector is explained.

#### Government units as producers

5.1845\_185 The fact that governments choose to supply not only collective services but also many goods and individual services free, or at prices that are not economically significant, to households or other units does not necessitate that they produce them themselves. Even in the case of most collective services, or so-called "public goods", governments are obliged only to assume responsibility for organizing and financing their production. They are not obliged to produce them. However, government units do usually engage in a wide range of productive activities in practice, covering not only collective services but also many other goods and individual services. Because it is largely a matter of political choice, the range of goods and services produced by government units varies greatly from one country to another. Apart from some collective services such as public administration and defence, it is therefore difficult to categorize certain types of production, such as the production of education or health services, as intrinsically governmental, even though

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they are often produced by government units.

5.1855.186 When a government unit wishes to intervene through the production of goods and services it has fourthree options:

- a. it may create a public corporation whose corporate policy, including pricing and investment, it is able to control;
- b. it may create an NPI that it controls;
- $\underbrace{c.}_{i} it may produce the goods or services itself in an establishment that it owns but that does not exist as a separate legal entity from the government unit itself:$
- e.d. it may create or enter into a public private partnership (PPP); see chapter 30 for more details.
- 5.1865.187 However, a government establishment, or group of establishments engaged in the same kind of production under common management, should be treated as a quasi-corporation if the following three criteria hold:
  - a. the unit charges prices for its outputs that are economically significant;
  - b. the unit is operated and managed in a similar way to a corporation; and
  - c. the unit has a complete set of accounts that enable its operating surpluses, savings, assets and liabilities to be separately identified and measured.
- 5.1875.188 Such quasi-corporations are market producers that are treated as separate institutional units from the government units that own them. They are classified, sectored and subsectored in the same way as public corporations.
- 5.1885\_189 In order to be treated as a quasi-corporation the government must allow the management of the enterprise considerable discretion not only with respect to the management of the production process but also the use of funds. Government quasi-corporations must be able to maintain their own working balances and business credit and be able to finance some or all of their capital formation out of their own savings, depreciation reserves or borrowing. The ability to distinguish flows of income and capital between quasi-corporations and government implies that their operating and financing activities are not fully integrated with government revenue or finance statistics in practice, despite the fact that they are not separate legal entities.
- 5.1895.190 Producer units of government that cannot be treated as quasi-corporations, like all unincorporated enterprises that cannot be separated from their owners, remain in the same institutional unit as the owner, in this case within the general government sector. They are likely to consist largely, or entirely, of non-market producers: that is, producers most or all of whose output is supplied to other units free, or at prices that are not economically significant. In addition to providing non-market goods or services to the general public, such units may include government producers supplying non-market goods or services to other government units for purposes of intermediate consumption or gross fixed capital formation: for example, munitions factories, government printing offices, transport agencies, computer or communications agencies, etc. However, it is possible for an unincorporated enterprise within a government to be a market producer. The example often quoted is that of a bookshop within a museum.

## Social security schemes and social security funds

5.1905.191 Social security schemes are social insurance schemes that cover the community as a whole or large sections of the community and are imposed and controlled by government units. The schemes cover a wide variety of programmes, providing benefits in cash or in kind for old age, invalidity or death, survivors, sickness and maternity, work injury, unemployment, family allowance, health care, etc. There is not necessarily a direct link between the amount of the contribution paid by an individual and the benefits he or she may receive.

5.1915.192 When social security schemes are separately organized from the other activities of government units and hold their assets and liabilities separately from the latter and engage in financial transactions on their own account, they qualify as institutional units that are described as social security funds. However, institutional arrangements in respect of social security schemes differ from country to country and in some countries they may become so closely integrated with the other finances of government as to bring into question whether they should be treated as separate institutional units.

5.1925.193 The amounts raised, and paid out, in social security contributions and benefits may be deliberately varied in order to achieve objectives of government policy that have no direct connection with the concept of social security as a scheme to provide social benefits to members of the community. They may be raised or lowered in order to influence the level of aggregate demand in the economy, for example. Nevertheless, so long as they remain separately constituted funds, they must be treated as separate institutional units in macroeconomic statistics.

### 2. The general government sector

5.1935.194 The general government sector consists of the following groups of resident institutional units:

- a. All units of central, state or local government (as described immediately below);
  - b. All non-market producers that are controlled by government units.
- 5.1945.195 The sector also includes social security funds, either as separate institutional units or as part of any or all of central, state or local government. The sector does not include public corporations, even when all the equity of such corporations is owned by government units. Nor does it include quasi-corporations that are owned and controlled by government units. However, unincorporated enterprises owned by government units that are not quasi-corporations remain integral parts of those units and, therefore, must be included in the general government sector.

5.1955.196 If a government uses an entity that is resident in the economic territory of another government to carry out general government activities (i.e., fiscal activities, rather than for a public corporation), that entity is not included as part of the general government in either its economy of residence or the economy of the government that uses the entity. Such entities are not treated in the same way as embassies and other territorial enclaves if they are created and operate under the laws of the host economy. These entities are treated as direct investment enterprises of the government that owns them and classified as separate institutional units in the economy where they are established. See also paragraphs 5.100 – 5.102, and paragraph 6.xx, BPM7/ Non-resident international joint ventures between governments, where neither party has control of the entity, are apportioned to governments as notional resident units.

### 3. Subsectors of the general government sector

5.1965.197 A full subsectoring of the general government would allow for all government units, including social security funds, to be distinguished for each of central, state and local government. In practice, though, it is usual to show all social security funds together as one subsector or to merge them all with their appropriate level of government and not show social security funds by level of government separately. Further, NPIs may be shown as an "of which" item for general government as a whole or for central, state and local government individually.

5.1975.198 The first method of subsectoring general government is as follows:

- a. Central government;
- b. State government;
- c. Local government;

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#### d. Social security funds;

where it is understood that each of the subsectors a, b and c include government controlled non-market producers but exclude social security funds at that level of government.

### 5.1985.199 The second method of subsectoring general government is as follows:

- a. Central government;
- b. State government;
- c. Local government;

where it is understood that each of the subsectors a, b and c include both government controlled non-market producers and social security funds at that level of government.

5.1995.200 Under either method of subsectoring, NPIs should be shown as an "of which" heading under the appropriate level of government.

5.2005.201 The choice between the two methods of subsectoring depends mainly on the size, or importance, of social security funds within a country and on the way in which they are managed.

5:2015.202 In some countries there may not exist a proper intermediate level of government between central and local government, in which case the subsector "state government" is not distinguished. In others there may be more than two levels of government below the central government. In that case, the lower levels should be aggregated with state or local government as appropriate.

### Central government

- 5.2025.203 The central government subsector consists of the institutional unit or units making up the central government plus those non-market producers that are controlled by central government.
- 5.2035.204 The political authority of central government extends over the entire territory of the country. Central government has therefore the authority to impose taxes on all resident and non-resident units engaged in economic activities within the country. Its political responsibilities include national defence, the maintenance of law and order and relations with foreign governments. It also seeks to ensure the efficient working of the social and economic system by means of appropriate legislation and regulation. It is responsible for providing collective services for the benefit of the community as a whole, and for this purpose incurs expenditures on defence and public administration. In addition it may incur expenditures on the provision of services, such as education or health, primarily for the benefit of individual households. Finally, it may make transfers to other institutional units, namely to households, NPIs, corporations and other levels of government.
- 5:2045.205 Central government is a large and complex subsector in most countries. It is generally composed of a central group of departments or ministries that make up a single institutional unit plus, in many countries, other institutional units. The departments may be responsible for considerable amounts of expenditure within the framework of the government's overall budget, but often they are not separate institutional units capable of owning assets, incurring liabilities, engaging in transactions, etc., independently of central government as a whole.
- 5:2055,206 The departments of central government are often deliberately dispersed geographically and located in different parts of the country, but they nevertheless remain parts of a single institutional unit. Similarly, if the central government maintains branch offices or agencies in different parts of the country to meet local needs, including military bases or installations that serve national defence purposes, these must also be counted as parts of a single institutional unit for central government.

5.2065.207 In addition to government departments and ministries, there may be agencies of central government with separate legal identity and substantial autonomy; they may have discretion over the volume and composition of their expenditures and may have a direct source of revenue such as earmarked ("hypothecated") taxes. Such agencies are often established to carry out specific functions such as road construction or the non-market production of health or education services. These should be treated as separate institutional units if they maintain full sets of accounts but are part of the central government subsector if the services they produce are non-market and if they are controlled by central government.

5:2075.208 In some countries, the central government may include units that engage in financial transactions that in other countries would be performed by central banks. In particular, units of central government may be responsible for the issue of currency, the maintenance of international reserves and the operation of exchange stabilization funds, and also transactions with the International Monetary Fund (IMF). When the units in question remain financially integrated with central government and under the direct control and supervision of central government, they cannot be treated as separate institutional units. Moreover, whatever monetary authority functions are carried out by central government are recorded in the government sector and not the financial corporations sector. However, because of the analytical importance that is attached to obtaining accounts covering the monetary authorities as a whole, and in order to provide links with other statistical systems, such as the BPM, the GFSM and the Monetary and Financial Statistics Manual and Compilation Guide (MSFMCG), it is recommended that the transactions of central government agencies carrying out monetary authority and deposit-taking functions should be separately identified, so that they can be combined with those of the central bank and other deposit-taking corporations in special tabulations if desired.

### State government

- 5.208<u>5.209</u> The state government subsector consists of state governments that are separate institutional units plus those non-market producers that are controlled by state governments.
- 5-2095.210 State governments are institutional units exercising some of the functions of government at a level below that of central government and above that of the governmental institutional units existing at a local level. They are institutional units whose fiscal, legislative and executive authority extends only over the individual "states" into which the country as a whole may be divided. Such "states" may be described by different terms in different countries. In some countries, especially small countries, individual states and state governments may not exist. However, in large countries, especially those that have federal constitutions, considerable powers and responsibilities may be assigned to state governments.
- 5.2105.211 A state government usually has the fiscal authority to levy taxes on institutional units that are resident in, or engage in economic activities or transactions within, its area of competence (but not other areas). In order to be recognized as an institutional unit it must be able to own assets, raise funds and incur liabilities on its own account. It must also be entitled to spend or allocate some, or possibly all, of the taxes or other income that it receives according to its own policies, within the general rules of law of the country, although some of the transfers it receives from central government may be tied to certain specified purposes. It should also be able to appoint its own officers, independently of external administrative control. On the other hand, if a regional unit is entirely dependent on funds from central government, and if the central government also dictates the ways in which those funds are to be spent at the regional level, it should be treated as an agency of central government tanks of central government.
- 5.2115.212 State governments, when they exist, are distinguished by the fact that their fiscal authority extends over the largest geographical areas into which the country as a whole may be divided for political or administrative purposes. In a few countries more than one level of government exists between the central government and the smallest governmental institutional units at a local level; in such cases, for purposes of sectoring within macroeconomic statistics, these intermediate levels of government are grouped together with the level of government, either state or local, with which they are most closely associated.
- 5.2125.213 State governments may own, or control, corporations in the same way as central government. Similarly, they may have units that engage in market production, in which case the relevant producer units should be treated as quasi- corporations whenever their operations and accounting records justify this.

### Local government

- 5.2135.214 The local government subsector consists of local governments that are separate institutional units plus those non-market producers that are controlled by local governments. In principle, local government units are institutional units whose fiscal, legislative and executive authority extends over the smallest geographical areas distinguished for administrative and political purposes. The scope of their authority is generally much less than that of central government or state governments, and they may, or may not, be entitled to levy taxes on institutional units resident in their areas. They are often heavily dependent on grants or transfers from higher levels of government, and they may also act as agents of central or regional governments to some extent. However, in order to be treated as institutional units they must be entitled to own assets, raise funds and incur liabilities by borrowing on their own account; similarly, they must have some discretion over how such funds are spent. They should also be able to appoint their own officers, independently of external administrative control. The fact that they may also act as agents of central or state governments to some extent does not prevent them from being treated as responsibility.
- 5.2145\_215 As they are the government units that are in closest contact with the institutional units resident in their localities, they typically provide a wide range of services to local residents, some of which may be financed out of transfers from higher levels of government. The same rules govern the treatment of the production of goods and services by local government units as are applied to central and state governments. Units such as municipal theatres, museums, swimming pools, etc., that supply goods or services on a market basis should be treated as quasi-corporations whenever the appropriate accounting information is available and classified to the non-financial corporated enterprises within local government. Units supplying services such as education or health on a non-market basis remain an integral part of the local government unit to which they belong.

### Social security funds

5.215 5.216 The social security funds subsector consists of the social security funds operating at all levels of government.

## 4. The alternative method of subsectoring

5.2165.217 The alternative method of subsectoring the general government sector is to group the social security funds operating at each level of government with the corresponding government units and government controlled non-market producers at that level of government. The two alternative methods of subsectoring are designed to accommodate different analytical needs. The decision as to which method is more appropriate in a given country cannot be made a priori. It depends on how important social security funds are and on the extent to which they are managed independently of the government units with which they are associated. If the management of social security funds is so closely integrated with the short- or medium-term requirements of the government's general economic policy that contributions and benefits are deliberately adjusted in the interests of overall economic policy, it becomes difficult, at a conceptual level, to draw any clear distinction between the management of social security funds may exist in only a very rudimentary form. In either of these circumstances it is difficult to justify treating social security funds as a separate subsector on a par with central, state and local government, and it is more appropriate to use the alternative method of subsectoring in which they are grouped with the corresponding government units at each level of government.

## G. The households sector and its subsectors

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### 1. Households as institutional units

- 5.2175.218 For the purposes of macroeconomic statistics, a household is defined in paragraph 5.4 as a single person having a separate living accommodation, or a group of natural persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food. In general, each member of a household should have some claim upon the collective resources of the household. At least some decisions affecting consumption or other economic activities must be taken for the household as a whole.
- 5.2185.219 Households often coincide with families, but members of the same household do not necessarily have to belong to the same family so long as there is some sharing of resources and consumption. Households may be of any size and take a wide variety of different forms in different societies or cultures depending on tradition, religion, education, climate, geography, history and other socio-economic factors. The definition of a household that is adopted by survey statisticians familiar with the socio-economic conditions within a given country is likely to approximate closely to the concept of a household as defined in macroeconomic statistics, although survey statisticians may add more precise, or operational, criteria within a particular country.
- 5.2195.220 Domestic staff who live on the same premises as their employer do not form part of their employer's household even though they may be provided with accommodation and meals as remuneration in kind. Paid domestic employees have no claim upon the collective resources of their employers' households and the accommodation and food they consume are not included with their employer's consumption. They should therefore be treated as belonging to separate households from their employers.
- 5.2205.221 Persons living permanently in an institution, or who may be expected to reside in an institution for a very long, or indefinite, period of time are treated as belonging to a single institutional household when they have little or no autonomy of action or decision in economic matters. Some examples of persons belonging to institutional households are the following:
  - a. Members of religious orders living in monasteries, convents or similar institutions;
  - b. Long-term patients in hospitals, including mental hospitals;
  - c. Prisoners serving long sentences;
  - d. Persons living permanently in retirement homes;
  - e. Persons living in labour camps.

5.2215.222 On the other hand, persons who enter hospitals, clinics, convalescent homes, religious retreats, or similar institutions for short periods, who attend residential schools, colleges or universities, or who serve short prison sentences should be treated as members of the individual households to which they normally belong.

5.2225.223 The residence of individual natural-persons is determined by that of the household of which they form part and not by their place of work. All members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise spend periods of time abroad. If they work and reside abroad so long that they acquire a centre of economic interest abroad, they cease to be members of their original households. More details on the residence of households are provided in paragraphs 5.253 – 5.267.

### 2. Unincorporated enterprises within households

5.2235.224 As noted in the introduction, households are unlike corporations in that they undertake final consumption. However, like corporations, they may also engage in production. Household unincorporated market enterprises are created for the purpose of producing goods or services for sale or barter on the market. They can be engaged in virtually any kind of productive activity: agriculture, mining, manufacturing, construction, retail distribution or the production of other kinds of services. They can range from single persons working as street traders or shoe cleaners with virtually no capital or premises of their own through

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to large manufacturing, construction or service enterprises with many employees.

5.2245.225 Household unincorporated market enterprises also include unincorporated partnerships that are engaged in producing goods or services for sale or barter on the market. The partners may belong to different households. When the liability of the partners for the debts of the enterprises is unlimited, the partnerships must be treated as unincorporated enterprises and remain within the household sector since all the assets of the household, including the dwelling itself, are at risk if the enterprise goes bankrupt. However, unincorporated partnerships with many partners, such as some large legal, accounting or architectural firms, are likely to behave like corporations and should be treated as quasi-corporations assuming complete sets of accounts are available for the partnerships. Partnerships whose partners enjoy limited liability are effectively separate legal entities and, as already noted, are treated as corporations.

5.2255.226 An unincorporated enterprise can only be treated as a corporation if it is possible to separate all assets, including financial assets down to the level of cash, into those that belong to the household in its capacity as a consumer from those belonging to the household in its capacity as a producer.

#### 3. Family trusts

5.2265.227 Households may create trusts for a variety of reasons. Disregarding the issue of a family trust being resident in another country than its beneficiaries, as a consequence of which it would automatically be treated as a separate institutional unit, the standard criteria for an institutional unit should be applied for treating trusts which are resident in the same economy as its beneficiaries. In practice, the trust should be consolidated with the household, if there is a single beneficiary assuming the risks and rewards, while in the case of a trust with multiple beneficiaries, the trust is to be treated as a separate institutional unit, to be classified in subsector S.127 Captive financial institutions and money lenders assuming that the group of beneficiaries is restricted. More details on the treatment of trusts are provided in paragraphs 5.103 – 5.111.

#### 4. Subsectors of the household sector

- 5.2275.228 The household sector consists of all resident households. There are many useful ways in which the households sector may be subsectored and statistical agencies are advised to give due consideration to the various possibilities. More than one method may be adopted if there is a demand for different breakdowns of the households sector from different users, analysts or policymakers.
- 5.2285.229 The SNA has to be applied flexibly, not rigidly. In order to implement any of the possible methods of subsectoring the households sector suggested below, individual countries should make their own decisions about what they consider to be the most relevant classification. Thus, the fact that a specific, detailed classification according to a criterion of interest is proposed here should not be interpreted as implying that the characteristics proposed are necessarily or always the most important for purposes of economic analysis and policymaking. Having said that, in view of the importance of having internationally comparable data on the distribution of income, consumption, saving and wealth across household groups, below a subsectoring according to be supplementary items, which could be more or less relevant depending on country circumstances.
- 5.2295.230 More generally, when breaking down the households sector into various groups of households, institutional households are typically excluded from the analysis<sub>2</sub>, because The main reason for excluding these types of households is that they may comprise large groups of individuals with very different socio-demographic backgrounds, who are not related, and who may have very different income and consumption patterns. As a consequence, they are not really comparable with private households, which is why it is recommended to analyze and present them separately.

#### Subsectoring according to levels of income and wealth

5.2305.231 Households may be grouped into subsectors according to their level of income or their level of

wealth. As the size and composition of households differ significantly, ranging from one-person households to households with multiple adults with or without children, the levels of income, consumption and wealth are not directly comparable. Therefore, it is recommended to focus on 'equivalized' results, using equivalence scales that take into account the differences in size and composition of households. In doing so, results for income and consumption are typically recalculated according to the number of consumption units in each household, whereby a value is assigned to each household type in proportion to its needs. As a default, the "modified OECD scale" could be used, which assigns a value of 1 to the household headfirst adult household member (14 and above), of 0.5 to each additional household member of 14 and above, and of 0.3 to each additional household member of usehold member up to 13. However, as the most appropriate scale may depend on specific circumstances, countries may look for other equivalence scales which may be more representative of their national circumstances.

- 5.2315.232 In relation to the analysis of wealth, the use of equivalence scales depends on the purpose of the analysis. They should be avoided when analysing the characteristics of individual components of wealth and the distribution of net wealth. To control for different household structures, complementary analysis can be done on per capita basis. However, for the joint analysis of income, consumption and wealth, it is practical to use the same equivalence scales to adjust wealth as those used to adjust income and consumption. In doing so, wealth is treated as a source of income streams that can be used to finance current consumption and contribute to current economic well-being in the household.
- 5.2325\_233 As a standard, breakdowns by standard of living based on (current) disposable income and based on wealth should be targeted, showing income and wealth decile groups, and, if possible, results for the top 5% and the top 1%. Depending on analytical needs, alternative breakdowns as presented below could be compiled, as supplementary items. More details on compiling distributional results are provided in chapter 32.

# Subsectoring according to other criteria

5.2335.234 Households may also be grouped into subsectors according to the nature of their largest source of income. For this purpose, the following types of household income need to be distinguished:

- a. Income from self-employment;
- b. Income from (Netnet) property income;
- c. Remuneration of employees;
- d. (Net) current transfers received, to be broken down into pension benefits and other (net) current transfers.

5.2345.235 Households are allocated to subsectors according to which of the four categories of income listed above is the largest for the household as a whole, even if it does not always account for more than half of total household income. When more than one income of a given category is received within the same household, for example, because more than one member of the household earns remuneration of employees or because more than one property or transfer income is received, the classification should be based on the total household income within each category.

5.2355.236 Another way of grouping households into subsectors is to look at the number and age of the members of the household, as follows:

- a. Single less than 65 years old;
- b. Single 65 and older;
- c. Single with children living at home;
- d. Two adults less than 65 without children living at home;
- e. Two adults at least one 65 or older without children living at home;

- f. Two adults with less than 3 children living at home;
- g. Two adults with at least 3 children living at home; and
- h. Other households

5.236<u>5.237</u> Within the above household compositions, children are generally classified as up to 16 years and up to 24 years if they are the offspring of one of the household members and are still living at home. The classification of children may vary between countries dependent on national legislation.

5.2375.238 Alternative classifications could also be considered:

- a. By geographic region;
- b. By housing status (e.g., rental, owner-occupied with mortgage, and owner-occupied without mortgage);
- c. By the age of the reference person (e.g., 0-24, 25-34, 35-44, 45-54, 55-64, 65-74, and 75+);
- By labour market status of the reference person (e.g., unemployed, employee, employer, own account worker, unpaid family worker, member of producer's cooperative, student, retired and not classified by status);
- e. By highest level of educational attainment of the reference person (e.g., low, middle and high);
- f. By disability status of the reference person;
- g. By migratory status of the reference person;
- h. By ethnicity of the reference person;
- i. By degree of urbanisation; and

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j. By sex or gender of the reference person.

5.2385\_239 Cross-sections of the groupings as listed above with the subsectors according to the level of income and wealth may also be possible, such as further breaking down labour market status groups by income decile, or by looking at the income distribution within regions. This may provide more detailed insights in inequalities within specific subgroups. However, it is important to assess the quality of the results at these more granular levels of detail. In this respect, more detailed insights in household groups may also be obtained by combining the distributional results based on the level of income and wealth with socio-demographic information, focusing on specific socio-demographic characteristics of households or individuals belonging to the various household groups.

## H. The non-profit institutions serving households sector

5.2395.240 Previous sections have explained that NPIs are allocated to the corporations sectors when they are engaged in market production and to the general government sector if they are engaged in non-market production but subject to government control. The remaining NPIs are termed non-profit institutions serving households (NPISHs). All provide goods and services free or at prices that are not economically significant.

5:2405.241 One type of NPISHs consists of those that are created by associations of natural persons to provide goods or, more often, services primarily for the benefit of the members themselves. The services are usually provided free, being financed by regular membership subscriptions or dues. They include NPISHs such as professional or learned societies, political parties, trades unions, consumers' associations, churches or religious societies, and social, cultural, recreational or sports clubs. They do not include bodies serving similar functions that are controlled by government units. Religious institutions are treated as NPISHs even when mainly financed by government units if this majority financing is not seen as empowering control by

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government. Political parties in countries with one-party political systems that are controlled by government units by means of providing the necessary finance are included in the general government sector.

- 5.2415.242 In some communities, NPISHs may be found that do not possess any legal status or formal articles of association. They should be treated as NPISHs when they perform the same kinds of functions as the societies, political parties, trades unions, etc., described above, even if they are not legally constituted as NPISHs. However, when groups of households collaborate on communal construction projects (such as construction of buildings, roads, bridges, ditches, dykes, etc.), they should be treated as informal partnerships engaged on own-account construction rather than NPISHs. NPISHs should normally have a continuing role to play and not be deemed to be created for single projects of limited duration.
- 5.2425\_243 A second type of NPISH consists of charities, relief or aid agencies that are created for philanthropic purposes and not to serve the interests of the members of the association controlling the NPISH. Such NPISHs provide goods or services on a non-market basis to households in need, including households affected by natural disasters or war. The resources of such NPISHs are provided mainly by donations in cash or in kind from the general public, corporations or governments. They may also be provided by transfers from non-residents, including similar kinds of NPISHs resident in other countries.
- 5.2435.244 The third type of NPISHs consist of those that provide collective services, such as research institutions that make their results freely available, environmental groups, etc. These are less common than the first two types of NPISHs and may not always be significantly represented in a country.
- 5.2445.245 If the number or size of NPISHs funded from abroad is significant, it may be useful to disaggregate NPISHs into those that are mainly funded domestically and those that are mainly funded from abroad.

## I. The rest of the world

5.2455.246 For purposes of macroeconomic statistics, the rest of the world consists of all non-resident institutional units that enter into transactions with resident units, or have other economic links with resident units. It is not a sector for which complete sets of accounts have to be compiled, although it is often convenient to describe the rest of the world as if it were a sector. The accounts, or tables, for the rest of the world are confined to those that record transactions between residents and non-residents or other economic relationships, such as claims by residents on non-residents, and vice versa. The rest of the world includes certain institutional units that may be physically located within the geographic boundary of a country; for example, foreign enclaves such as embassies, consulates or military bases, and also international organizations.

## 1. International organizations

5.2465.247 Certain international organizations have all the essential attributes of institutional units. The special characteristics of an "international organization" as this term is used in macroeconomic statistics may be summarized as follows:

- a. The members of an international organization are either national states or other international organizations whose members are national states; they thus derive their authority either directly from the national states that are their members or indirectly from them through other international organizations;
- b. They are entities established by formal political agreements between their members that have the status of international treaties; their existence is recognized by law in their member countries;
- c. International organizations are created for various purposes:
  - International financial organizations these entities conduct financial intermediation at an
    international level (i.e., channelling funds between lenders and borrowers in different
    economies). A central bank to a group of economies (including currency union central banks)
    is an example of an international financial organization. Other examples are the IMF, World
    Bank Group, BIS, and regional development banks; and

- Other international organizations these entities provide non-market services of a collective nature for the benefit of their member states, such as peacekeeping, education, science, policy issues, and other research.
- 5.2475.248 International organizations may be global or regional. An international agency responsible for functions normally undertaken by general government, such as administration and policing, is classified as an international organization, but it may be useful to identify such agencies separately in statistics.
- 5.2485.249 International organizations are treated as not being resident of the territories in which they are located. This treatment is because they are generally exempted from, or are only partially subject to, national laws or regulations, and so they are not considered to be part of the national economy of the territory, or territories, in which they are located.
- 5.2495.250 International organizations may be presented as an institutional sector in some cases. First, they may appear in data for a currency union or economic union, in which case, international organizations of the union are residents of the union as a whole. Second, they may be of relavance when data by sector of counterparty are prepared, for example, for sources of current transfers. Such data would be of particular interest in economies in which international organizations have a substantial presence.
- 5.2505.251 In contrast to international organizations, enterprises owned jointly by two or more governments are not treated as international organizations but like other enterprises. In the case of joint zones under the control of two or more governments, the enterprises in the zone are split between governments based on some operational indicator or equal proportions (see paragraph 5.253). The distinction is based on whether the organizations produces for the market and is important because of the different treatments for the residence of international organizations and enterprises. Separate pension funds for the staff of international organizations. Therefore, the residence of these pension funds is determined according the general principle for determining residency.

### 2. Currency unions and currency union central banks

- 5.2515.252 A currency union is defined as a union to which two or more economies belong and that has a regional central decision-making body, commonly a currency union central bank (CUCB), endowed with the legal authority to conduct a single monetary policy and issue the single currency of the union.
- 5.2525.253 A distinction can be made between centralized currency unions and decentralized currency unions. In the former model, the currency union has a CUCB owned by the governments of the member economies with the common currency issued by the CUCB and central bank operations in each economy carried out by branches or agencies of the CUCB. In the latter model, the currency union comprises a CUCB and currency union national central banks (CUNCBs) of the member economies with the CUCB being owned by the CUNCBs. The monetary policy decisions are taken by the decision-making body of the CUCB, which also coordinates the implementation of the decisions, a primary responsibility of the CUNCBs.
- 5.2535\_254 The central bank of a currency union is treated as a special kind of international organization. The members of the international organization of which the central bank is part are the governments or the national central banks of the countries in the currency union. The central bank is treated as being non-resident in any of the member countries of the currency union but is resident in the currency area as a whole. More on the treatment of currency and economic unions can be found in appendix 3 of *BPM7*.
- 5.2545.255 In relation to the treatment of centralized currency unions, national agencies, including the notional resident units, are treated as residents of the economies of their location. Transactions between the national agency and resident units of the same member economy settled through accounts at the currency union central bank will thus be recorded/imputed in the balance sheets of the national agency for statistical purposes, and treated as transactions and positions between residents. This ensures that in each economy, monetary activities with residents of the currency union are carried out by national agencies (which resemble in its operations a national central bank) having their own assets and liabilities.



territory. Subsequently, the concept of residence is further elaborated for households and individuals, for enterprises and various types of production arrangements, and for government units, (regional) international organizations and NPISHs. The section ends with a discussion of the treatment of assets and liabilities held by groups of residents and non-residents, the treatment of changes in residence of institutional units, and finally, alternatives to the residence concept.

## 1. More details on the economic territory

#### International organizations

5.2565.257 The economic territory of an international organization (defined in paragraphs 5.239 – 5.243) consists of territorial enclave(s) over which the organization has jurisdiction. These enclaves are clearly demarcated land areas or structures that the international organization owns or rents and uses, and that are formally agreed on with the government of the territory, or territories, in which the enclave(s) are physically located. Each international organization is an economic territory in its own right, covering operations from all its locations. As a consequence, the economic territory of international organizations is not included in the scope of a country's macroeconomic statistics.

#### Special zones

5.2575.258 Sometimes a government has a separate physical or legal zone that is under its control, but to which, to some degree, separate laws are applied. For example, a free trade zone or offshore financial centre (i.e., a jurisdiction in which financial corporations located there predominantly have financial transactions and positions with clients outside that jurisdiction) may be exempt from certain taxation or other laws. Because of the need to view the whole economy, to have comprehensive global data, and to be compatible with partner data, these special zones always should be included in the economic statistics of that economy. While national totals showing all economic activities in the economy are required for international purposes, separate data may be prepared for different subsets of the economy. To the extent that different laws and policies may apply, and <del>natural persons</del>, goods, and finance do not flow completely freely between a zone and the rest of the economy, a government may wish to have data to support separate analysis of either or both the special zone and the remainder of the economy.

## Changes in economic territory

5.2585.259 The scope of an economic territory may change under several circumstances:

- a. The passing of control of a geographic area from one government to another by mutual agreement or under a decision of an international court or arbitrator. These exchanges satisfy the definition of a transaction. Accordingly, assets conveyed from one government to the other are recorded as an acquisition of land (in the external accounts recorded in the capital account) or equipment and buildings (in the external accounts recorded as transactions in goods and services, respectively, if they can be separated). If the exchange is made in exchange for payment or extinguishing of a prior liability, the corresponding entry is a financial account entry for the agreed amount. If there is no amount payable, the corresponding entry is a capital transfer. If there is a mutual exchange of land or buildings, both entries in the exchange are shown on a gross basis. In addition to these cases involving the two governments, the exchange is mesidence, these would result in other changes in the volume of assets and liabilities.
- b. Change in the status of a particular area by seizure. Because this change in status is not by mutual agreement, it is not a transaction, but would instead be reflected by entries in the other changes in volume account.

Commented [ED36]: Paragraph 4.9, BPM6

Commented [ED34]: Paragraph 4.7, BPM6

Commented [ED35]: Paragraph 4.8, BPM6

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- c. The merger of two or more economic territories to have a single national government may be seen as an absorption of one territory by another or the elimination of two territories and the creation of another. These arrangements result in entries in the other changes in volume account (namely, elimination of cross-border liabilities between the two previous constituent territories and possible reclassifications for economies having asset or liability positions with either territory).
- d. The split of a single economic territory into two or more territories is not in itself a transaction. However, there may be associated flows between the parties, for example, compensation for assuming liabilities that would qualify as transactions and be classified according to usual definitions. There also would be entries in the other changes in volume account for the appearance of cross-border liabilities between the two separating economies.

5.2595.260 When such events occur, it is essential that metadata are provided to assist users in understanding how the territorial changes affect the data.

#### Joint zones

5.2605.261 In some cases, areas are under joint administration or sovereignty, that is, an area is under the effective economic control of two or more governments. These areas can be called joint administration or sovereignty zones. Because, typically, they have laws that differ from the primary territories of the individual governments, the zone could be considered an economic territory in its own right. Because the number of enterprises in these zones typically is small, however, it may be preferred to split the enterprises in the zone between the primary territories rather than publish separate data for the zone. The method of splitting should be to prorate on the basis of a relevant factor according to the circumstances, such as some operational indicator or equal proportions for each of the primary territories, when the enterprises that account for the vast majority, or all, of the economic activity in the zone are effectively operated from the economy of just one of the sovereign authorities, it may be preferred to treat those enterprises as residents of that economy, showing the other economy as recipient of its share of property income, taxes, and so on, and avoiding most of the complexities of prorating for those enterprises. The statistical compilers of each primary territory involved should consult with each other to adopt consistent methods with no gaps or overlaps. Through metadata and consultations, they may also assist compilers in counterpart economies to ensure consistency of bilateral data.

# 2. More details on residence

### Residence of households

- 5.2615.262 Although many people are clearly strongly connected to only one economy, others have substantial economic interests in two or more economic territories. Factors such as location of dwellings, employment, asset holdings, citizenship, migration status, income tax status, income received, expenditure, business interests, and location of dependent family members may point to different economies. To identify the economy of residence when there are connections to two or more economies, the following definition is used to identify the centre of predominant economic interest.
- 5.2625.263 A household is resident in the economic territory in which household members maintain or intend to maintain a dwelling or succession of dwellings treated and used by members of the household as their principal dwelling. Any unincorporated enterprise of such a household is also resident in this economic territory. Being present for one year or more in a territory or intending to do so is sufficient to qualify as having a principal dwelling there. If there is uncertainty about which dwelling is the principal dwelling, it is identified from the length of time spent there, rather than other factors such as presence of other family members, cost, size, or length of tenure.
- 5.2635.264 Individuals who belong to the same household must be residents of the same territory. If a member of an existing household ceases to reside in the territory where his or her household is resident, the individual

Commented [ED37]: Paragraph 4.10, BPM6

**Commented [ED38]:** Paragraphs 5.253-267 are based on paragraphs 4.116-4.130. BPM6

ceases to be a member of that household. As a result of this definition, the use of households as the institutional unit is compatible with residence being determined on an individual basis.

5.2645.265 Further to the general principles, some other factors are used to determine residence of particular categories. These categories are students, medical patients, ship's crew, as well as national diplomats, military personnel, staff of scientific stations, and other civil servants employed abroad in government enclaves (these enclaves are discussed in paragraph 5.14). In these cases, some other connections are considered to be more important in determining residence. In the case of significant population movements between two particular territories, compilers in each territory should cooperate to ensure consistent definitions and measurement.

#### Students

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5.2655\_266 People who go abroad for full-time study generally continue to be resident in the territory in which they were resident prior to studying abroad. This treatment is adopted even though their course of study may exceed a year. However, students change to being residents of the territory in which they are studying when they develop an intention to continue their presence in the territory of study after the completion of the studies. For students, the rationale for not changing the territory of residence is that the movement to the adifferent territory is considered to have a temporary motivation, that is, their centre of predominant economic interest remains with the home territory. The residence of accompanying dependents of students is determined in the same manner as the persons they accompany. From the perspective of their resident economics are included in import of services (in BPM classified under travel—see paragraph 11.xx, BPM7 for specific details).

#### Patients

5:2665.267 People who go abroad for the purpose of medical treatment maintain their predominant centre of interest in the territory in which they were resident before they received the treatment, even in the rare cases in which complex treatments take a year or more. As with students, the movement is considered to have a temporary motivation. The residence of accompanying dependents of patients is determined in the same manner as the persons they accompany. From the perspective of their resident economy, the expenditures of patients and accompanying persons in their host economies are included in import of services (in BPM classified under travel— see paragraph 11.xx, BPM7 for specific details).

# Crew of ships and so on

5.2675.268 Crew of ships, aircraft, oil rigs, space stations, or other similar equipment that operate outside a territory or across several territories are treated as being resident in their home base territory. The home base is determined from where they spend most time other than undertaking their duties. The home base is regarded as a stronger connection than the location of the mobile equipment or its operator, even though most of the time may be spent at the latter location. From the perspective of their resident economy, the expenditures of the crew members in their host economies are included in import of services (in BPM classified under travel).

#### Diplomats, military personnel, and so on

5.2685\_269 National diplomats, peacekeeping and other military personnel, and other civil servants employed abroad in government enclaves, as well as members of their households are considered to be residents of the economic territory of the employing government. Those enclaves – military bases, embassies, and the like, as discussed in paragraph 5.14 – form part of the economic territory of the employing government. They continue to be residents in their home economics even if they live in dwellings outside the enclaves. The expenditure of diplomats and so on, including that of their households, in their host economies is included in imports of goods and services (in BPM classified under government goods and services n.i.e.). Other

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employees, such as locally recruited staff, are resident in the location of their principal dwelling.

### International organization staff

5.2695.270 Staff of international organizations, including those with diplomatic status and military personnel, are resident in the territory of their principal dwelling. The treatment of international organization staff is different from national diplomats and others discussed in the previous paragraph because the latter continue to be paid from and directed by their home government and tend to have shorter postings and rotate back to their economy of origin.

### **Cross-border workers**

5.2705.271 Border workers, seasonal workers, and other short-term workers cross borders for a certain period to undertake a job. No special treatment is adopted, so their residence is determined according to the criteria in paragraph 5.254. Border workers are employed persons who cross from one territory to another to attend their place of employment. Seasonal workers cross the border for particular periods, such as the harvest or tourist seasons to attend a place of employment. Other short-term employment may occur for a particular task, such as a construction project, repairs, delivery of advice, and so on. In each case, the residence of the persons concerned is based on the principal dwelling, rather than the territory of employment.

### Highly mobile individuals

Some individuals have close connections with two or more territories, for example, they have dwellings in more than one territory in which they spend significant amounts of time. For individuals who do not have continuous actual or intended presence in any one territory for one year, the territory of the principal dwelling they maintain is the key consideration. In cases of no principal dwelling, or two or more principal dwelling in different economies, the territory of residence is determined on the basis of the territory in which the predominant amount of time is spent in the year. Although these individuals need to be classified as residents of a single economy for statistical result of classifying long-term guest workers as residents of the host economy is appropriate, however, in that their income and consumption in the host territory are not treated involve artificial rerouting — their income and travel expenses would be attributed to the home territory.

5.2715\_272 Nevertheless, it may be desirable for compilers to provide supplementary data on groups of non-residents that have significant links with the economy, for example, by remitting funds to family members remaining there or by intending to return there with savings or pension entitlements. Similarly, it may be desirable to have supplementary data on those who are classified as residents of the economy, but maintain significant links to other economies. <u>Appendix Annex 5-4</u> discusses some supplementary presentations for flows primarily associated with some of these mobile individuals.

#### Refugees

5.2725.273 No special treatment is adopted for refugees and they are recorded according to the same principles as migrants, although their motivation is usually different. Their residence will change from their home territory to the territory of refuge, if they have stayed or intend to stay in their place of refuge for one year or more, even if that residence is involuntary or transient, and its future status is unclear. The awarding of special rights and protection to refugees for at least one year could be taken into account to assess their intended duration of stay in the territory of refuge.

Commented [ED39]: This paragraph will not be included in the 2025 SNA.

## Application of residence principles

5.2735.274 In practice, residence principles are generally not applied to specific individuals, but to broad groups of people. As a result, factors such as intention to stay for one year or more are typically inferred from patterns of similar groups in the past. Some administrative data sources may vary somewhat from statistical definitions of residence. If the variations are significant, some adjustment may be made, or the administrative definition may be considered as an acceptable approximation in practice.

5.2745\_275 The determination of residence results in how the income, expenditure, and financial positions of the households concerned are treated in macroeconomic statistics. Table 4.3 provides a brief summary of some of the implications for the external accounts of whether a household is classified as resident or non-resident of the reporting economy for different types of flows. For example, a non-resident student studying in a territory is shown as being a source of service credits for education, housing, food, other goods and services, and possibly transfer debits, if the student is receiving a scholarship from the host economy. For a resident student, these transactions would be out of scope of the external accounts. The effect of changes of residence of natural persons is discussed in paragraph 5.284.

| Table 4.3 (BPM7): Select  | ed effects of a hou | isehold's residence | e status on the sta | tistics of the host economy |  |
|---------------------------|---------------------|---------------------|---------------------|-----------------------------|--|
| (BPM7) (= Table 4.3 of BE | 2M6)                |                     |                     |                             |  |

| Economic flow or position  | Resident (e.g., long-<br>term guest worker) | Nonresident (e.g., short-term<br>guest worker)  |
|--|---|---|
| Remuneration of employees<br>received from enterprises in the<br>reporting economy                       | Not external transaction                    | Earned income   |
| Social contributions and taxes<br>on wages and salaries paid by<br>employees in the reporting<br>economy | Not external transaction                    | Transfer income   |
| Personal expenditure in the reporting economy  | Not external transaction                    | Services, mainly travel   |
| Transfers to relatives in home economy   | Current or capital transfers                | Resident-resident transfer within<br>home economy, so outside balance of<br>payments (however, possible<br>financial account transactions if<br>made from bank in host economy) |
| A resident institutional unit's<br>Financial financial claims on or                                      | Not in external accounts                    | Included in external accounts   |

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**Commented [ED40]:** These paragraphs, including the table, will not be included in the 2025 SNA.
liabilities to the household Land and buildings in host economy

Land and buildings in home

economy

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 Not included in international investment position Direct investment asset in notional resident unit Direct investment liability of the reporting economy in notional resident unit

Not included in international investment position

#### **Residence of enterprises**

- 5.2755\_276 As a general principle, an enterprise is resident in an economic territory when the enterprise is engaged in a significant amount of production of goods or services from a location in the territory. Additional principles are spelled out in paragraphs 5.271 5.273. As stated in paragraph 6.1, an enterprise is an institutional unit engaged in production and may be a corporation or quasi-corporation, a non-profit institution, or an unincorporated enterprise (part of household sector).
- 5.2765\_277 In contrast to individuals and households, which may have connections to two or more economies, enterprises are almost always connected to a single economy. Taxation and other legal requirements tend to result in the use of a separate legal entity for operations in each legal jurisdiction. In addition, a separate institutional unit is identified for statistical purposes in cases in which a single legal entity has substantial operations in two or more territories (e.g., for branches, land ownership, and multierritory enterprises, as further elaborated in paragraphs 5.72–5.75.) As a result of splitting such legal entities, the residence of each of the subsequently identified enterprises is clear. The introduction of the terminology "centre of predominant economic interest" does not mean that entities with substantial operations in two or more territories no longer need to be split.
- 5.2775.278 It is generally required that production take place or is planned to take place in the territory over a period of a year or more for a quasi-corporation to be identified. All enterprises must be resident somewhere, however, so if an actual institutional unit's only activity is a production process that is undertaken over a shorter period, the unit is resident in the territory of location of the production.

#### Corporations with little or no physical presence

5.2785.279 A legal entity is resident in the economic territory under whose laws the entity is incorporated or registered. If it is a resident artificial subsidiary, it is combined with a parent resident in the same economy to form an institutional unit or, for some purposes, combined into a local enterprise group. However, it must not be combined with entities resident in other economies. If it has substantial operations in another economy, a branch may be identified there (see paragraph 5.18 (c)). In some cases, a corporation has little or no physical presence, for example, its administration is entirely contracted out to other entities. Banking, insurance, investment funds (as distinct from their managers), securitization vehicles, and some other institutional units with similar designations often operate this way. Similarly, with virtual manufacturing, all the physical processes are outsourced to other units.

5:2795.280 A single corporation might be registered in several jurisdictions, for example, incorporation, income tax, value added tax, and particular regulations, and a jurisdiction may have been agreed on for settling disputes involving the enterprise. In such cases, the jurisdiction of the laws that govern the creation and continued existence of the entity should be used as the criterion for determining residence. If there is no incorporation or registration, legal domicile is used as a criterion. The incorporation and registration represents a substantial degree of connection to the economy, associated with jurisdiction of assets, or location of managers or administration may be less clear-cut.

#### Production delivered from a base

5.2805.281 In some cases, an enterprise has a location that is used as a base to deliver services to other locations. For example, this mode is used for transport and also may be used for delivery of many kinds of services, **Commented [ED41]:** Paragraphs 5.268-274 are based on BPM6 paragraphs 4.131-4.137

such as on-site repairs, short-term construction, and many types of business services. In such cases, the residence of the enterprise is determined from its base of operations, rather than the point of delivery or location of mobile equipment, unless the activities at the point of delivery are sufficiently substantial to amount to a branch, as discussed in paragraphs 5.57 - 5.59. For example, an institutional unit that operates ships on the high seas and various territorial waters has its residence determined according to the criteria in paragraphs 5.267 - 5.272, and the economy of residence is not necessarily the same as the location where the ships spend the most time or the territory of registration of the ships. Additionally, the enterprise that operates the ships is not necessarily the same as the enterprise that owns the ships, such as where the ship operator has an operating lease from the ship owner, who is resident in another economy. The residence of the enterprise that owns the ship is also determined according to the criteria in paragraphs 5.268 - 5.272. Flags of convenience used by enterprises do not determine the residence of the operator, and indeed a single shipping operator may have ships registered in several economies. Similarly, the residence of enterprises that charter ships is determined by the location of its own base of operations, rather than the flags or locations of particular ships. The base of operating mobile equipment may be legally domiciled in one economy but managed from another economy.

The possibility of change of residence by enterprises is discussed in paragraph 4.167.

5.2815.282 Table 4.4 provides a brief summary of some of the implications for the external accounts of whether an enterprise is treated as a resident enterprise or as a nonresident for different types of flows and positions.

 Table 4.4 (BPM7): Selected effects of the residence status of an enterprise owned by a nonresident on the statistics of the host economy (BPM7) (= Table 4.4 of BPM6)

**Commented [ED42]:** This paragraph, including the table, will not be included in the 2025 SNA.

|  | Resident enterprise   | Nonresident enterprise                  |
|--|---|---|
| Economic flow or position  | (e.g., long-term construction project)  | (e.g., short-term construction project) |
| Sales by enterprise to residents   | Not external transaction  | Imports of goods and services           |
| Purchases by enterprise from residents   | Not external transaction  | Exports of goods and services           |
| Remuneration of employees<br>payable to residents of host<br>economy                 | Not external transaction if receivable  | Remuneration of employees               |
| Remuneration of employees<br>payable to residents of home<br>economy                 | Remuneration of employees   | Not transaction of host economy         |
| Net operating surplus  | Dividends payable or reinvested<br>earnings (enterprise is a direct<br>investment enterprise)               | Not external transaction                |
| Injections of funds by owners  | Direct investment liabilities of the<br>reporting economy (enterprise is a<br>direct investment enterprise) | Not external transaction                |
| A resident institutional unit's financial claims on or liabilities to the enterprise | Not included in external accounts   | Included in external accounts           |

#### **Residence of other institutional units**

#### General government

5.2825.283 General government includes operations outside the home territory, such as embassies, consulates, military bases, and other enclaves of foreign governments, including those providing training and other forms of assistance. Usually, these operations are not separate institutional units, but even if they were, they are residents of their home territory, rather than the host territory in which they are physically located. This treatment is adopted because they usually have some degree of immunity from the host territory's laws and are deemed under international law to be extensions of the home government's territory. However, an entity created by a government under the laws of the host jurisdiction is an enterprise resident in the host economy and not part of the general government sector in either economy. The residence of the employees of these operations is discussed in paragraph 5.259.

#### International organizations

5.2835.284 International organizations are defined in paragraphs 5.239 – 5.243. International organizations are resident in an economic territory of their own, and not of the economy in which they are physically located. This treatment applies to both international organizations located in only one territory and those located in two or more territories. The residence of the employees of these operations is discussed in paragraph 5.261.

5.2845.285 An international organization that operates peacekeeping and other military forces or that acts as the interim administration in a territory remains classified as an international organization and is non-resident in that territory, even if it undertakes general government functions. In cases in which these organizations are significant, it may be desirable to identify them separately.

5.2855.286 A separately constituted pension fund of an international organization is not treated as an international organization, but it is regarded as a financial corporation. Its residence is determined according to the general principles in paragraphs 5.268 – 5.272 – that is, it is a resident of the territory in which it is located, and if it lacks a physical presence, it is a resident of the economy in which it is incorporated or registered.

Regional international organizations

Commented [ED43]: Paragraphs 5.275-281 are based on BPM6 paragraphs 4.138-4.144

5.2865.287 Some international organizations cover a group of economies in a particular region, such as with economic or currency unions. If statistics are prepared for that region as a whole, these regional organizations are residents of the region as a whole, even though they are not residents of any member economy.

5.2875.288 When producing global or regional totals, international organizations are combined with national data.

#### NPISHs

5.2885\_289 An NPISH has a centre of economic interest in the economy in which the institution was legally created and is officially recognized and recorded as a legal or social entity. In practice, residence of the vast majority of NPISHs may be determined without ambiguity. When an NPISH is engaged in charity or relief work on an international scale, it may maintain substantial operations for individual territories that may amount to branches (see discussion in paragraph 5.57 – 5.59). Such a branch is usually financed largely or entirely by current or capital transfers from abroad. NPISHs are not international organizations, which are limited to those created by governments.

#### 3. Assets and liabilities held by groups that include both residents and non-residents

5.2895.290 Some financial assets have owners who are residents of different economic territories. Examples include joint bank accounts or other cases in which an account holder authorizes relatives to withdraw funds from the account. In these cases, the allocation between the owners may be unclear:

In the case of deposits of emigrant workers in their home economies that are freely usable by family
members resident in the home economies, a convention can be adopted to treat these assets as being
held by residents of the home economy.

Commented [ED44]: Based on paragraph 4.145, BPM6

- Similarly, for deposits of emigrant workers in the host economy that are freely usable by family
  members, a convention can be adopted to treat these as being held by a resident of the host economy.
- 5:2905.291 Compilers may adopt another treatment if better information is available. Because these accounts may be used to make transfers, it is important that such transactions are recognized at either the time of deposit or time of withdrawal (depending on the convention adopted). It is also important that compilers discuss methods with the compilers of monetary and financial statistics and compilers in the counterpart economy with a view to adopting consistent and realistic treatments in cases in which the values are significant.

#### 4. Changes in residence of institutional units

#### Change in residence of individuals

5.2915.292 Households or their individual members can change their territory of residence. Because all members of a household are residents of the same territory, the movement of an individual may require that the person leave one household and become a member of another household. The change in the residence by an owner of an asset or by someone who has a liability requires a reclassification, because no exchange is made between two parties and, accordingly, no transaction occurs. (The entries are discussed in paragraphs 9.21–9.22.)

#### Assets moved between entities

5.2925.293 For what are called "corporate migrations", two situations can occur: one in which assets are moved between entities and another in which the corporation itself changes residence. When a company is said to relocate to another jurisdiction, it usually involves transactions to move assets from a corporation in one economy to a related corporation in a different economy (see paragraphs 8.19 - 8.22, "corporate inversion and other restructuring"). That is, the ownership of assets is moved, rather than the entity changing residence.

#### Change in residence of entities other than natural-persons

5.2935.294 In contrast, in some rare cases, an entity changes its residence (i.e., without moving assets to ownership by another entity). These cases could arise from exchanges of territory between governments. Additionally, corporation or trust law in some cases allows entity emigration or immigration (e.g., it could be permitted within an economic union, but is not generally the case for most jurisdictions). The effects on the IIP would be treated as other changes in rolume in the same way as for the change in residence of an individual, recorded in the other changes in financial assets and liabilities account. (These cases are discussed in paragraph 9.23.)

#### 5. Alternatives to the residence concept

5.2945\_295 With globalization, an increasing number of entities have connections to two or more economies. Some additional data sets provide alternatives to the residence concept, such as those based on ownership (as in data on the activities of multinational enterprise groups, as discussed in Appendix 4, and consolidated banking statistics) and provide additional information, such as on resident workers who send remittances abroad (as discussed in Appendix 5). In consolidated banking statistics, banking groups and their global operations are reported as a single entity (i.e., all the controlled affiliates of an enterprise are allocated to the economy of the head office).

**Commented [ED45]:** These paragraphs are based on BPM6 paragraphs 4.165-4.168 and will not be included in this chapter of the 2025 SNA. However, some elements may feature in the relevant chapters describing transactions and other flows.



# National Statistician's Committee for Advice on Standards for Economic Statistics

NSCASE July 2024 – Chapter 5 NSCASE Meeting Minutes

# System of National Accounts 2025 Chapter 5: Residence, Institutional Units, and Sectors

- 1. The Chair invited Chris to present the item.
- 2. Chris stated that the chapter was joint SNA 2025 and BPM7. The chapter summarised conceptual and measurement issues around residence, institutional units and sectors. The main update in the chapter was the additional guidance for the treatment of free zones, offshore banks and offshore financial centres. He informed the Committee that the ONS was happy with the detail of the chapter but that external stakeholders had some queries on the status of real estate funds, which was evident in comments on both Chapter 29 and Chapter 5.
- 3. Robert agreed with ONS comments. Nonetheless, Chapter 29 repeated a lot of the content of Chapter 5 and suggested that they could be merged, removing the repeated material. He also identified several inconsistencies between the two chapters, as noted above [5.4].
- 4. The Chair agreed with Robert but noted that the chapter was already long, suggesting that if editors explored merging the content of the chapters, they should consider how the content could be divided to make it more digestible.
- 5. Robert believed the chapter was not clear on the classification of government owned foreign entities. He drew on the definition in 5.38 and figure 5.1, the chapter appeared to classify a government that owned a foreign entity as a multinational enterprise group. Nick then questioned how the IMF and World Bank would be treated. The Chair remarked that the European Central Bank was owned by the national governments.

# Chapter 6: Enterprises, establishments and industries (OLD Chapter 5: Enterprises, establishments and industries)

# A. Introduction

- 6.1 Institutional units are defined in chapter 45. The present chapter is concerned with production activities and the units that undertake them, starting with institutional units and then considering parts of institutional units. An enterprise is the view of an institutional unit as a producer of goods and services. The term enterprise may refer to a corporation, a quasi-corporation, an NPI or an unincorporated enterprise. Since corporations and NPIs other than NPISHs are primarily set up to engage in production, the whole of their accounting information relates to production and associated accumulation activities. Government, the central bank, households and NPISHs necessarily engage in consumption and may engage in production all, households do. As explained in chapter 45, whenever the necessary accounting information exists, the production activity of these units is separated from their other activities into a quasi-corporation. It is when this separation is not possible that an unincorporated enterprise exists within the government unit, the central bank, household or NPISH. It is thus possible to define an unincorporated enterprise as follows. An unincorporated enterprise represents the production activity of a quasi-corporation.
- 6.2 The majority of enterprises by number engages in only one sort of production. The majority of production, though, is carried out by a relatively small number of large corporations that undertake many different kinds of production, there being virtually no upper limit to the extent of diversity of production in a large enterprise. If enterprises are grouped together on the basis of their principal activities, at least some of the resulting groupings are likely to be very heterogeneous with respect to the type of production processes carried out and also the goods and services produced. Thus, for analyses of production in which the technology of production plays an important role, it is necessary to work with groups of producers that are engaged in essentially the same kind of production. This requirement means that some institutional units must be partitioned into smaller and more homogeneous units, which the SNA defines as establishments. *An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added.* Further, the SNA defines industries in terms of establishments. *An industry consists of a group of establishments engaged in the same, or similar, kinds of activity.* In the SNA, production accounts and generation of <u>carned</u> income accounts are compiled for industries as well as sectors.
- 6.3 This chapter first discusses productive activity and its classification in order to lay the ground for defining establishments and subsequently industries. All enterprises require some basic, routine services to support their production activities. When they are provided in house they are called ancillary activities. The recording of ancillary activities follows a number of conventions depending on exactly how they are provided. Ancillary activities are described in section D.
- 6.4 The definitions that emerge, as well as the underlying definitions of kinds of activities and of statistical units other than establishments, are consistent with the definitions in *ISIC, Rev. 4*. Any slight differences in wording between this chapter and the "Introduction" to the *ISIC* are noted and explained in the appropriate places below. Here and elsewhere reference is also made to the *CPC 2*, which is the classification of products used in the SNA.

# **B. Productive activities**

6.5 Production in the SNA, as will be discussed in detail in chapter 67, consists of processes or activities carried out under the control and responsibility of institutional units that use inputs of labour, capital, goods and services to produce outputs of goods and services. Any such activity may be described, and classified, with

reference to various characteristics, for example:

- a. Type of goods or services produced as outputs,
- b. Type of inputs used or consumed,
- c. Technique of production employed,
- d. Ways in which the outputs are used.

The same goods or services may be produced using different methods of production. Certain types of goods may be produced from quite different inputs; for example, sugar may be produced from sugar cane or from sugar beet, or electricity from coal, oil, nuclear power stations or from hydroelectric plants<u>and various other ways of generating</u> renewable energy (wind turbines, solar panels, etc.). Many production processes also produce joint products, such as meat and hides, whose uses are quite different.

#### 1. The classification of activities in the SNA

- 6.6 The classification of production activities used in the SNA is *ISIC* (Rev.4). The criteria used in *ISIC* to delineate each of its four levels of the classification are complex. The structure consists of 21 Sections, 88 Divisions, 238 Groups and 419 Classes. At the Division and Group levels, substantial weight is placed on the nature of the good or service that is produced as the principal product of the activity in question by referring to the physical composition and stage of productionfabrication of the item and the needs served by the item. This criterion furnishes the basis for grouping producer units according to similarities in, and links between, the raw materials consumed and the sources of demand for the items. As well, two other major criteria are considered at these levels: the uses to which the goods and services are put, and the inputs, the process and the technology of production.
- 6.7 While it is not necessary for purposes of this chapter to explain the concept of an activity in any detail, it is necessary to clarify the fundamental distinction between principal and secondary activities on the one hand and ancillary activities on the other.

#### 2. Principal and secondary activities

#### Principal activities

6.8 **The principal activity of a producer unit is the activity whose value added exceeds that of any other activity carried out within the same unit.** (The producer unit may be an enterprise or an establishment as defined below.) The classification of the principal activity is determined by reference to *ISIC*, first at the highest level of the classification and then at more detailed levels. The principal activity of an enterprise consists of the principal product and any by-products, that is, products necessarily produced together with principal products. The output of the principal activity must consist of goods or services that are capable of being delivered to other units even though they may be used for own consumption or own capital formation.

#### Secondary activities

6.9 A secondary activity is an activity carried out within a single producer unit in addition to the principal activity and whose output, like that of the principal activity, must be suitable for delivery outside the producer unit. The value added of a secondary activity must be less than that of the principal activity, by definition of the latter. The output of the secondary activity is a secondary product. Most producer units produce at least some secondary products.

## 3. Ancillary activities

6.10 As its name implies, an ancillary activity is incidental to the main activity of an enterprise. It facilitates the efficient running of the enterprise but does not normally result in goods and services that can be marketed. For enterprises that are relatively small and have only a single location, ancillary activities are not separately identified. For larger enterprises with multiple locations, it may be useful to treat ancillary activities in the same way as a secondary or even a principal product. A detailed discussion of the recording of ancillary activities is given in section D after the discussion on the recording of primary and secondary production is complete.

# C. Partitioning enterprises into more homogeneous units

6.11 Although it is possible to classify enterprises according to their principal activities using the *ISIC* and to group them into "industries", some of the resulting "industries" are likely to be very heterogeneous because some enterprises may have several secondary activities that are quite different from their principal activities. In order to obtain groups of producers whose activities are more homogeneous, enterprises have to be partitioned into smaller and more homogeneous units.

#### **1.** Types of production units

#### Kind-of-activity units

6.12 One way to partition an enterprise is by reference to activities. A unit resulting from such a partitioning is called a kind-of-activity unit (KAU). A kind-of-activity unit is an enterprise, or a part of an enterprise, that engages in only one kind of productive activity or in which the principal productive activity accounts for most of the value added. Each enterprise must, by definition, consist of one or more kind-of-activity units. When partitioned into two or more kind-of-activity units, the resulting units must be more homogeneous with respect to output, cost structure and technology of production than the enterprise as a whole.

#### Local units

6.13 Enterprises often engage in productive activity at more than one location, and for some purposes it may be useful to partition them accordingly. Thus, *a local unit is an enterprise, or a part of an enterprise, that engages in productive activity at or from one location.* The definition has only one dimension in that it does not refer to the kind of activity that is carried out. Location may be interpreted according to the purpose, narrowly, such as a specific address, or more broadly, such as within a province, state, county, etc.

#### Establishments

- 6.14 The establishment combines both the kind-of-activity dimension and the locality dimension. An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added. Establishments are sometimes referred to as local kind-of activity units (local KAUs).
- 6.15 Although the definition of an establishment allows for the possibility that there may be one or more secondary activities carried out, they should be on a small scale compared with the principal activity. If a secondary activity within an enterprise is as important, or nearly as important, as the principal activity, then that activity should be treated as taking place within a separate establishment from that in which the principal activity takes place.
- 6.16 Thus, establishments are designed to be units that provide data that are more suitable for analyses of production in which the technology of production plays an important role. However, it may still be necessary to transform the resulting data subsequently for purposes of input-output analysis, as explained briefly below

in describing the unit of homogeneous production and in more detail in chapter 2836.

6.17 In practice, an establishment may usually be identified with an individual workplace in which a particular kind of productive activity is carried out: an individual farm, mine, quarry, factory, plant, shop, store, construction site, transport depot, airport, garage, bank, office, clinic, etc.

#### 2. Data and accounts for establishments

- 6.18 The only data that can meaningfully be compiled for an establishment relate to its production activities. They include the following:
  - a. The items included in the production account and the generation of <u>earned</u> income account;
  - b. Statistics of numbers of employees, types of employees and hours worked;
  - c. Estimates of the stock of non-financial capital, including and natural resources, used;
  - d. Estimates of changes in inventories and gross fixed capital formation undertaken.
- 6.19 The compilation of a production account and a generation of <u>earned</u> income account implies that it must be feasible to calculate output and intermediate consumption and thus value added and also <u>compensationremuneration</u> of employees, taxes on production and imports, subsidies and the operating surplus or mixed income. In principle, it must be feasible to collect at least the above kinds of statistics for an establishment, even if they may not always be available, or needed, in practice.

#### 3. Application of the principles in specific situations

6.20 The application of the principles given above for partitioning an enterprise into establishments is not always straightforward. This section discusses several situations in which the organization of production is such that the application is particularly difficult.

#### Establishments within integrated enterprises

6.21 *A horizontally integrated enterprise is one in which several different kinds of activities that produce different kinds of goods or services for sale on the market are carried out simultaneously using the same factors of production.* This definition is consistent with *ISIC Rev.4* which reads in part:

Horizontal integration occurs when an activity results in end-products with different characteristics. This could theoretically be interpreted as activities carried out simultaneously using the same factors of production. In this case, it will not be possible to separate them statistically into different processes, assign them to different units or generally provide separate data for these activities. Another example would be the production of electricity through a waste incineration process. The activity of waste disposal and the activity of electricity production cannot be separated in this case.

- 6.22 Within the SNA, a separate establishment should <u>preferably</u> be identified for each different kind of activity wherever possible.
- 6.23 *A vertically integrated enterprise is one in which different stages of production, which are usually carried out by different enterprises, are carried out in succession by different parts of the same enterprise.* The output of one stage becomes an input into the next stage, only the output from the final stage being actually sold on the market. *ISIC Rev.4* describes vertically integrated enterprises as follows:

Vertical integration of activities occurs where the different stages of production are carried out in succession by the same unit and where the output of one process serves as input to the next. Examples of common vertical integration include tree felling and subsequent on-site sawmilling, a clay pit combined with a brickworks, or production of synthetic fibres in a textile mill.

- 6.24 In *ISIC Rev.4*, vertical integration should be treated like any other form of multiple activities. A unit with a vertically integrated chain of activities should be classified to the class corresponding to the principal activity within this chain, that is, to the activity accounting for the largest share of value added, as determined by the top-down method. This treatment has changed from previous versions of *ISIC*. It should be noted that the term "activity" in this context is used for each step in the production process that is defined in a separate *ISIC* class, even though the output of each step may not be intended for sale.
- 6.25 If value added or substitutes for the individual steps in a vertically integrated process cannot be determined directly from accounts maintained by the unit itself, comparisons with other units (for example, based on market prices for intermediate and final products) could be used. The same precautions for using substitutes as listed above apply here. If it is still impossible to determine the share of value added for the different stages in the chain of production activities, default assignments for typical forms of vertical integration can be applied. *The Companion Guide to ISIC and CPC* (United Nations (forthcoming)) provides a set of examples for such cases.
- 6.26 While the procedure for the treatment of vertically integrated activities could be applied to any unit, it should be noted that the SNA recommends that when a vertically integrated enterprise spans two or more sections of *ISIC*, at least one establishment must be distinguished within each section. With such a treatment, activities of units engaged in vertically integrated activities will not cross section boundaries of *ISIC*.
- 6.27 From an accounting point of view it can be difficult to partition a vertically integrated enterprise into establishments because values have to be imputed for the outputs from the earlier stages of production which are not actually sold on the market and which become intermediate inputs into later stages. Some of these enterprises may record the intra-enterprise deliveries at prices that reflect market values, but others may not. Even if adequate data are available on the costs incurred at each stage of production, it may be difficult to decide what is the appropriate way in which to allocate the operating surplus of the enterprise among the various stages. One possibility is that a uniform rate of operating surplus be applied to the costs incurred at each stage.
- 6.28 Despite the practical difficulties involved in partitioning vertically integrated enterprises into establishments, it is recommended in the SNA, as noted in the section of <u>ISIC</u> quoted above, that when a vertically integrated enterprise spans two or more sections of the <u>ISIC</u>, at least one establishment <u>mustshould preferably</u> be distinguished within each section. <u>ISIC</u> sections correspond to broad industry groups such as agriculture, fishing, mining and quarrying, manufacturing, etc.

#### Establishments owned by general government

- 6.29 Government units, especially central governments, may be particularly large and complex in terms of the kinds of activities in which they engage. The principles outlined above have toshould preferably be applied consistently and systematically to government units. The procedures to be followed when dealing with the main kinds of producer units owned by government may be summarized as follows.
- 6.30 If an unincorporated enterprise of government is a market producer and there is sufficient information available to treat it as a quasi-corporation, it should be treated as a publicly controlled unit in the non-financial or financial corporations sectors as appropriate. The usual conventions about distinguishing different establishments within the quasi-corporation apply.
- 6.31 An example of an unincorporated market enterprise that can be treated as a quasi-corporation is a municipal swimming pool that is independently managed and whose accounts permit its income, saving and capital to be measured separately from government so that flows of income, or capital, between the unit and government can be identified.
- 6.32 If an unincorporated enterprise of government is a market producer and there is insufficient information to treat it as a quasi-corporation, or if the unincorporated enterprise is a non-market producer, then it remains within the general government sector but it should <u>preferably</u> be treated as an establishment in its own right and allocated to the appropriate industry.
- 6.33 Non-market producers such as public administration, defence, health and education providing final goods or services should <u>preferably</u> be partitioned into establishments using the activity classification given in Sections

O, P and Q of *ISIC Rev. 4*. Agencies of central government may be dispersed over the country as a whole in which case it will be necessarymay be desirable to distinguish different establishments for activities that are carried out in different locations.

6.34 When a government agency supplies goods to other government agencies it should <u>preferably</u> be treated as a separate establishment and classified under the appropriate heading of *ISIC*. This applies to the production of munitions or weapons, printed documents or stationery, roads or other structures, etc. A government that produces its own weapons to supply to its own armed forces is, in effect, a vertically integrated enterprise that spans two or more sections of *ISIC*. Therefore, at least one separate establishment should <u>preferably</u> be distinguished in each heading. The same argument applies to a government printing office and other goods producers owned by government.

## 4. More general considerations about the choice of units for describing the production process

- 6.35 One of the challenges brought about by the rapidly changing nature of production and particular the ways in which enterprises produce goods and services has put into question the SNA's preference for the use of the establishment as the preferred unit to compile industrial statistics, and in particular, supply and use tables. In addition, there are diverging practices across countries. Several countries use, for example, (an approximation of) kind-of-activity units, enterprises or even enterprise groups as the basic statistical unit underlying their supply and use tables. In this respect, a change can also be observed in the collection of source data, from survey data to administrative records, the latter typically relating to enterprises or legal units rather than establishments. Furthermore, it has become increasingly important to link data from supply and use tables with data from institutional sector accounts, i.e., to link the production of goods and services and generation of earned income with distributional aspects and finance.
- 6.36 The above considerations have led to a renewed interest in the question of which guidance to provide in relation to the use of units in the description of the process of production and generation of earned income. It was however not possible to arrive at an agreed response to change the SNA's preference for establishments, which is not surprising in view of the quite diverging user needs as well as the differences in the collection of source data and the compilation of statistics across countries. For these reasons, the issue of statistical units has been put on the research agenda (see Annex xx).

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# **D.** Ancillary activities

- 6.366.37 As noted in section B, ancillary activities require special consideration because of the different ways of recording that are recommended depending on circumstances. As a preliminary step, though, it is <u>usefules</u> well to review exactly what is meant by an ancillary activity. Essentially, they are the basic services that every enterprise needs to have in order to operate effectively. The sorts of services referred to include keeping records, files or accounts in written form or on computers; providing electronic and traditional written communication facilities; purchasing materials and equipment; hiring, training, managing and paying employees; storing materials or equipment: warehousing; transporting goods or persons inside or outside the producer unit; promoting sales; cleaning and maintenance of buildings and other structures; repairing and servicing machinery and equipment; and providing security and surveillance.
- 6.376.38 These types of services can be produced in house or can be purchased on the market from specialist service producers though, in practice, the requisite services may not be readily available in the right quantities on local markets. When the services are produced in house, they are termed ancillary activities. *An ancillary activity is a supporting activity undertaken within an enterprise in order to create the conditions within which the principal or secondary activities can be carried out.* In addition, ancillary activities have certain common characteristics related to their output. These additional characteristics include:
  - a. The output of an ancillary activity is not intended for use outside the enterprise;
  - b. Ancillary activities typically produce outputs that are commonly found as inputs into almost any

kind of productive activity;

- c. Ancillary activities produce services (and, as exceptions, goods that do not become a physical part of the output of the principal or secondary activity) as output;
- d. The value of ancillary activity output is likely to be small compared with that of the principal or secondary activities of an enterprise.
- 6.386.39 The defining characteristics that ancillary activities support the principal and secondary activities of an enterprise and are used within the enterprise are by no means sufficient to identify an ancillary activity. There are many kinds of activities whose outputs are entirely consumed within the same enterprise but which could not possibly be considered as ancillary. Goods are not commonly used as inputs in the same way as services such as accounting, transportation or cleaning. For example, an enterprise may produce milk, all of which is processed into butter or cheese within the same enterprise. However, milk production cannot be considered an ancillary activity, because milk is a particular kind of input found only in special types of productive activity. In general, goods that become embodied in the output of the principal or secondary activities are not outputs of ancillary activities.
- 6.396.40 Certain activities, although common, are not so common as to be considered ancillary. Many enterprises produce their own machinery and equipment, build their own structures and carry out their own research and development. These activities are not to be treated as ancillary, whether carried out centrally or not, as they are not found frequently and extensively in all kinds of enterprises, small as well as large.

#### Recording (or not) the output of ancillary activities

- 6.40<u>6.41</u> An ancillary activity is not undertaken for its own sake but purely in order to provide supporting services for the principal or secondary activities with which it is associated. If all the ancillary activity is undertaken in the establishment where its output is used, the ancillary activity is regarded as an integral part of the principal or secondary activities with which it is associated. As a result:
  - a. The output of an ancillary activity is not explicitly recognized and recorded separately in the SNA. It follows that the use of this output is also not recorded;
  - All the inputs consumed by an ancillary activity, materials, labour, consumption of fixed capital<u>depreciation and depletion</u>, etc., are treated as inputs into the principal or secondary activity that it supports.

In this case it is not possible to identify the value added of an ancillary activity because that value added is combined with the value added of the principal or secondary activity.

- 6.41<u>6.42</u> When the production of an enterprise takes place in two or more different establishments, certain ancillary activities may be carried out centrally for the benefit of all the establishments collectively. For example, the purchasing, sales, accounts, computing, maintenance or other departments of an enterprise may all be the responsibility of a head office located separately from the establishments in which the principal or secondary activities of the enterprise are carried out.
- 6.42<u>6.43</u> If an establishment undertaking purely ancillary activities is statistically observable, in that separate accounts for the production it undertakes are readily available, or if it is in a geographically different location from the establishments it serves, it may be desirable and useful to consider it as a separate unit and allocate it to the industrial classification corresponding to its principal activity. However, it is recommended that statisticians do not make extraordinary efforts to create separate establishments for these activities artificially in the absence of suitable basic data being available.
- 6.436.44 When such a unit is recognized, the ancillary activity is recognized as a primary output. The value of its output should be derived on a sum of costs basis, including the cost of the capital used in the unit. The output will be deemed to be non-market output when the parent enterprise is a non-market enterprise and market otherwise. If the output is treated as non-market, the cost of capital should be replaced by the consumption

of fixed capital when summing costs to determine the value of output. The output of the ancillary unit is treated as intermediate consumption of the establishments it serves and should be allocated across them using an appropriate indicator such as the output, value added or employment of these establishments.

- 6.44<u>6.45</u>It ismay be appropriate to treat specialized agencies serving central government as a whole, for example, computer or communications agencies, which tend to be large, as separate establishments.
- 6.45<u>6.46</u> Even when an ancillary activity is undertaken in the establishment where it is used, it may grow to the point that it has the capacity to provide services outside the enterprise. For example, a computer processing unit may develop in-house capabilities for which there is an outside demand. When an activity starts to provide a proportion of its services to outsiders, the part of the output that is sold has to be treated as secondary rather than ancillary output.

#### The role of ancillary activities in the SNA

6.466.47 The production accounts of the SNA do not provide comprehensive information about the production of services treated in some cases as ancillary services. It is therefore difficult to obtain information about their role in the economy. For example, it is difficult to know how much output is produced, how many persons are engaged in such activities, how many resources are consumed, etc. This may be regarded as a serious disadvantage for certain purposes, such as analysing the impact of "information technology" on productivity when the processing and communication of information are typical ancillary activities or when looking at the role of freight transport. For some purposes, a satellitethematic account may be compiled that makes estimates of all activities of a certain type regardless of whether they are ancillary or not. The overall measure of value added does not alter because both output and intermediate consumption increase by the same amount but a more inclusive picture of the role of the activity in the economy can be obtained. There is a discussion on the role of satellitethematic accounts in chapter 2938.

# E. Industries

6.476.48 Industries are defined in the SNA in the same way as in *ISIC: an industry consists of a group of* establishments engaged in the same, or similar, kinds of activity. At the most detailed level of classification, an industry consists of all the establishments falling within a single Class of *ISIC*. At higher levels of aggregation corresponding to the Groups, Divisions and, ultimately, Sections of the *ISIC*, industries consist of a number of establishments engaged on similar types of activities.

#### 1. Market, own account and non-market producers

6.486.49 The term "industry" is not reserved for market producers. An industry, as defined in the *ISIC* and in the SNA, consists of a number of establishments engaged in the same type of production, whether the institutional units to which they belong are market producers or not. The distinction between market and other production is a different dimension of production and economic activity. For example, the health industry in a particular country may consist of a number of establishments, some of which are market producers while others are non-market producers. Because the distinction between market and other kinds of production is based on a different criterion from the nature of activity itself, it is possible to cross-classify establishments by type of activity and by whether they are market producers, non-market producers or producers for own final use.

#### 2. Industries and products

- 6.496.50 As already mentioned, a one-to-one correspondence does not exist between activities and products and hence between industries and products. Certain activities produce more than one product simultaneously, while the same product may sometimes be produced by using different techniques of production.
- 6.506.51 When two or more products are produced simultaneously by a single productive activity they are "joint products". Examples of joint products are meat and hides produced by slaughtering animals or sugar and

molasses produced by refining sugar canes. The by-product from one activity may also be produced by other activities, but there are examples of by-products, such as molasses, that are produced exclusively as the by-products of one particular activity.

- 6.516.52 The relationship between an activity and a product classification is exemplified by that between the *ISIC* and the *CPC*. The *CPC* is a classification based on the physical characteristics of goods or on the nature of the services rendered, while the *ISIC* also takes into account the inputs in the production process and the technology used in the production process. In the development of the *CPC*, it is intended that each good or service distinguished in the *CPC* is defined in such a way that it is normally produced by only one activity as defined in *ISIC*. However, due to different types of criteria employed, this is not always possible. An example would be the product of mushrooms, which can be produced by controlled growing, that is, an activity classified in Agriculture in *ISIC*, or by simply gathering wild growing mushrooms, an activity classified in Forestry. More detailed national classifications may distinguish different forms of energy production in *ISIC*, based on different technologies, resulting in separate activities for the operation of hydroelectric power plants, nuclear power plants, etc. The output of all these activities, however, would be the single product electricity.
- 6.526.53 Conversely, each activity of the ISIC, no matter how narrowly defined, will tend to produce a number of products as defined in the CPC, although they are often clustered within the CPC structure and could be perceived as one "type" of product. As far as practically possible, an attempt is made to establish a correspondence between the two classifications, by allocating to each category of the CPC a reference to the ISIC class in which the good or service is mainly produced. However, due to the reasons outlined above, this typically does not result in a one-to-one correspondence. The majority of links between ISIC and CPC will tend to be one-to-many links, with a few cases requiring many-to-one links. It is possible to force this correspondence into a stricter relationship by selecting one link out of the many-to-one correspondence. This selection may facilitate data conversion, but is not a real description of the link between the two classifications.

# F. Units of homogeneous production

- 6.536.54 In most fields of statistics the choice of statistical unit, and methodology used, are strongly influenced by the purposes for which the resulting statistics are to be used. For purposes of input-output analysis, the optimal situation would be one in which each producer unit were engaged in only a single productive activity so that an industry could be formed by grouping together all the units engaged in a particular type of production without the intrusion of any secondary activities. Such a unit is called a "unit of homogeneous production".
- 6.546.55 Although the unit of homogeneous production may be the optimal unit for purposes of certain kinds of analysis, particularly input-output analysis, it may not be possible to collect directly from the enterprise or establishment the accounting data corresponding to units of homogeneous production. Such data may have to be estimated subsequently by transforming the data supplied by enterprises on the basis of various assumptions or hypotheses. Units that are constructed by statistical manipulation of the data collected by the agency are called analytical units.
- 6.556.56 If a producer unit carries out a principal activity and also one or more secondary activities, it will be partitioned into the same number of units of homogeneous production. If it is desired to compile production accounts and input-output tables by region, it is necessary to treat units of homogeneous production located in different places as separate units even though they may be engaged in the same activity and belong to the same institutional unit.

6.566.57 Chapter 2836 discusses the estimation of analytical units for use in an input-output context.

# Chapter 7: Chapter 7. Production account (OLD Chapter 6: The production account)

# A. Introduction

- 7.1 The production account is the starting point for the sequence of <u>economic</u> accounts for institutional units and sectors displaying how income is generated, distributed and used throughout the economy. Activities defined as production therefore determine the extent of GDP and the level of income for the economy. In concept, the economy-wide production account is the aggregation of a similar account for each production unit. Importantly, while production accounts can be compiled for an individual institutional unit as well as for sectors, they can also be compiled for establishments and thus for industries. It is this feature that allows the study of industrial activity in the economy and permits the compilation of supply and use tables and input-output tables.
- 7.2 The production account is linked to the definition of production. *Production is an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital, and goods and services to produce outputs of goods and services.* The production account shows the output of production and the various inputs to it. To do this, three concepts need clarifying.
- 7.3 The first concept to be clarified is what constitutes production within the SNA. This delineation is referred to as the production boundary of the SNA. Thereafter several key types of production need to be identified depending on whether production is for sale, for own use or is made available to others at little or no cost.
- 7.4 The next concept to be addressed is how output is to be valued. Key to this question is the role played by the various types of taxes imposed by (and subsidies given by) government on products and on the activity of production.
- 7.5 The third major concept to be considered is how the production process adds to the value of goods and services and leads to the generation of income. Does the whole contribution of labour and capital add to the value of these goods and services or should the fact that most capital declines in value as it is used need to be taken into account?
- 7.6 The general format of an account in the sequence of <u>economic</u> accounts is to show how <u>resourcesrevenues</u> are received and, after <u>usesexpenditures</u> are deducted, a balancing item is left. Because the production account is the first in the sequence of <u>economic</u> accounts, it is the first time the concept of a balancing item appears. The importance of balancing items in general and the one in this account in particular is also discussed before considering each of the entries of the production account in turn.
- 7.7 The production account for institutional units and sectors is illustrated in table 67.1. It contains only three items apart from the balancing item. The output from production is recorded under resources revenues on the right-hand side of the account. This item may be disaggregated to distinguish different kinds of output. For example, non-market output should be shown separately from market output and output for own final use in the sector accounts, when possible. The uses expenditures recorded on the left-hand side of the account consist of intermediate consumption. The uses expenditures recorded on the left-hand side of the account consist of these may also be disaggregated, by distinguishing for which types of output these items are used as an input.

# Table 67.1: The production account – uses expenditures

# Table 67.1 (cont): The production account - resources revenues

- 7.8 The balancing item in the production account is value added. It can be measured either gross or net, that is, before or after deducting consumption of fixed capital depreciation and depletion:
  - Gross value added is the value of output less the value of intermediate consumption;
  - Net value added is the value of output less the values of both intermediate consumption, and consumption of fixed capital depreciation and depletion.

7.9 As value added is intended to measure the value created by a process of production, it ought to be measured net, since the consumption of fixed capital depreciation and depletion areis a costs of production. However, as explained in sections H and I of this chapter, later, consumption of fixed capital depreciation as well as depletion may be less straightforward-can be difficult to measure in practice, and it may not always be possible to make a satisfactory estimate of its value and hence of net value added. Furthermore, the use of gross measures for policy and analysis is a longstanding tradition. Provision has therefore to be made for value added to be measured gross as well as net. It follows that provision has also to be made for the balancing items in subsequent accounts of the SNA to be measured either gross or net of the consumption of fixed capital depreciation and depletion.

# **B.** The concept of production

## 1. Production as an economic activity

- 7.10 Production can be described in general terms as an activity in which an enterprise uses inputs to produce outputs. The economic analysis of production is mainly concerned with activities that produce outputs of a kind that can be delivered or provided to other institutional units. Unless outputs are produced that can be supplied to other units, either individually or collectively, there can be no division of labour, no specialization of production and no gains from trading. There are two main kinds of output, namely goods and services, and it is necessary to examine their characteristics in order to be able to delineate activities that are productive in an economic sense from other activities. Collectively, goods and services are described as products.
- 7.11 In the SNA, it is seldom if ever necessary to make a clear distinction between goods and services but in making the link to other data sets it is often necessary to understand which products have been treated as goods and which as services.
- 7.12 Industrial classifications, such as ISIC, identify a group of manufacturing industries. However, many of these industries also produce services. For example, some aircraft engine manufacturers may both fabricate aircraft engines and repair and service existing engines. When goods dispatched to another unit for processing do not change ownership, the work done on them constitutes a service even though it may be undertaken by a manufacturing industry. The fact that the processing is classified as a service does not prevent the processor from being classified within manufacturing.
- 7.13 Similarly, some service-producing industries may produce products that have many of the characteristics of goods. For convenience, the products of these industries are described in the SNA as knowledge-capturing products.
- 7.14 Products are goods and services (including knowledge-capturing products) that result from a process of production.

# Goods

7.15 Goods are physical, produced objects for which a demand exists, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another by engaging in transactions on markets. They are in demand because they may be used to satisfy the needs or wants of households or the community or used to produce other goods or services. The production and exchange of goods are quite separate activities. Some goods may never be exchanged while others may be bought and sold numerous times. The production of a good can always be separated from its subsequent sale or resale.

#### Services

- 7.16 The production of services must be confined to activities that are capable of being carried out by one unit for the benefit of another. Otherwise, service industries could not develop and there could be no markets for services. It is also possible for a unit to produce a service for its own consumption provided that the type of activity is such that it could have been carried out by another unit.
- 7.17 Services are the result of a production activity that changes the conditions of the consuming units, or facilitates

*the exchange of products or financial assets.* These types of service may be described as change- effecting services and margin services respectively. Change-effecting services are outputs produced to order and typically consist of changes in the conditions of the consuming units realized by the activities of producers at the demand of the consumers. Change-effecting services are not separate entities over which ownership rights can be established. They cannot be traded separately from their production. By the time their production is completed, they must have been provided to the consumers.

- 7.18 The changes that consumers of services engage the producers to bring about can take a variety of different forms as follows:
  - Changes in the condition of the consumer's goods: the producer works directly on goods owned by the consumer by transporting, cleaning, repairing or otherwise transforming them;
  - Changes in the physical condition of persons: the producer transports the persons, provides them with accommodation, provides them with medical or surgical treatments, improves their appearance, etc.;
  - Changes in the mental condition of persons: the producer provides education, information, advice, entertainment or similar services in a face to face manner.
- 7.19 The changes may be temporary or permanent. For example, medical or education services may result in permanent changes in the condition of the consumers from which benefits may be derived over many years. On the other hand, attending a football match is a short-lived experience. In general, the changes may be presumed to be improvements, as services are produced at the demand of the consumers. The improvements usually become embodied in the persons of the consumers or the goods they own and are not separate entities that belong to the producer. Such improvements cannot be held in inventories by the producer or traded separately from their production.
- 7.20 A single process of production may provide services to a group of persons, or units, simultaneously. For example, groups of persons or goods belonging to different institutional units may be transported together in the same plane, ship, train or other vehicle. People may be instructed or entertained in groups by attending the same class, lecture or performance. Certain services are provided collectively to the community as a whole, or large sections of the community, for example, the maintenance of law and order, and defence.
- 7.21 Margin services result when one institutional unit facilitates the change of ownership of goods, knowledgecapturing products, some services or financial assets between two other institutional units. Margin services are provided by wholesalers and retailers and by many types of financial institutions. Margin services resemble change-effecting services in that they are not separate entities over which ownership rights can be established. They cannot be traded separately from their production. By the time their production is completed they must have been provided to the consumers.

# **Knowledge-capturing products**

7.22 Knowledge-capturing products concern the provision, storage, communication and dissemination of information, advice and entertainment in such a way that the consuming unit can access the knowledge repeatedly. The industries that produce the products are those concerned with the provision, storage, communication and dissemination of information, advice and entertainment in the broadest sense of those terms including the production of general or specialized information, news, consultancy reports, computer programs, movies, music, etc. The outputs of these industries, over which ownership rights may be established, are often stored on physical objects (whether on paper or on electronic media) that can be traded like ordinary goods. They have many of the characteristics of goods in that ownership rights over these products can be established and they can be used repeatedly. Whether characterized as goods or services, these products possess the essential common characteristic that they can be produced by one unit and supplied to another, thus making possible division of labour and the emergence of markets. It is important to note that these knowledge-capturing products should be recorded as either goods or services, and that they should not be classified as a distinct category of products.

# 2. The production boundary

7.23 Given the general characteristics of the goods and services produced as outputs, it becomes possible to define production. A general definition of production is given first, followed by the rather more restricted definition that is used in the SNA. Following this there is a discussion of the production boundary as it affects household activities and non-observed activities.

#### The general production boundary

- 7.24 Economic production may be defined as an activity carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital, and goods and services to produce outputs of goods or services. There must be an institutional unit that assumes responsibility for the process of production and owns any resulting goods or knowledge-capturing products or is entitled to be paid, or otherwise compensated, for the change-effecting or margin services provided. A purely natural process without any human involvement or direction is not production in an economic sense. For example, the unmanaged growth of fish stocks in international waters is not production, whereas the activity of fish farming is production.
- 7.25 While production processes that produce goods can be identified without difficulty, it is not always so easy to distinguish the production of services from other activities that may be both important and beneficial. Activities that are not productive in an economic sense include basic human activities such as eating, drinking, sleeping, taking exercise, etc., that it is impossible for one person to employ another person to perform instead. Paying someone else to take exercise is no way to keep fit. On the other hand, activities such as washing, preparing meals, caring for children, the sick or aged are all activities that can be provided by other units and, therefore, fall within the general production boundary. Many households employ paid domestic staff to carry out these activities for them.

#### The production boundary in the SNA

- 7.26 The production boundary in the SNA is more restricted than the general production boundary. For reasons explained below, activities undertaken by households that produce services for their own use are excluded from the concept of production in the SNA, except for services provided by owner-occupied dwellings and services produced by employing paid domestic staff. Otherwise, the production boundary in the SNA is the same as the more general one defined in the previous paragraphs.
- 7.27 The production boundary of the SNA includes the following activities:
  - The production of all goods or services that are supplied to units other than their producers, or intended to be so supplied, including the production of goods or services used up in the process of producing such goods or services;
  - The own-account production of all goods that are retained by their producers for their own final consumption or gross capital formation, including the production of electricity through the use of solar panels and wind power plants and the production of heat for heating water or a dwelling through geothermal heat or heat pumps;
  - The own-account production of knowledge-capturing products that are retained by their producers for their own final consumption or gross capital formation but excluding (by convention) such products produced by households for their own use;
  - The own-account production of housing services by owner occupiers; and
  - The production of domestic and personal services by employing paid domestic staff.

## The production boundary within households

The exclusion of most services produced for own use by households

7.28 The production of services by members of the household for their own final consumption has traditionally been excluded from measured production in national accounts and it is worth explaining briefly why this is so. It is

useful to begin by listing those services for which no entries are recorded in the accounts when they are produced by household members and consumed within the same household:

- The cleaning, decoration and maintenance of the dwelling occupied by the household, including small repairs of a kind usually carried out by tenants as well as owners;
- The cleaning, servicing and repair of household durables or other goods, including vehicles used for household purposes;
- The preparation and serving of meals;
- The care, training and instruction of children;
- The care of sick, infirm or old people;
- The transportation of members of the household or their goods.
- 7.29 In most countries a considerable amount of labour is devoted to the production of these services, and their consumption makes an important contribution to economic <u>well-beingwelfare</u>. However, national accounts serve a variety of analytical and policy purposes and are not compiled simply, or even primarily, to produce indicators of <u>well-beingwelfare</u>. The reasons for not imputing values for unpaid domestic or personal services produced and consumed within households may be summarized as follows:
  - The own-account production of services within households is a self-contained activity with limited repercussions on the rest of the economy. The decision to produce a household service entails a simultaneous decision to consume that service. This is not true for goods. For example, if a household engages in the production of agricultural goods, it does not follow that it intends to consume them all. Once the crop has been harvested, the producer has a choice about how much to consume, how much to store for future consumption or production and how much to offer for sale or barter on the market. Similarly, part of the electricity produced through solar panels on the roof of a dwelling may be delivered to the grid, in exchange for a compensation in cash or a compensation in kind. The latter may consist of a compensation in the form of free electricity in periods that the own production of electricity is not sufficient to cover the own demand. Indeed, although it is customary to refer to the own-account production of goods, it is not possible to determine at the time the production takes place how much of it will eventually be consumed by the producer. For example, if an agricultural crop turns out to be better than expected, the household may dispose of some of it on the market even though it may have originally supposed it would consume it all. This kind of possibility is non-existent for services; it is not possible to produce a service and then decide whether to offer it for sale or not.
  - As the vast majority of household services are not produced for the market, there are typically no suitable market prices that can be used to value such services <u>may not be directly available</u>. It is therefore <u>extremelyrelatively</u> difficult to estimate values not only for the outputs of the services but also for the associated incomes and expenditures that can be meaningfully added to the values of the monetary transactions on which most of the entries in the accounts are based.
  - With the exception of the imputed rental of owner-occupied dwellings, the decision to produce services for own consumption is not influenced by and does not influence economic policy because the imputed values are not equivalent to monetary flows. Changes in the levels of household services produced do not affect the tax yield of the economy or the level of the exchange rate, to give two examples.
- 7.30 Thus, the reluctance of national accountants to impute values for the outputs, incomes and expenditures associated with the production and consumption of services within households is explained by a combination of factors, namely the relative isolation and independence of these activities from markets, the extreme difficulty of making economically meaningful estimates of their values, and the adverse effects it would have on the usefulness of the accounts for policy purposes and the analysis of markets and market disequilibria.

7.307.31 Having said that, for the purpose of providing an improved measure of material well-being, countries are encouraged to compile extended accounts, in which the production (and asset) boundary is extended by also

#### including measures of unpaid household service work. See chapter 34 for more detailed information.

7.347.32 The exclusion of household services from the production boundary in the standard sequence of economic accounts has consequences for labour force and employment statistics. According to International Labour Organization (ILO) guidelines, economically active persons are persons engaged in production included within the boundary of production of the SNA. If that boundary were to be extended to include the production of own-account household services, virtually the whole adult population would be economically active and unemployment eliminated. In practice, it would be necessary to revert to the existing boundary of production in the SNA, if only to obtain meaningful employment statistics.

#### *Own-account production of goods*

- 7.327.33 Although services produced for own consumption within households fall outside the boundary of production used in the SNA, it is nevertheless useful to give further guidance with respect to the treatment of certain kinds of household activities which may be particularly important in some developing countries. The SNA includes the production of all goods within the production boundary. The following types of production by households are included whether intended for own final consumption or not:
  - The production of agricultural products and their subsequent storage; the gathering of berries or other uncultivated crops; forestry; wood-cutting and the collection of firewood; hunting and fishing;
  - The production of other primary products such as mining salt, cutting peat, etc.;
  - The processing of agricultural products; the production of grain by threshing; the production of flour by milling; the curing of skins and the production of leather; the production and preservation of meat and fish products; the preservation of fruit by drying, bottling, etc.; the production of dairy products such as butter or cheese; the production of beer, wine, or spirits; the production of baskets or mats; etc.;
  - Other kinds of processing such as weaving cloth; dress making and tailoring; the production of footwear; the production of pottery, utensils or durables; making furniture or furnishings; etc.;
  - The production of electricity through the use of solar panels and wind power plants and the production of heat for heating water or a dwelling through geothermal heat or heat pumps;
  - The supply of water is also considered a goods-producing activity in this context. In principle, supplying water is a similar kind of activity to extracting and piping crude oil.
- 7.337.34 It is not feasible to draw up a complete, exhaustive list of all possible productive activities but the above list covers the most common types. When the amount of a good produced within households is believed to be quantitatively important in relation to the total supply of that good in a country, its production should be recorded. Otherwise, it may not be worthwhile trying to estimate it in practice.

#### Services of owner-occupied dwellings

7.347.35 The production of housing services for their own final consumption by owner occupiers has always been included within the production boundary in national accounts, although it constitutes an exception to the general exclusion of own-account service production. The ratio of owner-occupied to rented dwellings can vary significantly between countries, between regions of a country and even over short periods of time within a single country or region, so that both international and inter-temporal comparisons of the production and consumption of housing services could be distorted if no imputation were made for the value of own-account housing services. The imputed value of the income generated by such production is taxed in some countries.

#### Production of domestic and personal services by employing paid domestic staff

7.357.36 Although paid domestic staff produce many of the services excluded from the production boundary of the SNA

when undertaken by household members, paying a person who comes to the house to wash, cook or look after children, for example, is as much a market activity as taking clothes to a laundry, eating at a restaurant or paying a nursery to care for children. By convention, though, only the wages of the domestic staff are treated as the value of output. Other materials used in their work are treated as household consumption expenditure because of the difficulty of identifying what is used by the staff and what by household members. Nor are payments to other household members treated as payments for services even if the payments are nominally for the performance of chores, for example pocket-money paid to children.

#### "Do-it-yourself" decoration, maintenance and small repairs

- 7.367.37 "Do-it-yourself" repairs and maintenance to consumer durables and dwellings carried out by members of the household constitute the own-account production of services and are excluded from the production boundary of the SNA. The materials purchased are treated as final consumption expenditure.
- 7.377.38 In the case of dwellings, "do-it-yourself" activities cover decoration, maintenance and small repairs, including repairs to fittings, of types that are commonly carried out by tenants as well as by owners. On the other hand, more substantial repairs, such as replastering walls or repairing roofs, carried out by owners, are essentially intermediate inputs into the production of housing services. However, the production of such repairs by an owner-occupier is only a secondary activity of the owner in his capacity as a producer of housing services. The production accounts for the two activities may be consolidated so that, in practice, the purchases of materials for repairs become intermediate expenditures incurred in the production of housing services. Major renovations or extensions to dwellings are fixed capital formation and recorded separately.

#### The use of consumption goods

7.39 The use of goods within the household for the direct satisfaction of human needs or wants is not treated as production. This applies not only to materials or equipment purchased for use in leisure or recreational activities but also to foodstuffs purchased for the preparation of meals. The preparation of a meal is a service activity and is treated as such in the SNA and ISIC Rev.4. It therefore falls outside the production boundary when the meal is prepared for own consumption within the household. The use of a durable good, such as a vehicle, by persons or households for their own personal benefit or satisfaction is intrinsically a consumption activity and should not be treated as if it were an extension, or continuation, of production. However, when vehicles, or other types of assets, are used in the production of goods and services (e.g., paid taxi services to third parties), the expenditure on the purchase of the durable should be split between gross fixed capital formation by the enterprise and household final consumption expenditure in proportion to its usage for business and personal purposes.

## The production and use of "free" products

- 7.40 Subsidizing certain prices, often down to zero, is a common technique for increasing sales of complementary items at marked-up prices. For example, a telecom carrier may offer subsidized smartphones, or a manufacturer of ink cartridges and printers may subsidize the printers. Other examples are free online games that encourage ingame purchases and free software that encourages users to purchase support services and related software products. Subsidized items and the marked-up items that they help sell can be treated as an implicit bundle. They do not cause any of the producer's output to be missed as long as the revenue from the entire bundle is taken into account. Subsidized outputs of this type are used by the same group of users who purchase the marked-up outputs. Users themselves therefore fund the subsidies that they receive, and their expenditures on the bundle of outputs include the full value of the cross-subsidized components of the bundle.
- 7.41 However, even though the standard procedures for measuring output capture the full value of the "free" and subsidized items supplied by market producers, the recording of the output may be lagged if the marked-up item that funds the subsidy is sold in a later period than the cross-subsidized item. Certainly, for an individual consumer, the consumption of the "free" or subsidized output often comes first, and the wait until the purchase of the marked-up item may be significant. However, for consumers in the aggregate, a balanced mix of the supplier's cross-subsidized and marked-up products will be used in the steady state. Only during periods of rapid growth will the producer's output be understated. But during periods of falling demand, while the producer's

output will be overstated, for a broad aggregate such as GDP the net effect of such timing problems should be negligible.

- 7.42Another issue which could potentially cause GDP to be underestimated is that prices of investment goods such as<br/>software and equipment are often cross-subsidized by marked-up supplies and services that the investment good<br/>helps sell. When this occurs, fixed capital formation and the value added of the users of the bundle of outputs will<br/>be understated, and their intermediate consumption of supplies and services will be overstated. Research on the<br/>extent of this problem and the feasibility of re-allocating the subsidies to the price of the investment good may be<br/>useful.
- 7.43 For (digital) platforms, "free" and subsidized outputs are not merely common, they are the rule. Two-sided platforms typically have a subsidized side, which is often free, and a funder side. Platform users differ in their willingness-to-pay for opportunities to connect with those on the other side and in the willingness-to-pay of those on the other side to connect with them. The platform responds to these differences by subsidizing the users whose presence on the platform will raise the value of the platform to those with a high willingness-to-pay, while marking up the prices paid by those in the latter group. For example, manufacturers of consumer products often have a high willingness-to-pay to inform potential customers, via advertising, about the benefits of their products as a way of increasing sales. Platforms thus assemble the necessary audience by supplying "free" services, and then recover the cost of supplying the free services by way of advertising revenues. The purchasers of advertising services, in turn, recover the cost of the platform's services through mark-ups on the advertised products.
- 7.44 However, different from the case of the first type of cross-subsidized items, the platform's funders recover their expenses from those on the other side as part of the transactions facilitated by the platform (e.g., sales of the advertised products). Thus, the consumers of the "free" platform services ultimately fund those services. Even if the set of individuals who pay the mark-ups and the set of individuals who consume the "free" services overlap only partially, households are collectively the funders of the "free" platform services used by households.
- 7.45 A third type of "free" services relates to the creation of content such as videos, images, text, and audio, both as a leisure activity and for commercial purposes such as receiving advertising revenue. Creating content for leisure purposes is outside the SNA production boundary. If the content creator does not receive remuneration, the content is assumed to be created for leisure purposes. The creation of open-source software also falls under this category. The value of open-source software produced by programmers employed by corporations, government, or NPISHs should already be included in measures of own-account software investment as estimated by the sum of costs method. Open-source software produced for commercial purposes by an unincorporated enterprise that is classified in the households sector is also conceptually inside the SNA production boundary. Moreover, enterprises may, for example, be bundling the free software with software support services, which would be another case of cross-subsidization of products. However, if the open-source software is produced by individual volunteers who are not remunerated in any way for their contribution, then the production is outside the 2008 SNA production boundary.
- 7.387.46 More information of the treatment of "free" digital products in the integrated framework of national accounts, as well as further details on the compilation of extended accounts for "free" digital products, can be found in chapter 22.

#### The "non-observed" economy

- 7.397.47 There is considerable interest in the phenomenon of the non-observed economy. This term is used to describe activities that, for one reason or another, are not captured in regular statistical enquiries. The reason may be that the activity is informal and thus escapes the attention of surveys geared to formal activities; it may be that the producer is anxious to conceal a legal activity, or it may be that the activity is illegal. Chapter 2539 discusses measurement of the informal economy within households.
- 7.407.48 Certain activities may clearly fall within the production boundary of the SNA and also be quite legal (provided certain standards or regulations are complied with) but deliberately concealed from public authorities for the following kinds of reasons:
  - To avoid the payment of income, value added or other taxes;
  - To avoid the payment of social security contributions;

- To avoid having to meet certain legal standards such as minimum wages, maximum hours, safety or health standards, etc.;
- To avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms.
- 7.417.49 Because certain kinds of producers try to conceal their activities from public authorities, it does not follow that they are not included in national accounts in practice. Many countries have had considerable success in compiling estimates of production that cover the non-observed economy as well as the ordinary economy. In some industries, such as agriculture or construction, it may be possible by using various kinds of surveys and the commodity flow method to make satisfactory estimates of the total output of the industry without being able to identify or measure that part of it that is not observed. Because the non-observed economy may account for a significant part of the total economy of some countries, it is particularly important to try to make estimates of total production that include it, even if it cannot always be separately identified as such.
- 7.427.50 There may be no clear borderline between the non-observed economy and illegal production. For example, production that does not comply with certain safety, health or other standards could be described as illegal. Similarly, the evasion of taxes is itself usually a criminal offence. However, it is not necessary for the purposes of the SNA to try to fix the precise borderline between non-observed and illegal production as both are included within the production boundary in any case. It follows that transactions on unofficial markets that exist in parallel with official markets (for example, for foreign exchange or goods subject to official price controls) must also be included in the accounts, whether or not such markets are actually legal or illegal.
- 7.437.51 There are two kinds of illegal production:
  - The production of goods or services whose sale, distribution or possession is forbidden by law;
  - Production activities that are usually legal but become illegal when carried out by unauthorized producers; for example, unlicensed medical practitioners.
- 7.447.52 Examples of activities that may be illegal but productive in an economic sense include the manufacture and distribution of narcotics, illegal transportation in the form of smuggling of goods and of people, and services such as prostitution.
- 7.457.53 Both kinds of illegal production are included within the production boundary of the SNA provided they are genuine production processes whose outputs consist of goods or services for which there is an effective market demand. The units that purchase smuggled goods, for example, may not be involved in any kind of illegal activities and may not even be aware that the other party to the transaction is behaving illegally. Transactions in which illegal goods or services are bought and sold need to be recorded not simply to obtain comprehensive measures of production and consumption but also to prevent errors appearing elsewhere in the accounts. The incomes generated by illegal production may be disposed of quite legally, while conversely, expenditures on illegal goods and services may be made out of funds obtained quite legally. The failure to record illegal transactions may lead to significant errors within the accounts if the consequences of the activity are recorded in the financial account and the external accounts, say, but not in the production and income accounts.
- 7.467.54 Regular thefts of products from inventories are not included in the value of output. Suppose a shop suffers regular theft from inventories. In calculating the value of output of the shop, part of the margin on the goods sold must cover the cost of the goods stolen. Thus the margin is calculated as the value received for the goods sold less the cost of both the goods sold and the goods stolen. If the stolen products are sold elsewhere, for example on a street stall, the value of the output of the street trader is still calculated as the difference between the value received for the goods, the whole of the sales value appears as the margin.
- 7.477.55 Illegal production does not refer to the generation of externalities such as the discharge of pollutants. Externalities may result from production processes that are themselves quite legal. Externalities are created without the consent of the units affected and no values are imputed for them in the SNA.
- 7.487.56 Although non-observed and illegal activities require special consideration, it is not necessarily the case that they

are excluded from normal data collection processes.

# C. Basic, producers' and purchasers' prices

- 7.497.57 More than one set of prices may be used to value outputs and inputs depending upon how taxes and subsidies on products, and also transport charges, are recorded. Moreover, value added taxes (VAT), and similar deductible taxes may also be recorded in more than one way. The methods of valuation used in the SNA are explained in this section.
- 7.507.58 The detailed discussion of taxes related to production appears in section C of chapter 78 but it is important in the context of discussing alternative price measures to make the distinction between taxes (and subsidies) on products and other taxes (and subsidies) on production. As the name implies, taxes on products are payable per unit of the product. The tax may be a flat amount dependent on the physical quantity of the product or may be a percentage of the value at which the product is sold. Other taxes on production are taxes imposed on the producer that do not apply to products nor are levied on the profits of the producer. Examples include taxes on land or premises used in production or on the labour force employed. The distinction between subsidies on products and other subsidies on production is made on similar grounds.

## 1. Basic and producers' prices

7.517.59 The SNA utilizes two kinds of prices to measure output, namely, basic prices and producers' prices:

- The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.
- The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer.

Neither the producer's nor the basic price includes any amounts receivable in respect of VAT, or similar deductible tax, invoiced on the output sold.

- 7.527.60 Unlike the basic price, the producer's price includes taxes on products (taxes payable per unit of output) and excludes subsidies on products (subsidies receivable per unit of output). The producer's price is the price, excluding VAT, that the producer invoices to the purchaser. The basic price measures the amount retained by the producer and is, therefore, the price most relevant for the producer's decision-taking. It is becoming increasingly common in many countries for producers to itemize taxes separately on their invoices so that purchasers are informed about how much they are paying to the producer and how much as taxes to the government.
- 7.537.61 Basic prices exclude any taxes on products the producer receives from the purchaser and passes on to government but include any subsidies the producer receives from government and uses to lower the prices charged to purchasers.
- 7.547.62Both producers' and basic prices are actual transaction prices that can be directly observed and recorded. Basic prices are often reported in statistical inquiries and some official "producer price" indices actually refer to basic prices rather than to producers' prices as defined here.

#### VAT and similar deductible taxes

7.557.63 Many countries have adopted some form of VAT. VAT is a wide-ranging tax usually designed to cover most or all goods and services. In some countries, VAT may replace most other forms of taxes on products, but VAT may also be levied in addition to some other taxes on products, such as excise duties on tobacco, alcoholic drink or fuel oils.

- 7.567.64 VAT is a tax on products collected in stages by enterprises. Producers are required to charge certain percentage rates of VAT on the goods or services they sell. The VAT is shown separately on the sellers' invoices so that purchasers know the amounts they have paid. However, producers are not required to pay to the government the full amounts of the VAT invoiced to their customers because they are usually permitted to deduct the VAT that they themselves have paid on goods and services purchased for their own intermediate consumption, resale or gross fixed capital formation. Producers are obliged to pay only the difference between the VAT on their sales and the VAT on their purchases for intermediate consumption or capital formation, hence the expression value added tax. The percentage rate of VAT is liable to vary between different categories of goods and services and also according to the type of purchaser. For example, sometimes goods purchased by visiting non-residents, which count as exports, may be exempt from VAT.
- 7.577.65 Other tax regimes exist, not called VAT, that operate in a similar manner. Within the SNA, the term VAT is used to apply to any similar deductible tax scheme even if the scope is narrower than a full system of VAT.

7.587.66 The following terminology needs to be defined:

- Invoiced VAT is the VAT payable on the sales of a producer; it is shown separately on the invoice that the producer presents to the purchaser.
- Deductible VAT is the VAT payable on purchases of goods or services intended for intermediate consumption, gross fixed capital formation or for resale that a producer is permitted to deduct from his own VAT liability to the government in respect of VAT invoiced to his customers.
- Non-deductible VAT is VAT payable by a purchaser that is not deductible from his own VAT liability, if any.

Thus, a market producer is able to recover the costs of any deductible VAT payable on his own purchases by reducing the amount of his own VAT liability in respect of the VAT invoiced to his own customers. On the other hand, the VAT paid by households for purposes of final consumption or fixed capital formation in dwellings is not deductible. The VAT payable by non-market producers owned by government units or NPISHs may also not be deductible.

#### Gross and net recording of VAT

- 7.597.67 There are two alternative systems that may be used to record VAT, the "gross" or "net" systems. Under the gross system, all transactions are recorded including the amounts of any invoiced VAT. Thus, the purchaser and the seller record the same price, irrespective of whether or not the purchaser is able to deduct the VAT subsequently.
- 7.607.68 While the gross system of recording seems to accord with the traditional notion of recording at "market" prices, it presents some difficulties. Practical experience with the operation of VAT over many years in a number of countries has shown it may be difficult, if not impossible, to utilize the gross system because of the way business accounts are computed and records are kept. Sales are normally reported excluding invoiced VAT in most industrial inquiries and business surveys. Conversely, purchases of goods and services by producers are usually recorded excluding deductible VAT. Although the gross system has been tried in some countries, it has had to be abandoned for these reasons. Further, it can be argued that the gross system distorts economic reality to the extent that it does not reflect the amounts of VAT actually paid by businesses. Large amounts of invoiced VAT are deductible and thus represent only notional or putative tax liabilities.

7.617.69 The SNA therefore requires that the net system of recording VAT should be followed. In the net system:

- Outputs of goods and services are valued excluding invoiced VAT; imports are similarly valued excluding invoiced VAT;
- Purchases of goods and services are recorded including non-deductible VAT.

Under the net system, VAT is recorded as being payable by purchasers, not sellers, and then only by those purchasers who are not able to deduct it. Almost all VAT is therefore recorded in the SNA as being paid on final uses, mainly on household consumption. However, small amounts of VAT may be paid by businesses in respect of certain kinds of purchases on which VAT may not be deductible.

- 7.627.70 The disadvantage of the net system is that different prices must be recorded for the two parties to the same transaction when the VAT is not deductible. The price recorded for the producer does not include invoiced VAT whereas the price recorded for the purchaser does include the invoiced VAT to the extent that it is not deductible. Thus, in aggregate, the total value of the expenditures recorded for purchasers must exceed the total value of the corresponding sales receipts recorded for producers by the total amount raised as non-deductible VAT.
- 7.637.71 The producer's price thus defined is a hybrid that excludes some, but not all, taxes on products. The basic price, which does not include any taxes on the product (but includes subsidies on the product) becomes a clearer concept in these circumstances and is the preferred method for valuing the output of producers.

#### 2. Purchasers' prices

7.647.72 The purchaser's price is the amount paid by the purchaser, excluding any VAT or similar tax deductible by the purchaser, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place.

7.657.73 When a purchaser buys directly from the producer, the purchaser's price may exceed the producer's price by:

- The value of any non-deductible VAT, payable by the purchaser; and
- The value of any transport charges on a good paid separately by the purchaser and not included in the producer's price.

It follows that the purchaser's price may exceed the basic price by the amount of the two items just listed plus the value of any taxes less subsidies on the product (other than VAT).

- 7.667.74 If purchasers buy output not from the producer directly but from a wholesaler or retailer, it is necessary to include their margins in the difference between basic and purchasers' prices also.
- 7.677.75 For certain purposes, including input-output analysis, it may be convenient to consider that the purchase of a product consists of two separate transactions. The first of these is the purchase of the product from the producer and the second is the margin paid to the wholesaler or retailer of the product. The margin represents the difference between the price paid by the final purchaser of a product after it has passed through the wholesale and retail distribution chains and the producer's price received by its original producer.
- 7.687.76 The traditional concept of the ""market" price becomes somewhat blurred under a system of VAT or similar deductible taxes because there may be two different prices for a single transaction: one from the seller's point of view and another from the purchaser's, depending upon whether or not the tax is deductible. It is recommended in the SNA that the term "market prices" should be avoided when referring to value added and the price basis used, (basic, producers' or purchasers'), be specified to avoid ambiguity.

#### 3. Basic, producers' and purchasers' prices – a summary

7.697.77 Figure 47.1 gives an overview of the essential differences between basic, producers' and purchasers' prices.

# Figure 67.1: Basic, producers' and purchasers' prices

# **D.** Value added and GDP

#### 1. Gross and net value added

7.707.78 The balancing item of a current account is the excess of resources revenues over uses expenditures. The rationale

for dividing transactions into sets of accounts is that the balancing item of each account is of economic interest. The balancing item of the production account is value added, so called because it measures the value created by production. Because a production account may be compiled for an institutional unit or sector, or establishment or industry, so-value added may be derived for any of these. Value added is of analytical interest because when the value of taxes on products (less subsidies on products) is added, the sum of value added for all resident units gives the value of gross domestic product (GDP).

- 7.717.79 Value added represents the contribution of labour and capital to the production process. Once the amount of value added appropriated by government in the form of other taxes on production is deducted from value added and the value of subsidies is added, the compensation of labour and capital is revealed. However, capital in the form of fixed capital and most natural resources has a finite life length. Some part of value added should therefore be regarded as the reduction in value of fixed capital due to its use in production. This These allowances are is called consumption of fixed capitaldepreciation and depletion.
- 7.727.80 Consumption of fixed capital Depreciation and depletion are is one of the most important elements in the SNA. In most cases, when a distinction is drawn between "gross" and "net" recording, "gross" means without deducting consumption of fixed capital depreciation and depletion, while recording "net" means after deducting consumption of fixed capital depreciation and depletion. In particular, all the major balancing items in the accounts from value added through to saving may be recorded gross or net, that is, before or after deducting consumption of fixed capital depreciation and depletion. It should also be noted that consumption of fixed capital depreciation and depletion are is typically quite large compared with most of the net balancing items. It may account for 10 per cent or more of GDP.
- 7.737.81Consumption of fixed capitalDepreciation and depletion are among-is one of the most difficult items in the accounts to define conceptually and to estimate in practice. Further, consumption of fixed capitaldepreciation and depletion does not represent the aggregate values of a set of transactions. It is an They are imputed values whose economic significance is different from entries in the accounts based mainly on market transactions. For these reasons, the major balancing items in national accounts have always tended to be recorded both gross and net of consumption of fixed capitaldepreciation and depletion. This tradition is continued in the SNA where provision is made for balancing items from value added through to saving to be recorded both ways. In general, the gross figure is the easier to estimate and so may be more reliable, but the net figure is usually the one that is conceptually more appropriate and relevant for analytical purposes. As net measures are superior from a conceptual point of view, more emphasis should be placed on these measures in communication, complementing but not necessarily replacing gross measures which are traditionally used. See also chapters 2 and 21).

#### 7.74<u>7.82</u>As stated above:

- "Gross value added" is defined as the value of output less the value of intermediate consumption;
- <u>"Value added net of depreciation" is defined as the value of output less the value of both intermediate consumption and depreciation;</u>
- <u>"Net value added</u>" is defined as the value of output less the values of both-intermediate consumption. and consumption of fixed capital depreciation and depletion.

To avoid repetition, only gross value added will be cited in the following sections when the corresponding conclusions for net value added are obvious.

#### 2. Alternative measures of value added

7.757.83 In the SNA, intermediate inputs are valued and recorded at the time they enter the production process, while outputs are recorded and valued as they emerge from the process. Intermediate inputs are normally valued at purchasers' prices and outputs at basic prices, or alternatively at producers' prices if basic prices are not available. The difference between the value of the intermediate inputs and the value of the outputs is gross value added against which must be charged consumption of fixed capitaldepreciation and depletion, taxes on production (less subsidies) and compensationremuneration of employees. The positive or negative balance remaining is the net operating surplus or mixed income.

7.767.84 As indicated above, alternative measures of gross value added may be obtained by associating different sets of prices with a set of quantities of inputs and outputs. The various measures that may be derived using the different sets of prices recognized in the SNA are considered below.

#### Gross value added at basic prices

7.777.85 Gross value added at basic prices is defined as output valued at basic prices less intermediate consumption valued at purchasers' prices. Although the outputs and inputs are valued using different sets of prices, for brevity the value added is described by the prices used to value the outputs. From the point of view of the producer, purchasers' prices for inputs and basic prices for outputs represent the prices actually paid and received. Their use leads to a measure of gross value added that is particularly relevant for the producer.

#### Gross value added at producers' prices

- 7.787.86 Gross value added at producers' prices is defined as output valued at producers' prices less intermediate consumption valued at purchasers' prices. As already explained, in the absence of VAT, the total value of the intermediate inputs consumed is the same whether they are valued at producers' or at purchasers' prices, in which case this measure of gross value added is the same as one that uses producers' prices to value both inputs and outputs. It is an economically meaningful measure that is equivalent to the traditional measure of gross value added at market prices. However, in the presence of VAT, the producer's price excludes invoiced VAT, and it would be inappropriate to describe this measure as being at "market" prices.
- 7.797.87 Both this measure of gross value added and that described in the previous <u>sub</u>section use purchasers' prices to value intermediate inputs. The difference between the two measures is entirely attributable to their differing treatments of taxes or subsidies on products payable on outputs (other than invoiced VAT). By definition, the value of output at producers' prices exceeds that at basic prices by the amount, if any, of the taxes on products, less subsidies on products so that the two associated measures of gross value added must differ by the same amount.

#### Gross value added at factor cost

- 7.807.88 Gross value added at factor cost is not a concept used explicitly in the SNA. Nevertheless, it can easily be derived from either of the measures of gross value added presented above by subtracting the value of any taxes on production, less subsidies on production, payable out of gross value added as defined. For example, the only taxes on production remaining to be paid out of gross value added at basic prices consist of "other taxes on production". These consist mostly of current taxes (or subsidies) on the labour or capital employed in the enterprise, such as payroll taxes or current taxes on vehicles or buildings. Gross value added at factor cost can thus be derived from gross value added at basic prices by subtracting other taxes on production, and addingless subsidies on production.
- 7.817.89 The conceptual difficulty with gross value added at factor cost is that there is no observable set of prices such that gross value added at factor cost is obtained directly by multiplying this set of prices by the sets of quantities of outputs. By definition, other taxes or subsidies on production are not taxes or subsidies on products that can be eliminated from the input and output prices. Thus, despite its traditional name, gross value added at factor cost is not strictly a measure of value added; it is essentially a measure of income and not output. It represents the amount remaining for distribution out of gross value added, however defined, after the payment of all taxes on production and the receipt of all subsidies on production. It makes no difference which measure of gross value added is used to derive this income measure because the alternative measures of value added considered above differ only in respect of the amounts of the taxes or subsidies on production that remain payable out of gross value added.

# 3. Gross domestic product (GDP)

7.827.90 The underlying rationale behind the concept of gross domestic product (GDP) for the economy as a whole is that it should measure the total gross value added from all institutional units resident in the economy. However, while the concept of GDP is based on this principle, GDP as defined in the SNA is such that an identity exists between

a measure built on value added, a measure built on income and one based on final expenditures. To achieve this, it is important that the same contribution to GDP is made by taxes on production under all three measures. The expenditure measure of GDP includes all taxes on production and taxes on imports since ultimately these are included in the purchasers' prices of the final users.

7.837.91 Given this definition of GDP, the following identities hold when the summations are taken over all resident producers:

GDP = the sum of the gross value added at producers' prices,

plus taxes on imports, less subsidies on imports, plus non-deductible VAT.

• GDP = the sum of the gross value added at basic prices,

plus all taxes on products,

less all subsidies on products.

• GDP = the sum of the gross value added at factor cost

plus all taxes on products,

less all subsidies on products,

plus all other taxes on production,

less all other subsidies on production.

In cases (b) and (c), the items taxes on products and subsidies on products includes taxes and subsidies on imports as well as on outputs.

#### 4. Domestic production

7.847.92 GDP measures the production of all resident producers. This does not necessarily coincide with all production taking place within the geographical boundary of the economic territory. Some of the production of a resident producer may take place abroad, while some of the production taking place within the geographical boundary of the economy may be carried out by non-resident producer units. For example, a resident producer may have teams of employees working abroad temporarily on the installation, repair or servicing of equipment. This output is an export of a resident producer and the productive activity does not contribute to the GDP of the country in which it takes places. Thus, the distinction between resident and non-resident producers takes place within the country in which they are resident. However, producers in service industries that typically have to deliver their outputs directly to their clients wherever they are located are increasingly tending to engage in production in more than one country, a practice that is encouraged by rapid transportation and instantaneous communication facilities. Geographical boundaries between adjacent countries are becoming less significant for mobile service producers, especially in small countries bordered by several other countries.

# E. The measurement of output

#### **1. Production versus output**

7.857.93 Production is an activity carried out by an establishment. It may not always be clear whether an establishment is producing a good or is providing a service. For example, an oil refinery processing crude oil that it owns is producing a good (refined petroleum); if the same refinery processes crude oil belonging to another unit, then it is providing a refinery service to that unit. This lack of clarity may often appear for goods passing between establishments of the same enterprise and it is important to know when to record the output of a good and when of a change-effecting service. When the establishments belong to different enterprises (that is to different institutional units), the defining principle is that of economic ownership. If an establishment has no discretion about the level of production, the price to be charged for the good or the destination of the good, there is evidence

that the establishment has not taken economic ownership of the goods being processed and the value of the output should be treated as the processing element only. This is the case for the refinery service cited above.

- 7.94 When the establishments involved belong to the same enterprise, there is no change of ownership since both establishments have the same owner. However, the principle of transferring risk, which accompanies change of ownership, can still be applied. Suppose, for example, that an establishment receives coal from another establishment in the same enterprise, uses it to generate electricity and then sells the electricity on the open market. The electricity generator has discretion about the amount of coal it demands, the amount of electricity to be generated and the prices to be charged. In such a case, the value of electricity generated should be measured including the cost of the coal consumed in the process even though there is no legal change in ownership given that both establishments belong to the same enterprise.
- 7.867.95 The measurement of output (and related inputs), including the determination of (changes in) economic ownership, may be complicated by the way in which global production arrangements are established. More details on the recording of such arrangements can be found in chapter 23.
- 7.877.96 In general, all goods and services that are produced and used by the same establishment are excluded from the measure of output. However, there are exceptions here also. For example, output is recorded if the goods and services being produced are used for capital formation of the establishment. Similarly output is recorded for products entering inventories even if eventually they are withdrawn from inventories for use as intermediate consumption in the same establishment in a later period. If the establishment is a household unincorporated enterprise growing maize, the value of maize produced includes maize kept for household consumption.
- 7.887.97 An establishment may produce goods and services that are used as its own intermediate consumption. An example is unglazed china that is only delivered to other units after glazing. In general the unglazed china is not recorded as output but if there is some china remaining unglazed at the end of the production period, it should be recorded as being produced and entering inventories. In the subsequent period, the unglazed china is withdrawn from inventories and the act of glazing constitutes output in the second period.
- 7.897.98 Although production is related to activities and thus the output of one production process is one set of products, output is measured for an establishment and may include the output of several production processes. Thus output is defined as the goods and services produced by an establishment,
  - excluding the value of any goods and services used in an activity for which the establishment does not assume the risk of using the products in production, and
  - excluding the value of goods and services consumed by the same establishment except for goods and services used for capital formation (fixed capital or changes in inventories) or own final consumption.

## 2. Time of recording

- 7.907.99 The output of most goods or services is usually recorded when their production is completed. However, when it takes a long time to produce a unit of output, it becomes necessary to recognize that output is being produced continuously and to record it as "work-in-progress". For example, the production of certain agricultural goods or large durable goods such as ships or buildings may take months or years to complete. In such cases, it would distort economic reality to treat the output as if it were all produced at the moment of time when the process of production happens to terminate. Whenever a process of production extends over two or more accounting periods, it is necessary to calculate the work-in-progress completed within each of the periods in order to be able to measure how much output is produced in each period.
- 7.917.100 On the other hand, goods and services may be completed in an accounting period but not delivered (sold) to a user in that period. Output is recorded when the work is completed and not when sold. There is thus a significant difference between the value of output in a period and the value of sales, the difference being accounted for by changes in inventories of finished goods and work-in-progress.

# 3. Valuation of output

7.927.101 Goods and services produced for sale on the market at economically significant prices may be valued

either at basic prices or at producers' prices. The preferred method of valuation is at basic prices, especially when a system of VAT, or similar deductible tax, is in operation. Producers' prices should be used only when valuation at basic prices is not feasible.

- 7.937.102 Output produced by market producers for own final use should be valued at the average basic prices of the same goods or services sold on the market, provided they are sold in sufficient quantities to enable reliable estimates to be made of those average prices. If not, the output should be valued by the total production costs incurred, including consumption of fixed capitaldepreciation (and depletion where relevant), plus any taxes (less subsidies) on production other than taxes or subsidies on products, plus a net return on the fixed capital and natural resources to non-financial assets used in production, plus rents payable on the use of non-produced non-financial assets. The concept of the net return to capital is introduced in section H and discussed more fully in chapter 2017.
- 7.947.103 The non-market output produced by government units, the central bank and NPISHs that is supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole is valued by total production costs incurred, similar to the method described in the above paragraph.-including consumption of fixed capital, plus taxes (less subsidies) on production other than taxes or subsidies on products. By convention, no net return to capital is included for non-market production. Similarly, no net return to capital is included for the valuation of production for own final use by non-market producers when these are estimated as the sum of costs. However, although generally a return to capital should be included in valuing non-market output, a return to capital for city parks and historical monuments is to be excluded on pragmatic grounds.

#### 4. Market output, output for own final use and non-market output

- 7.957.104 A fundamental distinction is drawn in the SNA between market output and non-market output because of the way the output of each is valued. Market output is the normal situation in a market economy where producers make decisions about what to produce and how much to produce in response to expected levels of demand and expected costs of supply. The determining factor behind production decisions is that economically significant prices are prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy. These prices normally result when:
  - The producer has an incentive to adjust supply either with the goal of making a profit in the long run or, at a minimum, covering capital and other costs; and
  - Consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged.

#### 7.967.105 There is further discussion on economically significant prices in chapter 2230.

7.977.106 Non-market output is output undertaken by general government, the central bank and NPISHs that takes place in the absence of economically significant prices. A price is said to be not economically significant when it has little or no influence on how much the producer is prepared to supply and is expected to have only a marginal influence on the quantities demanded. It is a price that is not quantitatively significant from the point of view of either supply or demand. Such prices are likely to be charged in order to raise some revenue or achieve some reduction in the excess demand that may occur when services are provided completely free, but they are not intended to eliminate such excess demand. Once a decision has been taken on administrative, social or political grounds about the total amount of a particular non-market good or service to be supplied, its price is deliberately fixed below the equilibrium price that would clear the market. The difference between a price that is not economically significant and a zero price is, therefore, a matter of degree. The price merely deters those units whose demands are the least pressing without greatly reducing the total level of demand.

7.987.107 Non-market output may be produced for two reasons:

• It may be technically impossible to make individuals pay for collective services because their consumption cannot be monitored or controlled. The pricing mechanism cannot be used when transactions costs are too high and there is market failure. The production of such services has to be

organized collectively by government units <u>or the central bank</u> and financed out of funds other than receipts from sales, namely taxation or other <del>government</del> incomes;

• Government units and NPISHs may also produce and supply goods or services to individual households for which they could charge but choose not to do so as a matter of social or economic policy. The most common examples are the provision of education or health services, free or at prices that are not economically significant, although other kinds of goods and services may also be supplied.

#### Market output

7.997.108 *Market output consists of output intended for sale at economically significant prices.* The value of market output is determined as the sum of the following items:

- The value of goods and services sold at economically significant prices;
- The value of goods or services bartered in exchange for other goods, services or assets;
- The value of goods or services used for payments in kind, including compensation in kind;
- The value of goods or services supplied by one establishment to another belonging to the same market enterprise to be used as intermediate inputs where the risk associated with continuing the production process is transferred along with the goods;
- The value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses;
- The margins charged on the supply of goods and services, transport margins, margins on the acquisition and disposal of financial assets, etc.

#### **Recording of sales**

- 7.1007.109 The times at which sales are to be recorded are when the receivables and payables are created: that is, when the ownership of the goods passes from the producer to the purchaser or when the services are provided to the purchaser. Goods or services are valued at the basic prices at which they are sold. If valuation at basic prices is not feasible, they may be valued at producers' prices instead. If it is necessary to value the sale of goods at producers' prices rather than basic prices, then the implicit value of margin services should also include any applicable taxes on products. For some margin services, especially those concerning financial assets, the value of the service provided may be implicit.
- 7.1017.110 The values of sales are determined by the amounts receivable and payable by the producers and purchasers, suitably adjusted for trade and transport margins. The amounts receivable and payable do not always coincide with the amounts actually received and paid. The amount payable should be shown in the production account and the difference between amounts payable and paid should be shown as accounts payable or receivable in the financial account. Subsequent payments of these amounts outstanding are recorded as financial transactions and not as part of the production account. If payments made in advance or in arrears attract interest charges, these should be shown as separate transactions and not included in the value of sales.

# **Recording of barter**

7.1027.111 Barter occurs when goods and services are exchanged for other goods, services or assets. The value of goods or services bartered should be recorded when the ownership of the goods is transferred or the services are provided. The output of goods bartered is valued at the basic prices that would have been received if they had been sold.

#### Recording of compensation in kind or other payments in kind

7.1037.112 Goods or services provided to employees as <u>compensation</u> in kind, or used for other payments in kind, should be recorded when the legal ownership of the goods is transferred or the services are provided. They should be valued at the basic prices that would have been received if they had been sold.

#### **Recording of intra-enterprise deliveries**

7.1047.113 Intra-enterprise deliveries are recorded only when the establishment receiving the goods assumes responsibility for making the decisions about the levels of supply and prices at which their output is delivered to the market. When incoming deliveries are recorded, they should be valued at the basic prices that would have been received if they had been sold.

#### Changes in inventories of finished goods

- 7.1057.114 The basic principle underlying the measurement of changes in inventories of finished goods is that output should be recorded at the time it is produced and valued at the same price whether it is sold, otherwise used or entered into inventories for sale or use later. In effect, goods only enter inventories when they are not immediately used for sale or other use in the period they are produced. Similarly, goods are withdrawn from inventories when the demand for the goods exceeds the amount produced in a period. No output is recorded when goods produced previously are withdrawn from inventories and sold or otherwise used unless a storage activity as described below in section F takes place.
- 7.1067.115 Inventories of finished goods therefore explain the difference between production and sales (or other use) in a single period. It follows that entries into inventories must be valued at the basic prices prevailing at the time of entry, while withdrawals must be valued at the prices at which they are then sold. This method of valuing changes in inventories, which may be described as the "perpetual inventory method" or PIM, is not always easy to implement in practice, however, and it sometimes leads to results that may be counter intuitive.
- 7.1077.116 When prices are stable, the measurement of changes in inventories is relatively simple. However, when there is inflation (or deflation), significant price increases (decreases) may occur while goods are held in inventories. Holding gains (losses) accruing on goods held in inventories after they have been produced must not be included in the value of output. It follows from the valuation method used that, when prices are changing, goods entering and leaving inventories at different times are valued at different prices, even within the same accounting period (as also are goods sold at different times). This requires that, in principle, all entries to, and withdrawals from, inventories be recorded continuously as they occur, and helps explain the complexity of the perpetual inventory method. The perpetual inventory method ensures their exclusion by valuing goods withdrawn from inventories at the prices prevailing at the time they are withdrawn and not at the prices at which they are entered, or their "historic costs". This method of valuation can lead to much lower figures for both output and profits in times of inflation than those obtained by business accounting methods based on historic costs. Further discussion on the valuation of inventories appears in chapter <u>1011</u>.

7.1087.117 It follows from the general principles outlined in the previous section that:

- Goods entering inventories are valued at the basic prices prevailing at that time: that is, at the prices at which they could have been sold when first produced;
- Goods withdrawn from inventories are valued at the basic prices prevailing at that time: that is, at the prices at which they can then be sold.

7.1097.118 Goods held in inventories are subject to deterioration through the passage of time and are at risk from theft or accidental damage. Recurrent losses due to normal rates of wastage, theft and accidental damage are treated in the same way as withdrawals from inventories and thus reduce the value of output. This practice is followed even if the losses are high relative to output as long as they are recurrent. The total value of the changes in inventories of finished goods recorded within a specified accounting period is then given by:

the sum of the values of all goods entering inventories

less the sum of the values of all goods withdrawn from inventories

less the value of any recurrent losses of goods held in inventories.

#### Changes in inventories of work-in-progress

- 7.1107.119 When the process of production takes a long time to complete, output must be recognized as being produced continuously as work-in-progress. As the process of production continues, intermediate inputs are continually being consumed so that it is necessary to record some corresponding output. Otherwise, recording the inputs and outputs as if they took place at different times, or even in different accounting periods would give meaningless figures for value added. Work-in-progress is essentially incomplete output that is not yet marketable: that is, output that is not sufficiently processed to be in a state in which it can easily be supplied or sold to other institutional units. It is essential to record such output whenever the process of production is not completed within a single accounting period so that work-in-progress is carried forward from one period to the next. In this case, the current value of the work-in-progress completed up to the end of one period is recorded in the closing balance sheet, which also serves as the opening balance sheet for the next period.
- 7.1117.120 Work-in-progress may need to be recorded in any industry, including service industries such as the production of movies, depending upon the length of time it takes to produce a unit of output. It is particularly important in industries with long gestation periods, such as certain types of agricultural production or durable producers' goods production, where the period of production may extend over several years.
- 7.1127.121 Work-in-progress is treated in the SNA as one component of inventories of outputs held by producers. However, the borderline between inventories of partially completed buildings and structures and gross fixed capital formation may not always be clear. Gross fixed capital formation is undertaken by users of fixed assets so gross fixed capital formation cannot be recorded until the legal ownership of the assets is transferred from their producers to their users. This transfer does not usually occur until the process of production is completed. However, when a contract of sale has been concluded in advance, the transfer of legal ownership may be deemed to occur in stages as value is put in place. In such cases, stage payments made by the purchaser can often be used to approximate the value of the transfer of partially completed assets, gross fixed capital formation although stage payments may sometimes be made in advance or in arrears of the completion of the stage, in which case shortterm credits are also extended from the purchaser to the producer, or vice versa. Although the partially completed asset has been transferred, it should remain to be recorded as work-in-progress, albeit in the accounts of the purchaser. In the absence of a contract of sale, the output produced must be treated as additions to the producer's inventories, that is, as work-in-progress, however large the partially completed structure may be. When the production process is terminated, the whole of the work-in-progress accumulated up to that point is effectively transformed into inventories of finished product ready for delivery or sale. When a sale takes place, the value of the sale must be cancelled by a withdrawal from inventories of equal value so that only the additions to work-inprogress recorded while production was taking place in the period in question remain as measures of output. In this way, the output is distributed over the entire period of production.
- 7.1137.122 Additions to, and withdrawals from, work-in-progress are treated in the accounts in the same way as entries to, and withdrawals from, inventories of finished goods. They must be recorded at the times they take place and at the basic prices prevailing at those times. However, further explanation is needed of the valuation in view of the special characteristics of work-in-progress. This explanation appears in chapter 2017.

#### Output for own final use

7.1147.123 Output for own final use consists of products retained by the producer for his own use as final consumption or capital formation. The value of output for own final use is determined as the sum of the following:

- The value of goods produced by an unincorporated enterprise and consumed by the same household;
- The value of services provided to households by paid domestic staff;
- The value of the imputed services of owner-occupied dwellings;
- The value of the fixed assets produced by an establishment that are retained within the same enterprise for use in future production (own-account gross fixed capital formation);

- The value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses;
- In exceptional cases, as described later in this section, there may be output for own intermediate use.

#### Goods produced by households

7.1157.124 All goods produced by households are within the production boundary and those that are not delivered to other units should be treated as either being consumed immediately or stored in inventories for later use.

#### Services of domestic staff

7.1167.125 Paid domestic staff (child minders, cooks, gardeners, chauffeurs, etc.) are formally treated as employees of an unincorporated enterprise that is owned by the household. The services produced are consumed by the same unit that produces them and they constitute a form of own-account production. By convention, any intermediate costs in the production of the domestic services are treated not as intermediate consumption of the output of the domestic services but as final consumption expenditure of the household. Thus the value of the output produced is deemed to be equal to the compensationremuneration of employees paid, including any compensation in kind such as food or accommodation.

#### Services of owner-occupied dwellings

- 7.1177.126 Households that own the dwellings they occupy are formally treated as owners of unincorporated enterprises that produce housing services consumed by those same households. When well-organized markets for rented housing exist, the output of own-account housing services can be valued using the prices of the same kinds of services sold on the market in line with the general valuation rules adopted for goods or services produced on own account. In other words, the output of the housing services produced by owner occupiers is valued at the estimated rental that a tenant would pay for the same accommodation, taking into account factors such as location, neighbourhood amenities, etc. as well as the size and quality of the dwelling itself. The same figure is recorded under household final consumption expenditures. In many instances, no well-organized markets exist and other means of estimating the value of housing services must be developed.
- 7.127 There are two phenomena which may potentially lead to double-counting. The first one concerns the own-account production of electricity through the use of solar panels and wind power plants and the production of heat for heating water or a dwelling through geothermal heat or heat pumps. Installations for the generation and use of renewable energy (electricity or heat) may lead to higher market rentals for rented dwellings. Depending on the estimation and stratification methods, this "rental premium" may also feed into the output of owner-occupied housing services, and in this case the owner-occupied housing services need to be adjusted for this rental premium. In cases where very few rented dwellings have renewable energy installations, the risk of double-counting is expected to be negligible.
- 7.1187.128 The other potential risk for double-counting concerns the phenomenon that households may sublet their own dwelling for short periods of time, for example via online market places for accommodation rentals. Again, depending on estimation and stratification methods, one may assume that this "rent premium" affects the output of housing services produced on own-account, as households renting a dwelling may not be allowed to sub-lease the dwelling for short periods of time. If this is indeed the case, the estimated value of the services related to owner-occupied dwellings needs to split into the rentals from leasing the dwelling for short periods of time, and the part reflecting the consumption of owner-occupied housing serves. In addition, any purchases in relation to the leasing of the dwelling may need to be reclassified from final consumption expenditure to intermediate consumption.

## Own gross fixed capital formation

7.1197.129 Goods or services used for own gross fixed capital formation can be produced by any kind of enterprise, whether corporate or unincorporated. They include, for example, the special machine tools produced for their
own use by engineering enterprises, or dwellings, or extensions to dwellings, produced by households. A wide range of construction activities may be undertaken for the purpose of own gross fixed capital formation in rural areas in some countries, including communal construction activities undertaken by groups of households. In addition, intellectual property products such as R&D<sub>2</sub>-and software products, including data and databases, may be produced on own account.

#### Changes in inventories

7.1207.130 Additions to work-in-progress on structures intended for own use <u>continue to be treated as changes in</u> inventories until they are completed. As it may not always be feasible to distinguish work-in-progress from completed products, particularly in the case of intellectual property products, the relevant additions to work-inprogress are treated as acquisitions of fixed assets by their producers. Goods or services produced for own final use may be placed in inventories of finished products for use later. They are valued at the basic prices of similar products sold on the market at the time they enter inventories or by their costs of production if no suitable basic prices are available.

#### Own intermediate consumption

- 7.1217.131 It is unusual to record goods and services used as intermediate consumption within the same establishment but there are occasions where it may be desirable. If such recording is made, the goods and services in question add to both intermediate consumption and output so value added is unaffected by this practice.
- 7.1227.132 If an activity such as delivery services is of particular interest and there is a diversity of practice about whether it is treated as secondary output (that is, is charged for) or as being for own use (not charged for) then it may be desirable to show all delivery services as if they were secondary products with the output shown as own intermediate consumption where appropriate.
- 7.1237.133 As explained in paragraph 6.104-7.113 if a product is delivered by one establishment to another within the same enterprise, the delivery is recorded as output of the first establishment and intermediate consumption of the second only when the second establishment assumes the responsibility for making the decisions about the level of supply and prices at which the output is delivered to the market. When this is not the case, the output of the first establishment is shown as entering inventories while the second establishment delivers a processing service and charges for it. If a production account is being compiled for the enterprise, in the first case it may be preferable to show the product as both output and intermediate consumption of the enterprise rather than to consolidate it out. In the second case, the output of the enterprise will be the value of the product as produced by the first establishment plus the processing fee for the second.
- 7.1247.134 In some cases, part of the current output may be placed in inventories for use as intermediate consumption in future. An example is agriculture where some of the current crop may be used for seed in future.

#### Valuation of output for own final use

- 7.1257.135 Output for own final use should be valued at the basic prices at which the goods and services could be sold if offered for sale on the market. In order to value them in this way, goods or services of the same kind must actually be bought and sold in sufficient quantities on the market to enable reliable market prices to be calculated for use for valuation purposes. The expression "on the market" means the price that would prevail between a willing buyer and willing seller at the time and place that the goods and services are produced. In the case of agricultural produce, for example, this does not necessarily equate to the prices in the local market where transportation costs and possibly wholesale margins may be included. The nearest equivalent price is likely to be the so-called "farm-gate" price; that is, the price that the grower could receive by selling the produce to a purchaser who comes to the farm to collect the produce.
- 7.1267.136 When reliable market prices cannot be obtained, a second best procedure must be used in which the value of the output of the goods or services produced for own final use is deemed to be equal to the sum of their costs of production: that is, as the sum of:

- Intermediate consumption;
- <u>CompensationRemuneration</u> of employees;
- Consumption of fixed capital Depreciation (and depletion where relevant);
- A net return to non-financial assets used in production;
- <u>Rent payable on the use of non-produced non-financial assets;</u>
- Other taxes (less subsidies) on production.

By convention, no net return to capital is included when own-account production is undertaken by non-market producers.

7.1277.137 For unincorporated enterprises, it may not be possible to estimate compensation of employees, consumption of fixed capital and a the compensation for labour input and the return to capital are not separately available, both being partin which case an estimate of mixed income, covering all these items, should be made. In these cases, it may nevertheless be useful for certain types of analysis to impute an estimate of labour input separately, based on wage rates paid for similar kinds of work. The return to capital could then be estimated following the standard procedure.

7.1287.138 It will usually be necessary to value the output of own-account construction on the basis of costs as it is likely to be difficult to make a direct valuation of an individual and specific construction project that is not offered for sale. When the construction is undertaken for itself by an enterprise, the requisite information on costs may be easily ascertained, but not in the case of the construction of dwellings by households or communal construction for the benefit of the community undertaken by informal associations or groups of households. Most of the inputs into communal construction projects, including labour inputs, are likely to be provided free so that even the valuation of the inputs may pose problems. As unpaid labour may account for a large part of the inputs, it is important to make some estimate of its value using wage rates paid for similar kinds of work on local labour markets. While it may be difficult to find an appropriate rate, it is likely to be less difficult than trying to make a direct valuation of a specific construction project itself. The fact that an imputation is made for the value of labour input is a means to approximate the market price for the construction. It does not imply that these labour costs should also be treated as <u>compensation</u> remuneration of employees. As explained in chapter  $\frac{78}{28}$ , when labour is provided on a voluntary basis to a producer unit other than the labourer's own household, no imputation for compensationremuneration of employees is made. If labour is provided for a nominal payment, only the nominal payment is recorded as compensationremuneration of employees. The other labour costs are treated as mixed income.

#### Non-market output

7.1297.139 Non-market output consists of goods and individual or collective services produced by government, the central bank and non-profit institutions serving households (NPISHs) or government that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole. Although this output is shown as being acquired by government, the central bank and NPISHs in the use of income account, it should not be confused with production for own use. The expenditure is made by government, by the central bank and by NPISHs but the use of individual goods and services is by households, and the use of collective services by households or other resident institutional units. Thus non-market output should never be confused with output for own use where the producer unit not only has imputed expenditure on the output but also actually uses the output. Chapter 910 discusses the difference between expenditure and use in more detail.

7.1307.140 As explained above, government units, the central bank or NPISHs may engage in non-market production because of market failure or as a matter of deliberate economic or social policy. Such output is recorded at the time it is produced, which is also the time of delivery in the case of non-market services. In general, however, it cannot be valued in the same way as goods or services produced for own final consumption or own capital formation that are also produced in large quantities for sale on the market. There are no markets for

collective services such as public administration and defence, but even in the case of non-market education, health or other services provided to individual households, suitable prices may not be available. It is not uncommon for similar kinds of services to be produced on a market basis and sold alongside the non-market services but there are usually important differences between the types and quality of services provided. In most cases it is not possible to find enough market services that are sufficiently similar to the corresponding non-market services to enable their prices to be used to value the latter, especially when the non-market services are produced in very large quantities.

7.1317.141 The value of the non-market output provided without charge to households is estimated as the sum of costs of production, as follows:

- Intermediate consumption;
- CompensationRemuneration of employees;
- Consumption of fixed capital Depreciation (and depletion where relevant);
- •\_\_\_Other taxes (less subsidies) on production;
- A return to non-financial assets used in production;
- Rent payable on the use of non-produced non-financial assets.

As noted before, on pragmatic grounds, a return to capital for city parks and historical monuments is excluded for non-market production.

7.1327.142 If the output is made available at nominal cost, the prices are not economically significant prices and may reflect neither relative production costs nor relative consumer preferences. They therefore do not provide a suitable basis for valuing the outputs of the goods or services concerned. The non-market output of goods or services sold at these prices is valued in the same way as goods or services provided free, that is, by their costs of production. Part of this output is purchased by households, the remainder constituting final consumption expenditures by government units or NPISHs.

7.1337.143 Government units, the central bank and NPISHs may be engaged in both market and non-market production. Whenever possible, separate establishments should be distinguished for these two types of activities, but this may not always be feasible. Thus, a non-market establishment may have some receipts from sales of market output produced by a secondary activity: for example, sales of reproductions by a non-market museum. However, even though a non-market establishment may have sales receipts, its total output covering both its market and its non-market output is still valued by the production costs. The value of its market output is given by its receipts from sales of market products, the value of its non-market output being obtained residually as the difference between the values of its total output and its market output. The value of receipts from the sale of non-market goods or services at prices that are not economically significant remains as part of the value of its non-market output.

#### Market and non-market producers

7.1347.144 Market producers are establishments, all or most of whose output is market production. Non-market producers consist of establishments owned by government units, the central bank or NPISHs that supply goods or services free, or at prices that are not economically significant, to households or the community as a whole. These producers may also have some sales of secondary market output whose prices are intended to cover their costs or earn a surplus: for example, sales of reproductions by non-market museums. Though government, the central bank and NPISHs may have establishments undertaking market production, including own account capital construction, most of their activity will be undertaken on a non-market basis.

7.1357.145 When production for own final use is undertaken by a <u>unit in the general</u> government <u>unit, the central</u> <u>bank</u> or <u>an</u> NPISH<del>s sector</del>, it is treated as being undertaken by a non-market producer. It may also be undertaken by market producers or by units outside general government, <u>the central bank</u> and NPISHs who produce only for own final use.

#### F. The output of particular industries

#### 1. Introduction

<u>7.146</u> The rules governing the recording and valuation of output are not sufficient to determine the way in which the output of certain kinds of industries, mostly service industries, such as wholesale and retail trade and financial institutions, is measured. The following sections provide further information about the measurement of the output of a number of specific industries. For convenience, the industries concerned are given in the same order as they appear in the ISIC.

7.1367.147 This section does not address issues related to the measurement of output in the case of global production arrangements resulting from the increased globalisation of the worldwide economy. Further details on such arrangements and the related complexities, including their impact on the interpretation and analysis of macroeconomic aggregates, can be found in chapter 23.

#### 2. Agriculture, forestry and fishing

- 7.1377.148 The growth and regeneration of crops, trees, livestock or fish which are controlled by, managed by and under the responsibility of institutional units constitute a process of production in an economic sense. Growth is not to be construed as a purely natural process that lies outside the production boundary. Many processes of production exploit natural forces for economic purposes, for example, hydroelectric plants exploit rivers and gravity to produce electricity.
- 7.1387.149 The measurement of the output of agriculture, forestry and fishing is complicated by the fact that the process of production may extend over many months, or even years. Many agricultural crops are annual with most costs incurred at the beginning of the season when the crop is sown and again at the end when it is harvested. However, immature crops have a value depending on their closeness to harvest. The value of the crop has to be spread over the year and treated as work-in-progress. Often the final value of the crop will differ from the estimate made of it and imputed to the growing crop before harvest. In such cases revisions to the early estimates will have to be made to reflect the actual outcome. When the crop is harvested, the cumulated value of work-in-progress is converted to inventories of finished goods that is then run down as it is used by the producer, sold or is lost to vermin.
- 7.1397.150 Some plants and many animals take some years to reach maturity. In this case, the increase in their value is shown as output and treated as increases in fixed capital or inventories depending on whether the plant or animal yields repeat products or not. (There is more discussion of this distinction in chapter 1011.) The value of the increase in the plants or animals should take account of the delay before the yield from them is realized as explained in chapter 2017. Once the plant or animal has reached maturity, it will decline in value and this decline should be recorded as consumption of fixed capitaldepreciation.

#### 3. Machinery, equipment and construction

- 7.1407.151 The production of high value capital goods such as ships, heavy machinery, buildings and other structures may take several months or years to complete. The output from such production must usually be measured by work-in-progress and cannot be recorded simply at the moment in time when the process of production is completed. The way in which work-in-progress is to be recorded and valued is explained in chapter  $\frac{2017}{2}$ .
- 7.1417.152 When a contract of sale is agreed in advance for the construction of buildings and structures, but not for other production spreading over several periods, the output produced each period is treated as being sold to the purchaser at the end of each period, that is, as a sale rather than work in progress. In effect, the output produced by the construction contractor is treated as being sold to the purchaser in stages as the latter takes legal possession of the output. It is recorded as work-in-progressgross fixed capital formation by the purchaser and not as work-in-progress by the producer. When the contract calls for stage payments, the value of the output may often be approximated by the value of stage payments made each period. In the absence of a contract of sale, however, the

incomplete output produced each period must be recorded as work-in-progress of the producer. Dwellings built speculatively (that is, without a prior contract of sale) remain in the inventories of the construction company until sold, changing status within inventories from work-in-progress to finished products if they remain unsold on completion.

#### 4. Electricity and heat

- 7.153 The measurement of output in the area of electricity and heat is relatively straightforward. However, the production, by households, of electricity through the use of solar panels and wind power plants and the production of heat for heating water or a dwelling through geothermal heat or heat pumps may raise some issues. Specifically for electricity, a complication comes from the fact that different production and consumption models exist, often overlapping even within the same production unit. In fact, electricity can be used directly by the producing household for own final consumption, can be sold to the local grid, or a mix of the two (with complicated price structures involved). On the contrary, household production of heat is normally used for own final consumption.
- 7.154 Output for own final use should be valued at the basic price at which the goods or services could be sold on the market. For the production of electricity for own final use, the feed in tariff that the household would receive for electricity fed to the grid at the moment of use is considered the most appropriate valuation. In this respect, the use of batteries allows households to store excess electricity during peak times and use it, either for own final use or for delivery to the grid, in the evenings when feed in tariffs are generally higher. This difference in prices, by taking advantage of regular, predictable price variations due to changes in the patterns of supply and demand is to be treated as output, not as holding gains and losses; see also below. Receipts from deliveries to the grid in periods of excess production as well as payments for the use of electricity in periods that the own-account production is not sufficient to meet demands should be recorded accordingly. Charges to feed electricity to the grid are to be treated as a reduction in the basic price of electricity generated from solar panels for own use or fed to the grid.

#### 4.5. Transportation and storage

#### *Transportation*

7.1427.155 The output of transportation is measured by the value of the amounts receivable for transporting goods or persons. In economics a good in one location is recognized as being a different quality from the same good in another location, so that transporting from one location to another is a process of production in which an economically significant change takes place even if the good remains otherwise unchanged. The volume of transport services may be measured by indicators such as tonne-kilometres or passenger-kilometres, which combine both the quantities of goods, or numbers of persons, and the distances over which they are transported. Factors such as speed, frequency or comfort also affect the quality of services provided.

#### Storage

- 7.1437.156 Although the production of storage for the market may not be very extensive, the activity of storage is important in the economy as a whole as it is carried out in many enterprises. During storage the inventories of goods have to be physically stored somewhere. Many goods have to be stored in a properly controlled environment and the activity of storage can become an important process of production in its own right whereby goods are "transported" from one point of time to another. In economics, it is generally recognized that the same goods available at different times, or locations, may be qualitatively different from each other and command different prices for this reason. The increase in price of a product due to the fact that it has been in storage and storage costs have been incurred is a production process. However, it is important that the increase in price due to storage is clearly distinguished from holding gains and losses, which must be excluded from the value of production in the case of storage as in other activities.
- 7.1447.157 When goods are first produced, they may be held in store for a time in the expectation that they may be sold, exchanged or used more advantageously in the future. If the increase in value simply reflects a rise in price with no change in quality resulting from being held in storage, then there is no further production during the

period in addition to the costs of storage just described. However, there are three reasons why the increase in value can be construed as further production. The first is that the production process is sufficiently long that discounting factors should be applied to work put in place significantly long before delivery. The second reason is that the quality of the good may improve with the passage of time (such as wine). The third reason is that there may be seasonal factors affecting the supply or the demand for the good that lead to regular, predictable variations in its price over the year, even though its physical qualities may not have changed otherwise. In all these circumstances, storage can be regarded as an extension of the production process over time. The storage services become incorporated in the goods, thereby increasing their value while being held in store. Thus, in principle, the values of additions to inventories should include not only the values of the goods at the time they are stored but also the value of the additional output produced while the goods are held in store.

- 7.1457.158 However, most manufactured goods are produced and sold continuously throughout the year and are not subject to regular changes in supply or demand conditions. Nor do they "mature" while being stored. Changes in the prices of such goods while in inventories cannot be treated as additions to work-in-progress. In order to estimate the increase in the value of goods stored over and above the storage costs, use may be made of the expected increase in value over and above the general rate of inflation over a predetermined period. Any gain that occurs outside the predetermined period continues to be recorded as a holding gain or loss. Further explanation of the calculation of the value of storage and its separation from holding gains and losses is given in the annex to this chapter.
- 7.1467.159 This inclusion of output due to storage applies only to goods that take a long time to complete, those that have an established annual seasonal pattern or those where maturing is part of the regular production process. It does not apply to holding financial assets, valuables or other non-financial assets including land and buildings. Even if anticipated increases in value result in these cases, the motive for holding the items is speculation. The increases in value are treated as holding gains and not as part of the production process.

#### 5.6. Wholesale and retail distribution

- 7.1477.160 Although wholesalers and retailers actually buy and sell goods, the goods purchased are not treated as part of their intermediate consumption when they are resold with only minimal processing such as grading, cleaning, packaging, etc. Wholesalers and retailers are treated as supplying services to their customers by storing and displaying a selection of goods in convenient locations and making them easily available for customers to buy. Their output is measured by the total value of the trade margins realized on the goods they purchase for resale. A trade margin is defined as the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of. The margins realized on some goods may be negative if their prices have to be marked down. They must also be negative on goods that are never sold because they go to waste or are stolen.
- 7.1487.161 The standard formula for measuring output has to be modified for wholesalers or retailers by deducting from the value of the goods sold or otherwise used the value of the goods that would need to be purchased to replace them. The latter includes the additional goods needed to make good recurrent losses due to normal wastage, theft or accidental damage. In practice, the output of a wholesaler or retailer is given by the following identity:

the value of output =

the value of sales,

*plus* the value of goods purchased for resale and used for intermediate consumption, compensationremuneration of employees, etc.,

minus the value of goods purchased for resale,

plus the value of additions to inventories of goods for resale,

minus the value of goods withdrawn from inventories of goods for resale,

minus the value of recurrent losses due to normal rates of wastage, theft or accidental damage.

7.1497.162 The following points should be noted:

- Goods sold are valued at the prices at which they are actually sold, even if the trader has to mark their prices down to get rid of surpluses or avoid wastage. Allowance should also be made for the effect of reductions in price due to loyalty programmes or other schemes to offer reduced prices to certain customers in certain circumstances.
- Goods provided to employees as remuneration in kind should be valued at the current purchasers' prices payable by the traders to replace them; that is, the realized margins are zero. Similarly, goods withdrawn by the owners of unincorporated enterprises for their own final consumption should be valued at the current purchasers' prices payable by the traders to replace them.
- Goods purchased for resale should be valued excluding any transport charges invoiced separately by the suppliers or paid to third parties by wholesalers or retailers: these transport services form part of the intermediate consumption of the wholesalers or retailers.
- Additions to inventories of goods for resale should be valued at the prices prevailing at the time of entry into inventories.
- The value of goods withdrawn from inventories of goods for resale depends on whether the goods were acquired with the intention of making a real holding gain over a given period in storage. In the general case, when the goods being resold were not expected to realize a real holding gain while in storage, the value of the goods on withdrawal from inventories should be the cost to the wholesaler or retailer at the time of the withdrawal of acquiring exactly similar replacement goods for later sale. This valuation is necessary to exclude holding gains and losses from the measurement of output, as is the general rule in the SNA. However, when the goods have been stored for reasons of seasonal variation in prices or as part of the maturing process, the expected real holding gain over the anticipated period is deducted from the replacement value of goods withdrawn from inventories. This deduction is fixed in value at the time the goods enter storage and is not altered in the light of actual holding gains, real or nominal.
- The value of recurrent losses due to wastage, theft or accidental damage; goods lost are valued in the same way as goods withdrawn from inventories. For this reason, the two terms are often combined.
- 7.1507.163 The costs of storage incurred by wholesalers and retailers are not added to the value of the goods when they are withdrawn from inventories but are treated as part of intermediate consumption.
- 7.1517.164 The margins realized on goods purchased for resale thus vary according to their eventual use. The margins realized on goods sold at the full prices intended by the traders could be described as the normal margins. In fixing these margins, traders take account not only of their ordinary costs such as intermediate consumption and compensationremuneration of employees but also of the fact that some goods may ultimately have to be sold off at reduced prices while others may go to waste or be stolen. The margins realized on goods whose prices have to be marked down are obviously less than the normal margins and could be negative. The margins on goods used to pay employees as compensationremuneration in kind or withdrawn for final consumption by owners are zero because of the way these goods are valued. Finally, the margins on goods wasted or stolen are negative and equal to the current purchasers' prices of replacements for them. The average margin realized on goods purchased for resale may be expected to be less than the normal margin, possibly significantly less for certain types of goods such as fashion goods or perishable goods.

#### 6.7. Output of the central bank

- 7.165 Central banks provide a variety of financial services, which may differ across countries. Typically, one can distinguish a certain mix of the following broad groups of services: monetary policy services, including by issuing currency and regulating money supply; services related to promoting financial stability, including regulation and macroprudential supervision; services related to managing international reserves and the payments systems; and acting as banker to government.
- 7.166 In general, these services are provided for free, or at prices which are not economically significant, for the benefit

of the society as a whole. This clearly holds for monetary policy services and services related to the management of international reserves, but it also applies to, for example, services related to promoting financial stability and managing the payments systems. While these types of services may be important for financial intermediaries, their general purpose is to serve the broader financial system, including markets and market infrastructure, and the community as a whole.

- 7.167 Regarding supervision services, the stronger arguments also point in the direction of considering these services as being provided for the benefit of the society as a whole, to safeguard the society from poor business practices. Supervision services are usually not put in place to safeguard an individual financial corporation from putting their own funds/reserves at risk, which first and foremost would be the responsibility of the relevant corporation and its shareholders. In the case of these services, some payments may be made by financial corporations, but these payments are typically compulsory and not in proportion to the services provided, and should therefore be treated as current transfers.
- 7.168 In respect of the possible provision of implicit financial services on loans and deposits (see below) by central banks, it can be noted that central banks usually do not hold loans and deposits, predominantly to/from financial corporations and government, for commercial reasons. Central banks are atypical financial intermediaries, which take on liabilities and engage in lending, not with the purpose of earning a margin between the corresponding income streams, but to conduct monetary policy and meet other public functions. Even though their activity facilitates the channelling of funds between lenders and borrowers, their decisions in terms of volumes intermediated and/or prices charged are not motivated by the same considerations which are relevant for "regular" financial intermediaries like commercial banks. As such, the concept of implicit financial services on loans and deposits could thus be considered as irrelevant for them and certainly non-representative of their actual output. Furthermore, for a considerable part of the loans and deposits on the balance sheets of central banks, the interest rates are set in such a way that they have an impact on the market interest rates, thus also affecting the reference rates for the calculation of implicit financial services on loans and deposits, directly and indirectly. The reference rate, which can be looked upon as an exogenous variable for financial intermediaries charging this type of financial services, is to a certain degree endogenous for central banks.
- 7.169 As a consequence, the above services of central banks are considered as non-market output provided to the society as a whole (i.e., collective services), and total output is to be valued at the sum of costs, while compulsory payments by financial corporations to the central bank should be treated as current transfers, and not as purchases of services. In addition, central banks may occasionally receive revenue from sales of market output produced as a secondary activity. However, total output of the central bank covering both its market and its non-market output is still valued by their costs of production. The value of its market output is given by its receipts from sales of market products, the value of its non-market output being obtained residually as the difference between the values of its total output and its market output.

Before discussing financial services more generally, it is helpful to discuss the output of the central bank. There are three broad groups of central bank services. These are monetary policy services, financial intermediation and borderline cases. Monetary policy services are collective in nature, serving the community as a whole, and thus represent non-market output. Financial intermediation services are individual in nature and in the absence of policy intervention in the interest rates charged by the central banks, would be treated as market production. The borderline cases, such as supervisory services may be classified as market or non-market services depending on whether explicit fees are charged that are sufficient to cover the costs of providing the services.

In principle, a distinction should be made between market and non-market output but in practice the possible resource intensiveness of the exercise and the relative importance of making the distinction should be considered before implementing the conceptual recommendations. In cases where market output is not separated from non-market output, the whole of the output of the central bank should be treated as non-market and valued at the sum of costs.

Borderline cases such as supervisory services

Central banks frequently provide supervisory services overseeing the financial corporations. One could argue that

this is for the benefit of society in general and the national accounts should record them as government final consumption. In support of this view, one could draw a parallel with government performing market regulation policies, which it also may entrust to a specialized agency, or to government providing for roads, dams and bridges. From this point of view, surveillance services are collective services and should be recorded as government consumption expenditure.

However, one could also argue that government's regulatory services are to the benefit of the financial intermediaries, because these services contribute to the functioning and financial performance of these institutions. From this perspective, they are comparable to regulatory services of government such as quality control on food and drugs, which the national accounts record as intermediate consumption of producers. The fact that financial intermediaries pay a fee for these services in some countries (for example in a number of countries in Latin America) supports this view. Following this reasoning, surveillance services are not collective services but should be recorded as intermediate consumption of financial intermediaries. However, even if the view is taken that supervisory services are market output because a fee is charged, if the fees are not sufficient to cover the supervisory costs incurred by the bank, then the services should be treated as non-market output and part of government consumption expenditure.

Provision of non-market output

As long as it can be identified as a separate institutional unit, the central bank is always included in the financial institutions sector and never in general government. The collective consumption represented by monetary policy services is recorded as expenditure by general government but government does not incur the costs incurred by the central bank. Therefore a current transfer of the value of the non-market output should be recorded as payable by the central bank and receivable by the general government to cover the purchase of the non-market output of the central bank by government. This is described in paragraph 8.130.

Provision of market output

If the financial intermediation services provided by the central bank are significant, and if it is possible and worthwhile to compile data for a separate establishment providing them, these services should be shown as payable by the units to whom they are delivered. Supervisory services treated as market output are recorded similarly.

#### 7.8. Financial services other than those associated with insurance and pension funds

- 7.1527.170 A comprehensive discussion of the contribution of financial assets and liabilities to the generation and distribution of income and changes in wealth in an accounting period is given in part 4 of chapter 1725. What follows is a summary of the main aspects affecting the general measurement of the output of financial services. (See chapter 26 for details on the measurement of financial services in the case of Islamic finance.) There are three types of financial activities; financial intermediation, the services of financial auxiliaries and other financial services. Financial services include monitoring services, convenience services, liquidity provision, risk assumption, underwriting and trading services.
- 7.1537.171 Financial intermediation involves financial risk management and liquidity transformation, activities in which an institutional unit incurs financial liabilities for the purpose of acquiring mainly financial assets. Corporations engaged in these activities obtain funds, not only by taking deposits but also by issuing bills, bonds or other securities. They use these funds as well as own funds to acquire mainly financial assets not only by making advances or loans to others but also by purchasing bills, bonds or other securities. Auxiliary financial activities facilitate risk management and liquidity transformation activities. Financial auxiliaries, which are the units primarily engaged in auxiliary financial activities, typically act on behalf of other units and do not put

themselves at risk by incurring financial liabilities or by acquiring financial assets as part of an intermediation service.

- 7.1547.172 Financial services are produced almost exclusively by financial institutions because of the usually stringent supervision of the provision of those services. Similarly, financial institutions rarely produce other services. If a retailer wishes to offer credit facilities to its customers, for example, the credit facilities are usually offered by a subsidiary of the retailer, the subsidiary being treated as a financial institution in its own right regardless of the classification of the parent. Financial institutions may also create subsidiaries dealing with only particular forms of financial services. For example, a credit card operation may be associated with a given bank but may be institutionally separate.
- 7.1557.173 Financial services may be paid for explicitly or implicitly. Some transactions in financial assets may involve both explicit and implicit charges. Four main ways in which financial services are provided and charged for may be considered:
  - Financial services provided in return for explicit charges;
  - Financial services provided in association with interest charges on loans and deposits;
  - Financial services associated with the acquisition and disposal of financial assets and liabilities in financial markets;
  - Financial services associated with insurance and pension schemes.

The first three types of financial services are discussed below, while the following section deals with the financial services associated with insurance and pension schemess look at each of these in turn. In chapter 1725 there is an overview of the transactions and other flows associated with each type of financial instrument. The recording of investment income is described in chapter 78 and the acquisition and disposal of financial assets and liabilities in chapter 112. Changes in the value of financial assets and liabilities not arising from transactions are described in chapter 1213.

#### Financial services provided in return for explicit charges

- 7.1567.174 Many services come under this heading and may be provided by different categories of financial institutions. Deposit taking institutions, such as banks, may charge households to arrange a mortgage, manage an investment portfolio, give taxation advice, administer an estate, and so on. Specialized financial institutions may charge non-financial corporations to arrange a flotation of shares or to administer a restructuring of a group of corporations. However, the most pervasive and probably largest direct fee is likely to be that charged by credit card issuers to the units that accept credit cards as a means of payment for the goods and services they provide. The charge is usually calculated as a percentage of the sale; in the case of retailers the sale value corresponds to turnover and not output. Although the percentage is usually small in absolute terms, maybe one or two percent, the fact that it is applied to such large totals means that the total value of the charge is very large. The charge represents output of the credit card companies and intermediate consumption of the corporations that accept credit cards as means of payment. Ignoring the role of the credit card company does not affect the measurement of the expenditure (usually final consumption or exports) on the goods and services concerned but does underestimate the costs of the provider of goods and services and the output of the credit card company. This in turn leads to a misallocation of value added from the credit card company to the provider of the goods and services paid for by credit card.
- 7.175 The example of the credit card company is one that clearly demonstrates that a financial corporation may provide services that are paid for by different means by different customers or in different circumstances. The fee charged to the corporations accepting a credit card as means of payment has just been discussed. A card holder may also be charged an explicit fee, usually each year, for holding the card. In addition, if a card holder uses the credit facilities offered by the card, he will pay indirect charges associated with interest payable on the outstanding credit (which is treated as a loan in the SNA).
- 7.176 Some institutional units have the sole or predominant function of holding financial assets on behalf of their owners. For example, some mutual funds, holding companies, trusts, and special purpose entities serve this

purpose. In the process of managing those assets, these enterprises incur administrative expenses such as payments to fund managers, custodians, banks, accountants, lawyers, or their own staff. The expenses can be charged for explicitly as a fee, or implicitly by being paid out of investment income received or out of the assets of the enterprise. The expenses implicitly paid for should be recognized as a service to the owners. For example, a hedge fund may distribute a proportion of the net income of the fund to the entity that manages the fund, which should be recorded as a charge for services. Similarly, a custodian may charge lower fees in exchange for the right to on-lend securities.

- 7.177Implicit asset management service charges can be measured at cost. The corresponding entry is to increase the<br/>net value of investment income payable to the investor to the gross value before deduction of the expenses.<br/>Without the recognition of the output of such services, the costs incurred would lead to negative operating surplus<br/>for the asset management enterprises. With this treatment, these enterprises have a net operating surplus of zero.
- 7.178 Institutional units may be set up for holding and managing assets on behalf of others. They may have employees of their own, but more often engage the services of administrators, trustees and/or portfolio managers to manage the operations of the funds. This is the case for most investment funds. Importantly, the funds themselves are treated as separate institutional units, distinct from the unit managing them. The investment funds operations (buying and selling of securities, providing legal, accounting, and other services required to ensure that the fund is operating efficiently). The fund in turn charges a service fee to investors which is equivalent to the amount of operating expenses and is usually reported as an annual percentage of the assets in the fund. In addition, holders of investment fund shares/units may be charged with fees on specific transactions, such as redemption fees, exchange fees imposed for transferring shares/units within the same fund group or account fees. Both types of fees are treated as services that are provided directly from the original providers to the shareholders. Investment funds are thus not treated as providers or consumers of services, and their output and intermediate consumption is equal to zero.

#### Financial services provided in association with interest charges on loans and deposits

7.1577.179 One traditional way in which financial services are provided is by means of financial intermediation. This is understood to refer to the process whereby a financial institution such as a bank accepts deposits from units wishing to receive interest on funds for which the unit has no immediate use and lends them to other units whose funds are insufficient to meet their needs. The bank thus provides a mechanism to allow the first unit to lend to the second. Each of the two parties pays a fee to the bank for the service provided, the unit lending funds by accepting a rate of interest lower than that paid by the borrower, the difference being the combined fees implicitly charged by the bank to the depositor and to the borrower. From this basic idea the concept emerges of a "reference" rate of interest. The difference between the rate paid to banks by borrowers and the reference rate plus the difference between the reference rate and the rate actually paid to depositors represent charges for <u>implicit</u> financial intermediation services <u>on loans and deposits</u> indirectly measured (FISIM).

7.1587.180 However, it is seldom the case that the amount of funds lent by a financial institution exactly matches the amount deposited with them. Some money may have been deposited but not yet loaned; some loans may be financed by the bank's own funds and not from borrowed funds. However, the depositor of funds receives the same amount of interest and service whether or not his funds are then lent by the bank to another customer, and the borrower pays the same rate of interest and receives the same service whether his funds are provided by intermediated funds or the bank's own funds. For this reason an indirect service charge is to be imputed in respect of all loans and deposits offered by a financial institution irrespective of the source of the funds. The reference rate applies to both interest paid on loans and interest paid on deposits so that the amounts of interest recorded as such in the SNA are calculated as the reference rate times the level of loan or deposit in question. The difference between these amounts and the amounts actually paid to the financial institution are recorded as service charges paid by the borrower or depositor to the financial institution. For clarity the amounts based on the reference rate recorded in the SNA as interest are described as "SNA interest" and the total amounts actually paid to or by the financial institution are described as "bank interest". The implicit service charge is thus the sum of the bank interest on loans less the SNA interest on the same loans plus the SNA interest on deposits less the bank interest on the same deposits. The service charge is payable by or to the unit in receipt of the loan or owning the deposit as appropriate.

7.1597.181 By convention within the SNA, these indirect charges in respect of interest apply only to loans and

deposits and only when those loans and deposits are provided by, or deposited with, financial institutions. The financial institutions in question need not be resident; nor need the clients of the financial institution be resident. Thus imports and exports of this type of financial service are possible. Nor need the financial institution necessarily offer deposit-taking facilities as well as making loans. The financial subsidiaries of retailers are examples of financial institutions that make loans without accepting deposits. A money lender who has sufficiently detailed accounts to be treated as an actual or quasi-corporation may receive this sort of charge; indeed since money lenders usually charge especially high rates of interest, their service charges may exceed the SNA interest payments by significant amounts.

- 7.182 The reference rate to be used in the calculation of SNA interest is a rate between bank interest rates on deposits and loans. However, because there is no necessary equality between the level of loans and deposits, it cannot be calculated as a simple average of the rates on loans or deposits. The reference rate should contain no service element and reflect the risk and maturity structure of deposits and loans. The rate prevailing for inter bank borrowing and lending may be a suitable choice as a reference rate. However, different reference rates may be needed for each currency in which loans and deposits are denominated, especially when a non-resident financial institution is involved. For banks within the same economy, there is often little if any service provided in association with banks lending to and borrowing from other banks. As liquidity transformation services are considered to be part of the implicit financial services on loans and deposits, it is recommended to use a single temporal reference rate, and not two reference rates distinguishing short-term and long-term loans and deposits. The calculation of the single reference rate should be determined according to national circumstances, using any of the following approaches:
  - a reference rate based on a single observable exogenous rate for a specific instrument, such as interbank lending rates;
  - a reference rate based on a weighted average of observable exogenous rates of maturities with different terms (weighted by the stock of loans and deposits in each maturity); or
  - <u>a weighted average of the endogenous interest rates on loans and deposits.</u>
- 7.183 During periods of volatile movements in reference rates and when liquidity markets begin to disfunction, considerable care should be taken in determining estimates of implicit financial services on loans and deposits. These periods may be characterised by negative estimates of implicit financial services on loans and deposits, particularly for depositors, but also for borrowers. When such incidences occur, countries are encouraged to review the applicability of the underlying reference rate to calculate the implicit financial services on loans and deposits for that period. The first, and simplest approach, is that countries consider taking the simple weighted average of the interest rates on loans and deposits for those years with negative implicit service charges for either depositors or borrowers. The second, and slightly more complicated approach, takes the view that, during periods when markets are dis-functional, banks may offer financial inducements to attract depositors, meaning that part of what is now typically recorded as bank interest may actually consist of a transfer element. In this approach, during periods of negative implicit financial services on loans and deposits calculated using the conventional approach, the implicit service charges should instead be calculated by assuming that the margin (implicit financial services as a per cent of deposits or loans) banks charge on deposits or loans is broadly stable over time.
- 7.184 As noted before, liquidity transformation is considered to be part of implicit financial services on loans and deposits. Less clarity exists around the inclusion or exclusion of credit default risk. While there is conceptual merit in excluding credit default risk from implicit financial services on loans and deposits, at present many countries are not in a position to do this in a way that ensures reasonable comparability across countries. Having said that, a number of countries have demonstrated that it is feasible, in their cases, to produce meaningful results and these countries have compiled estimates of implicit financial services on loans and deposits on this basis. Recognising that these improvements will take some time to materialise, it is recommended that in the interest of maintaining international comparability, those countries that exclude credit default risk from their estimates of implicit financial services on loans and deposits that include credit default risk.
- 7.185 For international trade in implicit financial services on loans and deposits, different currencies may be involved, and the relevant service charges should be calculated by at least two groups of currencies (national and foreign

currency). Preferably, separate reference rates should be applied for each currency with a significant proportion of loans or deposits. The reference rate for a specific currency need not be the same for providers of implicit financial services on loans and deposits resident in different economies. Although under normal circumstances they should be expected to be relatively close, the rate should be taken, if available, from the financial markets of the home market of the currency, and preferably be the same as the one used by statistical compilers in that economy. In cases where negative implicit financial services on interbank loans occur, and the relevant negative service is received by a resident institution deemed to be the depositor, these should be recorded as liquidity services provided by the resident institution (increasing the institution's output and the economy's exports) and should not be recorded as negative imports. For the counterparty these flows should be recorded as intermediate consumption of liquidity services and imports, and not negative exports/output.

- 7.1607.186 Banks may offer loans that they describe as being fixed interest loans. This is to be interpreted as a situation where the level of bank interest is fixed but as the reference rate changes, the level of SNA interest and the service charge will vary.
- 7.1617.187 When an enterprise acquires a fixed asset under the terms of a financial lease, a loan is imputed between the lessor and the lessee. Regular payments under the lease are treated as being payments of interest and repayment of capital. When the lessor is a financial institution, the interest payable under the terms of a financial lease corresponds to bank interest and should be separated into SNA interest and financial service charge as for any other loan.
- 7.1627.188 Even when a loan is described as non-performing, interest and the associated service charge continue to be recorded in the SNA. There is discussion on the treatment of non-performing loans in chapter 1314.

## Financial services associated with the acquisition and disposal of financial assets and liabilities in financial markets

- 7.1637.189 Debt securities such as bills and bonds are other forms of financial assets that give rise to interest payments, interest being payable to the owner of the security by the issuer. As described in chapter 4725, some of these interest charges may themselves be imputed from changes in the value of securities as they approach maturity. When a financial institution offers a security for sale, a service charge is levied, the purchase price (or ask price) representing the estimated market value of the security plus a margin. Another charge is levied when a security is sold, the price offered to the seller (the bid price) representing the market value less a margin.
- 7.1647.190 Prices of securities may change rapidly and to avoid including holding gains and losses in the calculation of the service margins, it is important to calculate the margins on sales and purchases in terms of mid-prices. The mid-price of a security is the average at a given point in time between the bid and ask price. Thus the margin on the purchase of a security is the difference between the ask price and mid-price at the time of the purchase and the margin on a sale is the difference between the mid-price and the bid price at the time of the sale.
- 7.1657.191 It is important when measuring interest as the increase in value of a security between the date it is purchased and the date it matures (or is subsequently sold) to measure from one mid-point value to another and to treat the differences between mid-point price and bid or ask price at the time of purchase, sale or redemption as a service margin. Ignoring the margins understates the value of output of financial institutions and may understate interest payments also.
- 7.1667.192 Equities and investment fund shares or units give rise to property income other than interest but, like debt securities, they are offered for sale and purchase at different prices. The difference between the buying price and mid-price and the mid-price and selling price should be treated as the provision of financial services as in the case of securities. The same principles as for securities apply for the same reason.
- 7.193 Although no property income flows are involved, margins between buying and selling prices also apply to purchases of foreign currencies (including transactions denominated in foreign currencies such as payments for imports and exports as well as the acquisition of physical notes and coins of a foreign currency). Again these margins should be treated as the provision of financial services in a manner similar to that described for securities.
- 7.1677.194
   Factoring is a transaction in which a financial company (factor, which can be a bank, a specialized factoring company, or other financial organisation) buys trade accounts receivable from a supplier at a discount. The discount is equal to the difference between the nominal value of the accounts receivable and the actual

payments by the factor to the supplier, and may consist of three elements: (i) fees; (ii) interest; and (iii) compensation for possible credit defaults. From a conceptual perspective, the output of the factor is represented by the first element only. In practice, however, details about the three elements may not be separately available. The difference between the nominal value of the accounts receivable and the actual payments by the factor may then be considered as a good approximation of output, under the condition that the factoring services are basically restricted to short term financing arrangements with low amounts of (implicit) interest, including credit default risks. However, in situations in which the factor receives a relatively high compensation for risk-free interest (for example, due to conditions of high inflation) and/or possible credit defaults, this convention could lead to unacceptable high amounts of output for the factor and should preferably not be applied. In such cases, compilers should seek to estimate a value for risk-free interest and/or credit default risk to be deducted from the value of output, or alternatively, compilers may consider estimating output by the sum of costs. Furthermore, when separating out an element of interest, no implicit financial services on loans and deposits should be estimated. The main reason for this view is that factoring is quite different from the more traditional type of intermediating funds, which commonly refers to the intermediation between depositors and borrowers, thereby explicitly excluding claims like other accounts receivable/payable. This line of reasoning also applies, even though in the case of factoring the accounts receivable are to be reclassified to loans.

#### 8.9. Financial services associated with insurance and pension schemes.

- 7.1687.195\_\_\_\_Five types of activities are covered under this heading: Nnon-life insurance; Life insurance and annuities; Rreinsurance; Social insurance schemes; Social guarantee schemes.
- 7.1697.196 All these schemes lead to redistribution of funds, which are recorded in either the secondary distribution of transfer income account or the financial account. For non-life insurance and standardized guarantee schemes, most of the redistribution takes place between different units in the same period. Many client units pay relatively small policy premiums or fees and a small number of them receive relatively large claims or payments. For life insurance, annuities and pension schemes, the redistribution is primarily, though not entirely, between different periods for a single client. In fulfilling their responsibilities as managers of these funds, insurance companies and pension funds are involved in both risk management and liquidity transformation, the prime functions of financial institutions.
- 7.1707.197 Non-life insurance provides cover to the policyholder against loss or damage suffered as a result of an accident. A premium is paid to the insurance corporation and a claim is paid to the policyholder only if the event insured against occurs. If the event occurs then the maximum amount to be paid is specified in the policy so that the uncertainty concerns whether a payment will take place, not the amount of it.
- 7.1717.198\_\_\_\_Under a life insurance policy, many small payments are made over a period of time and either a single lump sum or a stream of payments is made at some pre-agreed time in the future. There is little conditionality involved in life insurance, usually the fact that a payment will be made is certain but the amount may be uncertain.
- 7.1727.199 Annuities are offered by insurance corporations and are a means for an individual person to convert a lump sum into a stream of payments in the future.
- 7.1737.200 Just as an individual may limit their exposure to risk by taking out an insurance policy, so may insurance corporations themselves. Insurance between one insurance corporation and another is called reinsurance. (Insurance other than reinsurance is called direct insurance.) Many reinsurance transactions are with specialized institutions in a few international financial centres. Reinsurers may also take out a further reinsurance policy. This practice is known as "retrocession".
- 7.1747.201 A social insurance scheme is one where a third party, usually an employer or the government, encourages or obliges individuals to participate in a scheme to provide benefits for a number of identified circumstances, including pensions in retirement. Social insurance schemes have much in common with direct insurance and may be run by insurance corporations. This is not necessarily the case, however, and there are special variations in how the payment of contributions (corresponding to premiums in the case of direct insurance) and benefits are recorded.
- 7.1757.202 In some circumstances a unit, possibly but not necessarily within general government, may offer very many guarantees of very similar nature. One example is export guarantees and another is student loans. Because

the guarantees are very similar and numerous, it is possible to make robust statistical estimates of the number of defaults the guarantor will have to cover and so these also are treated in a manner similar to direct non-life insurance.

7.1767.203 The detailed recording for each of these activities, including the measurement of output, the recording of flows between the insurance corporations or pension funds on the one hand and policyholders or beneficiaries on the other, and the implications for changes in the balance sheets of both sets of institutions are described in part 3 of chapter 1724. What follows is a summary of the key features of measuring output for the various activities listed above.

#### Non-life insurance

- 7.1777.204 Under a non-life insurance policy, the insurance company accepts a premium from a client and holds it until a claim is made or the period of the insurance expires. In the meantime, the insurance company invests the premium and the property income is an extra source of funds from which to meet any claim due. The property income represents income foregone by the client and so is treated as an implicit supplement to the actual premium. The insurance company sets the level of the actual premiums to be such that the sum of the actual premiums plus the property income earned on them less the expected claim will leave a margin that the insurance company can retain; this margin represents the output of the insurance company. Within the SNA, the output of the insurance industry is determined in a manner intended to mimic the premium setting policies of the insurance corporations.
- 7.1787.205 The basic method for measuring non-life insurance output is the following:

TotalActual premiums earned,

plus premium supplements,

less adjusted claims incurred.

- 7.1797.206 The actual premium is the amount payable to the direct insurer or reinsurer to secure insurance cover for a specific event over a stated time period. Cover is frequently provided for one year at a time with the premium due to be paid at the outset, though cover may be provided for shorter (or longer) periods and the premium may be payable in instalments, for example monthly.
- 7.1807.207 The actual premium earned is the part of the actual premium that relates to cover provided in the accounting period. For example, if an annual policy with a premium of 120 units comes into force on April 1 and accounts are being prepared for a calendar year, the premium earned in the calendar year is 90. The unearned actual premium is the amount of the actual premium received that relates to the period past the accounting point. In the example just given, at the end of the accounting period there will be an unearned actual premium of 30, intended to provide cover for the first three months of the next year. A claim (benefit) is the amount payable to the policyholder by the direct insurer or reinsurer in respect of an event covered by the policy occurring in the period for which the policy is valid. Claims normally become due when the event occurs, even if the payment is made some time later. (The exception to this time of recording is described in paragraph 8.121.9.0.xx.) Claims that become due are described as claims incurred. In some contested cases the delay between the occurrence of the event giving rise to the claim and the settlement of the claim may be several years. Claims outstanding cover claims that have not been reported, have been reported but are not yet settled or have been both reported and settled but not yet paid.
- 7.1817.208 The insurance corporation has at its disposal reserves consisting of unearned <u>actual</u> premiums and claims outstanding. These reserves are called technical reserves and are used by the insurance company to generate investment income. Because the technical reserves are a liability of the insurance corporation to the policyholders, the investment income they generate is treated as being attributed to the policyholders. However, the amounts remain with the insurance corporation and are in effect a hidden supplement to the apparent <u>actual</u> premium. This income is therefore treated as a premium supplement paid by the policyholder to the insurance corporation.
- 7.1827.209 In setting the level of <u>actual</u> premiums, which obviously the insurance corporation must do ex ante, it makes an estimate of the level of claims it expects to be faced with. Within the SNA there are two ways in which the appropriate level of claims (described as adjusted claims) can be determined. One is an ex ante method,

described as the expectation method, and estimates the level of adjusted claims from a model based on the past pattern of claims payable by the corporation. The other means of deriving adjusted claims is to use accounting information. Within the accounts for the insurance corporations there is an item called "equalization provisions" that gives a guide to the funds the insurance corporation sets aside to meet unexpectedly large claims. Adjusted claims are derived ex post as actual claims incurred plus the change in equalization provisions. In circumstances where the equalization provisions are insufficient to bring adjusted claims back to a normal level, some contribution from own funds must be added also.

- 7.1837.210 On occasion, the levels of technical reserves and of equalization provisions may be altered in response to financial regulation and not because of changes in the expected patterns of premiums and claims. Such changes should be recorded in the other changes in the volume of assets and liabilities account and excluded from the formula to determine output.
- 7.1847.211 In circumstances where information is not available for either approach to deriving adjusted claims, it may be necessary to estimate output instead by the sum of costs including an allowance for normal profits.

#### Life insurance

- 7.1857.212 A life insurance policy is a sort of saving scheme. For a number of years, the policyholder pays premiums to the insurance corporation against a promise of benefits at some future date. These benefits may be expressed in terms of a formula related to the <u>actual</u> premiums paid or may be dependent on the level of success the insurance corporation has in investing the funds.
- 7.1867.213 The insurance corporation cumulates <u>actual</u> premiums paid until the promised date when benefits become payable and in the meantime uses the reserves to produce investment income <u>and holding gains</u>. Some of the investment income <u>and holding gains</u> is added to the life insurance reserves belonging to the policyholders to meet benefits in future. This allocation is an asset of the policyholders but is retained by the insurance corporation which continues to invest the amounts until benefits become payable. The remainder of the investment income <u>and holding gains</u> not allocated to the policyholders is retained by the insurance corporation as its fee for the service they provide.
- 7.1877.214 The method of calculating output for life insurance follows the same general principles as for non-life insurance but because of the time interval between when <u>actual</u> premiums are received and when benefits are paid, special allowances must be made for changes in the technical reserves.

7.1887.215 The output of life insurance is derived as:

Actual Ppremiums earned,

plus premium supplements,

less benefits due,

less increases (plus decreases) in life insurance technical reserves and annuity entitlements.

7.1897.216 Premiums are defined in exactly the same way for life insurance as for non-life insurance.

- 7.1907.217 Premium supplements are more significant for life insurance than for non-life insurance. They consist of all the investment income allocated toearned on the reserves of the life insurance policyholders as property income, whether or not this income originates from investment income or from holding gains (or losses). The amount involved is earnings forgone by the policyholders by putting the funds at the disposal of the insurance corporation and are thus recorded as property income in the distribution of primaryallocation of earned income account.
- 7.1917.218 Benefits are recorded as they are awarded or paid. There is no need under life insurance to derive an adjusted figure since there is not the same unexpected volatility in the payment due under a life policy. It is

possible for the insurance corporation to make robust estimates of the benefits due to be paid even years in advance.

7.1927.219 Life insurance and annuity entitlementsteehnical reserves increase each year because of new actual premiums paid, new investment income allocated to the policyholders (but not withdrawn by them) and decrease because of benefits paid. It is thus possible to express the level of output of life insurance as the difference between the total investment income and holding gains earned on the life insurance and annuity entitlementsteehnical reserves less the part of these returns this investment income actually allocated to the policyholders and added to the insurance technical reserves.

#### Reinsurance

7.1937.220 The method of calculating the output of reinsurance is exactly the same as for non-life insurance, whether it is life or non-life policies that are being reinsured.

#### Social insurance schemes

7.1947.221 \_\_\_\_\_ There are four different ways in which social insurance may be organized.

- Some social insurance is provided by government under a social security scheme;
- An employer may organize a social insurance scheme for <u>its</u> employees, <u>either or not establishing a</u> <u>segregate fund to administer the scheme</u>;
- An employer may have an insurance corporation run the scheme for the employer in return for a fee;
- An insurance corporation may offer to run a scheme for several employers (i.e., a multi-employer scheme) or an employer-independent scheme, in return for any property income and holding gains they may make in excess of what is owed to the participants in the scheme. The resulting arrangement is called a multiemployer scheme.
- A separate institutional unit may be established to run a multi-employer schemes or an employerindependent scheme, either or not using services provided by insurance corporations.

The output for each of these modes of running a social insurance scheme is calculated in a different manner.

- 7.1957.222 Social security schemes are run as part of the operation of general government. If separate units are distinguished, their output is determined in the same way as all non-market output as the sum of costs. If separate units are not distinguished, the output of social security is included with the output of the level of government at which it operates.
- 7.1967.223 When an employer operates its own social insurance scheme, the value of the output is also determined as the sum of costs including an estimate for a return to any fixed capital used in the operation of the scheme. Even if the employer establishes a segregated pension fund to manage the scheme, the value of output is still measured in the same way.
- 7.1977.224 When an employer uses an insurance corporation to <u>administermanage</u> the scheme on his behalf, the value of the output is the fee charged by the insurance corporation.
- 7.1987.225 For a multiemployer scheme or an employer-independent scheme, the value of output <u>can often beis</u> measured as the sum of costs, or in the case the scheme is administered by an insurance corporation, the fees charged by the insurance corporation. However, in certain cases, the formula for life insurance policies <u>may need</u> to be applied; see chapter 24 for more details; it is the excess of the investment income receivable by the schemes less the amount added to the reserves to meet present and future pension entitlements.

#### Standardized guarantee schemes

7.1997.226 If a standardized guarantee scheme operates as a market producer, the value of output is calculated in the same way as non-life insurance. If the scheme operates as a non-market producer, the value of output is calculated as the sum of costs.

#### **10.** Crypto-assets without a corresponding liability designed to act as a medium of exchange

- 7.227 Crypto assets without a corresponding liability designed to act as a medium of exchange are considered as nonproduced non-financial assets. The miners solving cryptographic puzzles for validating the transactions in these assets on the blockchain, and (partly) receiving crypto assets in return, are considered to be producers of validation services, not as producers of the assets themselves. Their output should be measured as the sum of both explicit validation fees and implicit fees in the form of new crypto asset coins.
- 7.228 Most mineable crypto assets without a corresponding liability come into circulation via the work of miners that solve cryptographic puzzles (proof-of-work) and validate transactions on the blockchain. The work of these "miners" in most cases requires the use of solutions developed using intellectual property in developing algorithmic solutions to the cryptographic puzzles, the use of specialized computing equipment, considerable amounts of energy to run and cool these machines, and a lot of time to solve the puzzles. Non-mineable crypto asset without a corresponding liability enter into circulation in two different ways. They may be released via an explicit sale and/or as payment to validators that validate transactions in different ways than via proof-of-work (e.g., via proof of stake or proof of authority). In the end, the designer of the overall framework choses the method in which new crypto assets enter into circulation (e.g., via explicit sales, proof-of-work, etc.).
- 7.229 The activities related to the emergence of new crypto assets without a corresponding liability are regarded as production activities, as the operation of miners and validators require the input of intermediate goods and services, labour and capital. The key difference between crypto asset without a corresponding liability generated through mining (proof-of-work) and other validation (e.g., proof-of-stake) processes is that the intermediate inputs associated with the validation process of non-mineable crypto assets are significantly less than those which are required by mineable crypto assets. The validation process does not always require specialized computing equipment and the level of energy required is generally less than in the mining processes.
- 7.230 The owners of existing crypto assets without a corresponding liability (i.e., coins that have already been brought into circulation) are considered to be the ones consuming the services provided by validators. These concern multiple institutional units that may be spread across a wide range of countries. They are the ones benefiting from the new crypto assets being brought into circulation and from the associated validation services. It ensures the increased use of the crypto assets and the chances of them being accepted as general medium of exchange, both adding to the serviceability of the existing crypto assets. The associated (imputed) financial payment would correspond to the dilution in the value of existing coins, which would be recorded as a financial transaction between the producers and the community.

#### 9.<u>11.</u> Research and development

7.2007.231 Research and development is creative work undertaken on a systematic basis to increase the stock of knowledge, and use this stock of knowledge for the purpose of discovering or developing new products, including improved versions or qualities of existing products, or discovering or developing new or more efficient processes of production. Research and development is not an ancillary activity, and a separate establishment should be distinguished for it when possible. The research and development undertaken by market producers on their own behalf should, in principle, be valued on the basis of the estimated basic prices that would be paid if the research were subcontracted commercially, but in practice is likely to have to be valued on the basis of the total production costs incurredineluding the costs of fixed assets used in production. Research and development undertaken by specialized commercial research laboratories or institutes is valued by receipts from sales, contracts, commissions, fees, etc. in the usual way. Research and development undertaken by government units, universities, non-profit research institutes, etc. is non-market production and is valued on the basis of the total production costs incurred. The activity of research and development is different from teaching and is classified separately in ISIC. In principle, the two activities ought to be distinguished from each other when undertaken within a university or other institute of higher education, although there may be considerable practical difficulties when the same staff divide their time between both activities. There may also be interaction between teaching and research which

makes it difficult to separate them, even conceptually, in some cases. The treatment of R&D as capital formation is discussed in chapter  $\frac{1011}{10}$ .

#### 10.12. The production of originals and copies

- 7.2017.232 The production of books, recordings, films, software, tapes, disks, etc. is a two-stage process of which the first stage is the production of the original and the second stage the production and use of copies of the original. The output of the first stage is the original itself over which legal or de facto ownership can be established by copyright, patent or secrecy. The value of the original depends on the actual or expected receipts from the sale or use of copies at the second stage, which have to cover the costs of the original as well as costs incurred at the second stage.
- 7.2027.233 The output of the first stage is a fixed asset that belongs to the producer of the original (author, film company, program writer, etc.). It may be produced for sale or for own-account gross fixed capital formation by the original producer. As the asset may be sold to another institutional unit the owner of the asset at any given time need not be the original producer, although they are often one and the same unit. If the original is sold when it has been produced, the value of the output of the original producer is given by the price paid. If it is not sold, its value may be estimated on the basis of its production costs with a mark-up. However, the size of any mark-up must depend on the discounted value of the future receipts expected from using it in production, so that it is effectively this discounted value, however uncertain, that determines its value.
- 7.2037.234 The owner of the asset may use it directly to produce copies in subsequent periods. The value of the copies made is also recorded as production separately from the production involved in the making of the original. Consumption of fixed capitalDepreciation is recorded in respect of the use of the asset in the making of the copies the same way as for any other fixed asset used in production.
- 7.2047.235 The owner may also license other producers to make use of the original in production. The latter may produce and sell copies, or use copies in other ways, for example, for film or music performances. The copier undertakes production in making the copies. Part of the cost of making the copies is the fee paid by the licensee to the owner or licensor. This fee represents both intermediate consumption of the licensee and output of the owner that is recorded as a service sold to the licensee. The payments made for the licences may be described in various ways, such as fees, commissions or royalties, but however they are described they are treated as payments for services rendered by the owner.
- 7.2057.236 In certain circumstances the licence to make copies may also be treated as an asset, distinct from the original. The conditions under which this applies and the consequences are discussed in greater detail in chapters <u>12 and <del>17</del>27</u>.

#### G. Intermediate consumption

#### 1. Coverage of intermediate consumption

- 7.2067.237 Intermediate consumption consists of the value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as consumption of fixed capital depreciation. The goods or services may be either transformed or used up by the production process. Some inputs re-emerge after having been transformed and incorporated into the outputs, for example, grain may be transformed into bread. Other inputs are completely consumed or used up, for example, electricity and most services.
- 7.2077.238 Intermediate consumption does not include expenditures by enterprises on valuables consisting of works of art, precious metals and stones and articles of jewellery fashioned out of them. Valuables are assets acquired as stores of value: they are not used up in production and do not deteriorate physically over time. Expenditures on valuables are recorded in the capital account. Intermediate consumption also does not include costs incurred by the gradual using up of fixed assets owned by the enterprise: the decline in their value during the accounting period is recorded as consumption of fixed capital<u>depreciation</u>. However, intermediate consumption does include the rentals paid on the use of fixed assets, whether equipment or buildings, that are leased from other institutional units under an operating lease, and also fees, commissions, royalties, etc., payable under licensing arrangements,

as explained above.

7.2087.239 Where ancillary services are not shown as the output of a separate establishment, intermediate consumption includes the value of all the goods or services used as inputs into ancillary activities such as purchasing, sales, marketing, accounting, data processing, transportation, storage, maintenance, security, etc. In this case, the goods and services consumed by these ancillary activities are not distinguished from those consumed by the principal (or secondary) activities of a producing establishment. When a unit provides only ancillary services, it continues to be shown as a separate unit as long as the necessary information is available. There is more discussion of the treatment of ancillary activities in chapter 56.

#### 2. The timing and valuation of intermediate consumption

- 7.2097.240 The intermediate consumption of a good or service is recorded at the time when the good or service enters the process of production, as distinct from the time it was acquired by the producer. In practice, establishments do not usually record the actual use of goods in production directly. Instead, they keep records of purchases of materials and supplies intended to be used as inputs and also of any changes in the amounts of such goods held in inventories. An estimate of intermediate consumption during a given accounting period can then be derived by subtracting the value of changes in inventories of materials and supplies from the value of purchases on goods held in inventories. Thus, by reducing the value of changes in inventories, recurrent losses increase intermediate consumption. Even if they are consistently large, as long as they occur regularly, losses are treated as increasing intermediate consumption. Goods entering and leaving inventories are valued at the purchasers' prices prevailing at the times the entries, withdrawals or recurrent losses take place. This is exactly the same method as that used to value changes in inventories of goods produced as outputs from the production process. Thus, the earlier discussion of the properties and behaviour of the PIM applies to inventories of inputs.
- 7.2107.241 A good or service consumed as an intermediate input is normally valued at the purchaser's price prevailing at the time it enters the process of production; that is, at the price the producer would have to pay to replace it at the time it is used. As explained in more detail in section C, the purchaser's price can be regarded as being composed of three elements:
  - The basic price received by the producer of the good or service;
  - Any transportation costs paid separately by the purchaser in taking delivery of a good at the required time and location plus the cumulative trade margin on a good that passes through the chain of wholesale or retail distribution;
  - Any non-deductible tax on the product payable on the good or service when it was produced or while in transit to the purchaser less any subsidy on the product.

For purposes of the input-output tables, it may be necessary to distinguish all three elements but this is not necessary in the accounts for institutional sectors or the central supply and use table.

- 7.2117.242 Intermediate inputs treated as being acquired from other establishments belonging to the same enterprise should be valued at the same prices as were used to value them as outputs of those establishments plus any additional transport charges not included in the output values.
- 7.2127.243 When goods or services produced within the same establishment are fed back as inputs into the production within the same establishment, they are only recorded as part of the intermediate consumption if they have been recorded as part of the output of that establishment. There is discussion on when this might be appropriate in section E. Deliveries of goods and services between different establishments belonging to the same enterprise are recorded as outputs by the producing establishments and intermediate inputs by the receiving establishments only when the receiving establishment effectively assumes all risks for completing the production process.

## 3. The boundary between intermediate consumption and <u>compensation</u>remuneration of employees

- 7.2137.244 Certain goods and services used by enterprises do not enter directly into the process of production itself but are consumed by employees working on that process. In such cases it is necessary to decide whether the goods and services are intermediate consumption or, alternatively, remuneration in kind of employees. In general, when the goods or services are used by employees in their own time and at their own discretion for the direct satisfaction of their needs or wants, they constitute remuneration in kind. However, when employees are obliged to use the goods or services in order to enable them to carry out their work, they constitute intermediate consumption.
- 7.2147.245 It is immaterial to the employer whether they are treated as intermediate consumption or compensationremuneration of employees because they are both costs from the employer's viewpoint and the net operating surplus is the same. However, reclassifying such goods and services from remuneration in kind to intermediate consumption, or vice versa, changes value added and balance of primarycarned incomes, and hence GDP as a whole.
- 7.2157.246 The following types of goods and services provided to employees must be treated as part of intermediate consumption:
  - Tools or equipment used exclusively, or mainly, at work;
  - Clothing or footwear of a kind that ordinary consumers do not choose to purchase or wear and which are worn exclusively, or mainly, at work; for example, protective clothing, overalls or uniforms;
  - Accommodation services at the place of work of a kind that cannot be used by the households to which the employees belong: barracks, cabins, dormitories, huts, etc.;
  - Special meals or drinks necessitated by exceptional working conditions, or meals or drinks provided to servicemen or others while on active duty;
  - Transportation and hotel services including allowances for meals provided while the employee is travelling on business;
  - Changing facilities, washrooms, showers, baths, etc. necessitated by the nature of the work;
  - First aid facilities, medical examinations or other health checks required because of the nature of the work.

Employees may sometimes be responsible for purchasing the kinds of goods or services listed above and be subsequently reimbursed in cash by the employer. Such cash reimbursements must be treated as intermediate expenditures by the employer and not as part of the employee's wages and salaries.

7.2167.247 The provision of other kinds of goods and services, such as ordinary housing services, the services of vehicles or other durable consumer goods used extensively away from work, transportation to and from work, etc. should be treated as remuneration in kind, as explained more fully in chapter 78.

#### 4. The boundary between intermediate consumption and gross fixed capital formation

7.2177.248 Intermediate consumption measures the value of goods and services that are transformed or entirely used up in the course of production during the accounting period. It does not cover the costs of using fixed assets owned by the enterprise nor expenditures on the acquisition of fixed assets. The boundary between these kinds of expenditures and intermediate consumption is explained in more detail below.

#### **Small tools**

7.2187.249 Expenditures on durable producer goods that are small, inexpensive and used to perform relatively simple operations may be treated as intermediate consumption when such expenditures are made regularly and are very small compared with expenditures on machinery and equipment. Examples of such goods are hand tools such as saws, spades, knives, axes, hammers, screwdrivers, and so on. However, in countries where such tools account for a significant part of the stock of producers' durable goods, they may be treated as fixed assets.

#### Maintenance and repairs

- 7.2197.250 The distinction between maintenance and repairs and gross fixed capital formation is not clear-cut. The ordinary, regular maintenance and repair of a fixed asset used in production constitute intermediate consumption. Ordinary maintenance and repair, including the replacement of defective parts, are typical ancillary activities but such services may also be provided by a separate establishment within the same enterprise or purchased from other enterprises.
- 7.2207.251 The practical problem is to distinguish ordinary maintenance and repairs from major renovations, reconstructions or enlargements that go considerably beyond what is required simply to keep the fixed assets in good working order. Major renovations, reconstructions, or enlargements of existing fixed assets may enhance their efficiency or capacity or prolong their expected working lives. They must be treated as gross fixed capital formation as they add to the stock of fixed assets in existence.

7.2217.252 Ordinary maintenance and repairs are distinguished by two features:

- They are activities that owners or users of fixed assets are obliged to undertake periodically in order to be able to utilize such assets over their expected service lives. They are current costs that cannot be avoided if the fixed assets are to continue to be used. The owner or user cannot afford to neglect maintenance and repairs as the expected service life may be drastically shortened otherwise;
- Maintenance and repairs do not change the fixed asset or its performance, but simply maintain it in good working order or restore it to its previous condition in the event of a breakdown. Defective parts are replaced by new parts of the same kind without changing the basic nature of the fixed asset.

7.2227.253 On the other hand, major renovations or enlargements to fixed assets are distinguished by the following features:

- The decision to renovate, reconstruct or enlarge a fixed asset is a deliberate investment decision that may be undertaken at any time and is not dictated by the condition of the asset. Major renovations of ships, buildings or other structures are frequently undertaken well before the end of their normal service lives;
- Major renovations or enlargements increase the performance or capacity of existing fixed assets or significantly extend their previously expected service lives. Enlarging or extending an existing building or structure obviously constitutes a major change in this sense, but a complete refitting or restructuring of the interior of a building, or ship, also qualifies.

#### **Research and development**

7.2237.254 Research and development is treated as capital formation except in any cases where it is clear that the activity does not entail any economic benefit for its owner in which case it is treated as intermediate consumption.

#### Mineral exploration and evaluation

7.2247.255 Expenditures on mineral exploration and evaluation are not treated as intermediate consumption. Whether successful or not, they are needed to acquire new reserves and so are all classified as gross fixed capital formation.

#### **Military equipment**

7.2257.256 Expenditures on military equipment, including large military weapons systems, are treated as fixed capital formation. Expenditure on durable military goods such as bombs, torpedoes and spare parts are recorded as inventories until used when they are recorded as intermediate consumption and a withdrawal from inventories.

#### 5. Services provided by government to producers

7.2267.257 Government may provide services to producers. To the extent that a charge is made for these services, the charges form part of the intermediate consumption of the producer. However, when the charge does not represent an economically significant price, the value of the service to the producer is greater than the cost. However, no estimation of this benefit is made and the costs of the services not covered by the charges made are included in collective consumption of government.

#### 6. Social transfers in kind

- 7.2277.258 Expenditures by government or NPISHs on goods or services produced by market producers that are provided directly to households, individually or collectively, without any further processing constitute final consumption expenditures by government or NPISHs and not intermediate consumption. The goods and services in question are treated as social transfers in kind and enter into the actual consumption of households.
- 7.2287.259 By convention, nNon-financial and financial corporations do not make social transfers in kind, nor engage in final consumption, with the exception of the central bank providing non-market services for the society as a whole.

#### 7. Services of business associations

7.2297.260 Non-profit institutions in the form of business associations that exist to protect the interests of their members and are financed by them are market producers. The subscriptions paid by the businesses constitute payments for services rendered. These services are consumed as intermediate inputs by the members of the association and are valued by the amounts paid in subscriptions, contributions or dues.

#### 8. Outsourcing

7.2307.261 It is increasingly common for producers to change the way in which a production activity is completed. Different stages in the process or different support activities such as office cleaning or assembly of electronic components may be contracted out to another producer, in the same country or abroad. This changes the pattern of intermediate inputs even though the underlying technology may be the same. The impact of this on input-output tables is discussed in chapters 1415 and 2836.

#### 9. Leasing fixed assets

7.2317.262 The decision to rent buildings, machinery or equipment under an operating lease, rather than purchase them, can have a major impact on the ratio of intermediate consumption to value added and the distribution of value added between producers. Rentals paid on buildings or on machinery or equipment under an operating lease constitute purchases of services that are recorded as intermediate consumption. However, if an enterprise owns its buildings, machinery and equipment, most of the costs associated with their use are not recorded under intermediate consumption. The consumption of fixed capitaldepreciation on the assets forms part of gross value added while interest costs, both actual and implicit, have to be met out of the net operating surplus. Only the costs of the materials needed for maintenance and repairs appear under intermediate consumption. Decisions to rent rather than purchase may be influenced by factors quite unrelated to the technology of production, such as taxation, the availability of finance, or the consequences for the balance sheet.

7.2327.263 There is a significant difference between rentals of fixed assets under an operating lease and the acquisition of an asset under a financial lease. Under an operating lease, the lessor has a productive activity that involves the equipment in question and is responsible for the production risks associated with the operational status of the asset. Payments by the lessee are treated as payments for a service. Under a financial lease, the lessee accepts all risks and rewards associated with the use of the asset in production. A financial lease is thus treated as a loan by the lessor to the lessee and purchase of the equipment by the lessee. Subsequent payments are treated

as payments of interest and repayments of principal by the lessee to the lessor. Further details on the treatment of operating and financial leases are given in chapter  $\frac{1727}{27}$ .

#### H. Consumption of fixed capital Depreciation

#### 2.1. The coverage of consumption of fixed capital depreciation

- 7.2337.264 <u>Consumption of fixed capital Depreciation</u> is the decline, during the course of the accounting period, in the current value of the stock of fixed assets, including (cultivated) biological resources yielding repeat products, owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage. It also includes the decline of the regenerative potential of the underlying asset of cultivated biological resources yielding once-only products (e.g., forest land in the case of the growth of trees for the production of timber). The term depreciation is often used in place of consumption of fixed capital but it is avoided in the SNA because in commercial accounting the term depreciation is often used in the current value of the asset.
- 7.2347.265 Consumption of fixed capital Depreciation is calculated for all fixed assets owned by producers, but not for valuables (precious metals, precious stones, etc.) that are acquired precisely because their value, in real terms, is not expected to decline over time. Fixed assets must have been produced as outputs from processes of production as defined in the SNA. Consumption of fixed capital Depreciation does not, therefore, cover the depletion or degradation of non-produced natural assets resources such as land, mineral or other deposits, coal, oil, or natural gas, or contracts, leases and licences. It also does not cover the depletion or degradation of non-produced sets are included in a separate category "depletion", which is discussed in the following section.
- 7.2357.266 The value of produced assets may decline not merely because they deteriorate physically but because of a decrease in the demand for their services as a result of technical progress and the appearance of new substitutes for them. In practice, many structures, including roads and railway tracks, are scrapped or demolished because they have become obsolete. Even though the estimated service lives may be very long for some structures, such as roads, bridges, dams, etc., they cannot be assumed to be infinite. Thus, <u>depreciationeapital consumption</u> needs to be calculated for all types of structures, including those owned and maintained by government units, as well as machinery and equipment.
- 7.2367\_\_\_\_\_Losses of fixed assets due to normal or expected levels of accidental damage are also included under consumption of fixed capitaldepreciation; that is, damage caused to assets used in production resulting from their exposure to the risk of fires, storms, accidents due to human error, etc. When these kinds of accidents occur with predictable regularity they are taken into account in calculating the average service lives of the goods in question. For an individual unit, or group of units, any difference between the average and the actual normal accidental damage within a given period is recorded in the other changes in the volume of assets and liabilities account. However, at the level of the economy as a whole, the actual normal accidental damage within a given accounting period may be expected to be equal, or close, to the average.
- 7.2377.268 On the other hand, losses due to war or to major natural disasters that occur very infrequently, such as major earthquakes, volcanic eruptions, tidal waves or exceptionally severe hurricanes, are not included under consumption of fixed capital<u>depreciation</u>. There is no reason for such losses to be charged in the production account as costs of production. The values of the assets lost in these ways are recorded in the other changes in the volume of assets <u>and liabilities</u> account. Similarly, although consumption of fixed capital<u>depreciation</u> includes reductions in the value of fixed assets resulting from normal, expected rates of obsolescence, it should not include losses due to unexpected technological developments that may significantly shorten the service lives of a group of existing fixed assets. Such losses are treated in the same way as losses due to above average rates of normal accidental damage.

#### 3.2. <u>Consumption of fixed capital Depreciation</u> and rentals on fixed assets

7.2387.269 It is possible to draw a comparison between consumption of fixed capital depreciation and rental of assets

under an operating lease. The rental is the amount payable by the user of a fixed asset to its owner, under an operating lease or similar contract, for the right to use that asset in production for a specified period of time. The rental needs to be large enough to cover (i) any direct costs incurred by the owner including the costs of maintaining the asset, (ii) the reduction in the value of the asset over that period (the consumption of fixed expitaldepreciation) and (iii) the interest costs on the value of the asset at the start of the period. The interest costs may consist either of actual interest paid on borrowed funds or the loss of interest incurred as a result of investing own funds in the purchase of the fixed asset instead of a financial asset. Whether owned or rented, the full cost of using the fixed asset in production is measured by the actual or imputed rental on the asset and not by consumption of fixed capital depreciation alone. When the asset is actually rented under an operating lease or similar contract, the rental is recorded under intermediate consumption as the purchase of a service produced by the lessor. When the user and the owner are one and the same unit, the direct costs are recorded as intermediate consumption. The consumption of fixed capital depreciation represents the second element of the cost of using the asset. The third part of the cost, referred to above as the interest cost, is also known as the return to fixed capital. Like consumption of fixed capitaldepreciation, the return to capital is part of value added. The sum of the consumption of fixed capitaldepreciation and the value of the return to capital is known as the capital services rendered by the asset. Capital services are discussed in more detail in chapter  $\frac{2017}{2017}$ .

- 7.2397.270 The value of a fixed asset to its owner at any point of time is determined by the present value of the future capital services (that is, the sum of the values of the stream of future rentals less operating costs discounted to the present period) that can be expected over its remaining service life. Consumption of fixed capitalDepreciation is measured by the decrease, between the beginning and the end of the current accounting period, in the present value of the remaining sequence of expected future benefits. The extent of the decrease will be influenced not only by the amount by which the efficiency of the asset may have declined during the current period but also by the shortening of its service life and the rate at which its economic efficiency declines over its remaining service life. The decrease is expressed in the average prices of the current period for an asset of exactly the same quality and should exclude holding gains and losses. When the flow of future benefits that determines the present values used to derive consumption of fixed capitaldepreciation is expressed in terms of flows that include an element of inflation, then the discount factor should be used. Either procedure results in a present value expressed in current period prices.
- 7.2407.271 <u>Consumption of fixed capitalDepreciation</u> is a forward-looking measure that is determined by future, and not past, events namely, the benefits that institutional units expect to derive in the future from using the asset in production over the remainder of its service life. Unlike depreciation as usually calculated in business accounts, consumption of fixed capitaldepreciation is not, at least in principle, a method of allocating the costs of past expenditures on fixed assets over subsequent accounting periods. The value of a fixed asset at a given moment in time depends only on the remaining benefits to be derived from its use and consumption of fixed capitaldepreciation must be based on values calculated in this way.

#### 4.3. The calculation of consumption of fixed capitaldepreciation

- 7.2417.272 Fixed assets may have been purchased in the past at times when both relative prices and the general price level were very different from prices in the current period. In order to be consistent with the other entries in the same production account, consumption of fixed capitaldepreciation must be valued with reference to the same overall set of current prices as that used to value output and intermediate consumption. Consumption of fixed capitalDepreciation should reflect underlying resource costs and relative demands at the time the production takes place. It should therefore be calculated using the actual or estimated prices and rentals of fixed assets, that is, the prices originally paid for them, become quite irrelevant for the calculation of consumption of fixed capitaldepreciation as prices change over time.
- 7.2427.273 For these reasons, depreciation as recorded in business accounts may not provide the right kind of information for the calculation of consumption of fixed capitaldepreciation. If data on depreciation are used, they must, at the very least, be adjusted from historic costs to current prices. However, depreciation allowances for tax purposes have often been grossly manipulated in quite arbitrary ways to try to influence rates of investment and are best ignored altogether in many cases. It is recommended that independent estimates of consumption of fixed capitaldepreciation should be compiled in conjunction with estimates of the capital stock. These can be built up

from data on gross fixed capital formation in the past combined with estimates of the rates at which the efficiency of fixed assets decline over their service lives.

- 7.2437.274 Whenever possible, the initial value of a new fixed asset should be that prevailing on the market when the asset is acquired. If assets of all ages and specifications were regularly traded on markets, these prices should be used to value every asset as it ages. However, there is scarce information on the prices of second-hand assets and faced with this lack, a more theoretical approach to determining the price of an asset as it ages must be adopted.
- 7.244<u>7.275</u> Conceptually, market forces should ensure that the purchaser's price of a new fixed asset is equivalent to the present value of the future benefits that can be derived from it. Given the initial market price, therefore, and knowledge of the characteristics of the asset in question, it is possible to project the stream of future benefits and continually update the remaining present value of these. This method of building up estimates of the capital stock and changes in the capital stock over time is known as the perpetual inventory method, or PIM. Estimates of consumption of fixed capitaldepreciation are obtained as a by-product of the PIM.

#### **5.4.** The perpetual inventory method

7.2457.276 A brief explanation of how consumption of fixed capital depreciation may be calculated as a by-product of the perpetual inventory method of calculating the capital stock is given in this section. An overview of the link between the calculation of consumption of fixed capital depreciation, the return to capital and the stock of assets is given in chapter 2017. Much more guidance on the way to calculate capital stock estimates appears in the OECD mManual on Measuring Capital. 2nd edition (OECD, 2009).

#### Calculation of the gross capital stock

7.2467.277 The perpetual inventory method requires an estimate to be made of the stock of fixed assets in existence and in the hands of producers. The first step is to estimate how many of the fixed assets installed as a result of gross fixed capital formation undertaken in previous years have survived to the current period. Average service lives, or survival functions, based on observations or technical studies may be applied to past investments for this purpose. Fixed assets purchased at different prices in the past have then to be revalued at the prices of the current period by utilizing appropriate price indices for fixed assets. The construction of suitable price indices covering long periods of time may raises difficult conceptual and practical problems, but these technical problems of price measurement must be faced in any case in developing balance sheet values of assets. The stock of fixed assets surviving from past investment and revalued at the purchasers' prices of the current period is described as the gross capital stock. The gross capital stock can also be measured at the prices of a given base year if it is desired to have annual time series for the gross capital stock in volume terms.

#### **Relative efficiencies**

- 7.2477.278 The inputs into production obtained from the use of a given fixed asset tend to diminish over time. The rate at which the efficiency declines may vary from one type of asset to another. The simplest case to consider is one where the efficiency of the asset remains constant until it disintegrates, like a light bulb. Other simple cases include the case where the efficiency declines linearly or exponentially over its life. Other methods employ a hyperbolic rate of efficiency loss with relatively little decline in the initial years but increasingly steeper decline as time progresses. However, in practice calculations are not undertaken asset by asset individually but for cohorts of assets of similar ages and characteristics. Individual assets within the cohort will retire at different moments but the efficiency-retirement profile for the cohort as a whole is typically convex to the origin.
- 7.279 The efficiency profiles of fixed assets determine the profiles of the benefits they command over their service lives. Once the profiles of the benefits over the service lives of the fixed asset have been determined, it becomes possible to calculate the consumption of fixed capitaldepreciation, period by period.
- 7.2487.280 In general, it is recommended, as a default option, to use geometric depreciation method according to which a constant fraction of the capital stock is depreciated; however, other depreciation profiles may be

considered more suitable for certain types of assets. Linear depreciation is not considered as a suitable method in most circumstances.

#### Rates of consumption of fixed capitaldepreciation

7.2497.281 Consumption of fixed capitalDepreciation is derived as the reduction in the present value of the remaining benefits, as explained earlier. This reduction, and the rate at which it takes place over time, must be clearly distinguished from the decline in the efficiency of the capital assets themselves. Although the efficiency, and hence the benefit, of an asset with the efficiency characteristics of a light bulb may remain constant from period to period until it disintegrates, the value of the asset declines over time. It also follows that the consumption of fixed capitaldepreciation is not constant. It can easily be shown in this case that the decline in the present value of the remaining benefits from period to period is considerably lower earlier in the life of the asset than when the asset is approaching the end of its life. Consumption of fixed capitalDepreciation tends to increase as the asset gets older even though the efficiency and benefits remain constant to the end.

#### Values of consumption of fixed capitaldepreciation

7.2507.282 Consumption of fixed capitalDepreciation should not be estimated in isolation from the derivation of a set of capital stock data. Such data are needed for the balance sheet and, as shown in chapter 2017, trying to identify consumption of fixed capitaldepreciation in isolation from the level of the stock of the asset and its patterns of price and efficiency decline is likely to be error prone.

#### I. Depletion

#### 1. The coverage of depletion

- 7.2517.283 Depletion, in physical terms, represents the decrease in the quantity or value of the stock of a nonproduced natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of regeneration; in monetary terms, it corresponds with the decline in future income, due to extraction, that can be earned from a resource, the value of which is based on the physical flows of depletion using the price of the natural resource in situ.
- 7.284 For non-renewable natural resources, such as mineral and energy resources, depletion is equal to the quantity of resource that is extracted because the stock of these resources cannot regenerate on human time-scales. Increases in the stock of non-renewable natural resources (e.g., through discoveries) may permit the ongoing extraction of the resources. However, these increases in volume are not considered regeneration, and hence do not offset measures of depletion. The increases should be recorded as other changes in the volume of assets and liabilities.
- 7.285 For non-cultivated biological resources yielding once-only products, such as fish resources in open seas, the equality in physical terms between depletion and extraction does not hold. The ability for these resources to reproduce and grow naturally means that in certain management and extraction situations, the quantity of resources extracted may be matched by a quantity of resources that are reproduced and, in this situation, there is no overall physical depletion of the environmental asset. Only the amount of extraction that is above the level of growth is recorded as depletion; in the case the amount of extraction is below the level of growth, it is recorded as negative depletion. In the case of cultivated biological resources yielding once-only products, such as forest land underlying the growth of trees for timber production, the relevant amounts are recorded as fixed capital formation and depreciation.
- 7.286 Thus, in the estimation of depletion for biological resources, it is necessary to consider both the extraction and the growth of these resources. While the rates of extraction can be observed directly, measurement of the rates of growth can be complex and usually requires consideration of biological models. These models will usually account for both the structure and the size of biological resource populations; and exhibited by their general form, when the stock or population of the specific type of resource is small, the rate of growth will be small but, as the population increases, the rate of growth will also increase. Eventually, as the population within a given area reaches the carrying capacity of the area, i.e., as the density reaches a maximum, the rate of growth in the

population will slow substantially.

- 7.287 Based on this general model, for any given population, it is possible to calculate the number of animals or volume of plants by age or size class that may be removed from the population without affecting the capacity of the population to reproduce itself (i.e., opening stock equals closing stock). In effect, there is a "surplus" or excess that can be harvested from the existing stock. In biological models, this surplus is known as the sustainable yield. The level of the sustainable yield rises and falls in line with the overall size and structure of the population. For example, in populations where the growth rates are low, the sustainable yields are also low. It is noted that the same level of extraction will have a different relationship to the sustainable yield depending on the population size.
- 7.288 Land and renewable energy resources are generally not subject to depletion.
- 7.289 Depletion is not recorded when there is a reduction in the quantity of an environmental asset owing to unexpected events such as losses due to extreme weather or pandemic outbreaks of disease. These reductions are recorded as catastrophic losses (i.e., other changes in the volume of assets and liabilities), whereas depletion is the consequence of the extraction of natural resources by economic units.
- 7.290 Depletion can also be measured in monetary terms by valuing the physical flows of depletion using the price of the natural resource in situ. The monetary value of depletion is equal to the change in the value of the natural resource that is due to physical depletion. The next subsection explains how this can be calculated..

#### 2. The calculation of depletion

- 7.291 For the compilation of monetary estimates for the depletion of non-renewable mineral and energy resources, it is necessary to decompose the net present value of future resource rents into a quantity component and a price component. The relevant quantity is the quantity of the resource which is expected to be extracted in the course of the life of the asset. This quantity is the same as that used for the valuation of the asset. The implicit price of the asset can then be derived by dividing the monetary value of the asset by this quantity indicator, and basically represents a discounted series of future resource rents per unit. The monetary value of depletion can then be calculated by multiplying the resources extracted during a year with the average price of the asset at the beginning and the end of the year.
- 7.292 For the estimation of depletion for non-cultivated biological resources yielding once-only products, a similar procedure as the one for non-renewable mineral and energy resources can be followed, albeit that in the case of biological resources depletion may be positive or negative, depending on whether or not the growth of the resources is higher or lower than sustainable yields.
- 7.293 More extensive information on the estimation of depletion in physical and monetary terms can be found in the System of Environmental-Economic Accounting (SEEA) 2012 Central Framework, in particular chapter 5 (section 5.4.2 and Annex A5.1).

## Annex to chapter 67: Separating output due to storage from holding gains and losses

#### A. Introduction

A6.1 Paragraphs <u>6.142 to 6.145-7.156 to 7.159</u> recommend that, in some cases, the increase in value of goods held in inventories may be regarded as output due to storage rather than to holding gains. This annex explores the topic further and gives examples of when it is appropriate to treat any of the increase in value of a product as due to production and how this may be separated from any remaining holding gains and losses.

#### 1. Storage costs and holding gains and losses

- A6.2 Holding products in inventories always involves costs whether they are being held by the original producer or a subsequent wholesaler or retailer. These costs include those associated with providing the physical storage capacity, maintaining information on levels and types of inventories, costs of supplying withdrawals to customers and costs associated with renewing the level of inventories by acquiring replacement goods (other than the cost of the goods themselves). These costs form part of the basic price charged by a manufacturer or are recovered in the margins charged by wholesalers and retailers. The costs incurred are included in intermediate consumption, compensationremuneration of employees and the cost of capital. It may also be the case that specialist storage producers provide a service to other producers and again their costs are included in intermediate consumption.
- A6.3 For most products, called "type I" products, this is the only aspect of storage that is relevant. All the costs associated with storage are included in production costs. The value of the goods as they are withdrawn from inventories is valued at the costs of producing or acquiring replacement items at that time. As a consequence, output is measured excluding any change in the value of products held in inventories; this change in value is treated as a holding gain or loss, as illustrated in the following example.
- A6.4 Suppose a wholesaler buys and sells 100 packets of washing powder every period and in order to allow for marginal variations in demand keeps an inventory of 10 packets. At the beginning of a period the price paid per packet is 2, so the value of his inventories is 20. During the period the acquisition cost per packet increases to 2.1. The value of the 10 packets in inventories rises to 21 but the increase in value of 1 reflects the fact only that if the 10 packets were withdrawn from inventories for sale and replaced by identical products, the new products would cost 21 to acquire. Because output is measured with all units, whether newly produced or withdrawn from inventories, valued at the new price of 2.1, the 1 increase in the value of a stock of 10 packets at the beginning of the period, valued at 20, is replaced by a similar stock of 10 packets at the end of the period now valued at 21.

#### **B.** Goods whose real value changes over time

- A6.5 There are three specific cases where the treatment described above is unsatisfactory because other factors intervene in the time while the goods are held in storage. Goods where this is the case are described as "type II" products. The three specific circumstances are the following:
  - a. Goods that have a very long production process;
  - b. Goods that change their physical characteristics while in inventories;
  - c. Goods that have seasonal patterns of supply or demand but not both.

Each of these is discussed in turn below.

#### 1. Goods with a long production period

- A6.6 When a product is held in inventories for an extended period of time because of the length of the production process, in principle, discount factors should be used when calculating the value of work put in place each period before the delivery date. For example, if a construction project ultimately worth 200 is put in place steadily over four years, it is unrealistic to count 50 as the contribution to production in the first year. Any purchaser would take account of the fact that he would not be able to realize the value of this production for another three years and discount the value accordingly. As time passes, there is income arising to the unit holding the products as the discount factor unwinds. This case is described in chapter 2017, with the full details of this numerical example.
- A6.7 It is suggested that in practice it is necessary to make an allowance for the discount factor only for goods of a significantly high value and significantly long production process, where goods are recorded as work-in-progress or capital formation on own account for many periods before completion.

#### 2. Goods whose physical characteristics change

- A6.8 The second set of circumstances relates to goods whose physical characteristics change during storage because maturing is part of the production process. The goods concerned are those that in the absence of any general or relative change in prices still increase in value because they improve in quality over the time held in storage. Examples are fermentation affecting food products and the ageing of wine and spirits. When the product is withdrawn from storage, it is physically different from a new item entering the maturing phase and so it is not appropriate to use the acquisition cost of the new entry into inventories as the value of the product being withdrawn. The question is how to separate the increase in value due to maturing from the overall price increases of the goods concerned.
- A6.9 Suppose a product takes three years to reach a sufficient maturity to be sold and there is final demand for the product until it reaches this state. If the good is traded, even in its immature state, then prices will exist for the immature, newly manufactured product, for the one year old product, the two year old product and the mature product. Supposing the product is well-established, at any point in time there will be a mix of newly manufactured items and those of maturities of one, two and three years. If prices exist for these different maturities, separating the value of storage is not difficult. In the first year the new product is transformed into a product of one year's maturity. If the price when the product is brand new is P0 and when it is one year old is P1, and t is the first year and t+1 the second, the change in value of a quantity Q of the product made last year to the price of a similar new product made this year (Q(P0,t+1 P0,t)) and the difference between the price of a similar new product made this year and the price of the one year mature product this year (Q(P1,t+1 P0,t+1)). By applying the price differences to the volumes involved, the first difference gives rise to a holding gain; the second to the value of output due to storage.
- A6.10 The identity that:

the increase in value from period t to period t+1,

*is equal to* the change in value between products of the same maturity (or vintage) from period t to period t+1 (treated as a holding gain),

*plus* the change in value between products of successive maturities (or vintages) in period t+1 treated as the output due to storage,

is true for any two successive time periods. Thus, in the second year the increase in price between the one year mature product at the beginning of the year and the price of a one year mature product at the end of the year gives rise to a holding gain and the difference in price between a one year mature product at the end of the year and the two year mature product at the same time gives the value of output due to storage, and so on.

A6.11 The identity in paragraph A6.10 holds in current values, when each term contains (or consists of) nominal holding gains (or losses) or when each term is deflated by the general level of inflation so that each term contains or consists of real holding gains (or losses). In volume terms, as when there are no price increases, the increase in value is identified with the output due to storage.

- A6.12 In practice it is very likely that robust time series of prices at different points in the maturing process do not exist. It is possible that some close equivalent might be available but even this is not very likely. How can storage be separated from holding gains in the absence of these prices?
- A6.13 From long experience the producer may be able to make a reasonable prediction about the increase in value due to storage. Suppose in a particular case he expects the value in volume terms after three years to be two and a half times the cost of producing the new product. If the new product is worth 100, the three year old, mature, product is worth 250. This suggests that the volume of output due to storage is 50 in each of the next three years. (Like the long construction product discussed above, in principle, a discount factor should be applied to the initial 100 and the first two tranches of 50 because the product is not ready for sale until the end of the third year.) In the absence of information about the increase in the price of the product relative to the general increase in value must be taken as the value of the output due to storage in current values. Once the price of the fully mature product is known, some adjustment could be made or, pragmatically, the difference between the original prediction and the outturn, adjusted for general inflation, may be taken as a real holding gain or loss.
- A6.14 It is not ideal that the output due to storage is assumed to be invariant to fluctuations in relative prices, but in circumstances where most of the price increase will be due to storage and better basic data are not available, this approach gives a pragmatic estimate of output due to storage that is superior to the assumption that the whole of the increase in value is simply a holding gain.

#### 3. Goods with seasonal patterns of supply and demand

- A6.15 The third case where there is a change in value that is not attributable solely to holding gains and losses is when goods are placed in storage to take advantage of changes in the pattern of supply and demand over a year. The most common case is storage of a staple crop, such as maize, where there is a relatively short harvest period but demand is fairly constant throughout the year. As a result, the price rises as inventories decrease until the next harvest when an increase in supply causes the price to fall again. It is possible to envisage the opposite case where demand is seasonal but it is cost effective for producers to produce the good for the whole, or most, of the year, even though for much of that time the production goes straight into inventories and stays there until demand peaks.
- A6.16 The reason that this type of product is different from a type I product is that, as with the goods that change characteristics due to maturing, the price increases, relative to the general level of inflation, in a more or less predictable way because of the effect of transporting the goods through time, from a period of abundance to one of relative scarcity. This is a quite different motivation from holding items in store for purely speculative reasons when there is no pattern established for the probable increase in prices and no predetermined time over which the goods might be held.
- A6.17 The ideal situation is one where there is a well-established and robust seasonal pattern for the expected price increases in the crop. In such a case, the seasonal pattern of the prices can be used to establish the output due to storage and the remaining increase in value represents holding gains and losses that can be separated into real and neutral elements as normal.
- A6.18 However, given that the total level of a harvest can be quite different year on year and the actual time of harvest may vary slightly from year to year depending on climatic conditions, establishing a robust seasonal pattern of prices may not be easy. In such a case, the pragmatic suggestion is similar to that for maturing goods when there is imperfect information. The premise is that the increase in price will be attributable to two factors; the first is an increase matching the general increase in prices. The element of increase in the value of inventories corresponding to this should be treated as nominal holding gains and losses. The second factor leading to the increase in prices is a seasonal scarcity value and this element should be treated as giving rise to output due to storage. Assuming that all the increase other than that matching average price increases is due to storage implies that there are no real holding gains.

#### 4. Who benefits from the increase in value of goods in storage?

A6.19 The fact that type II products give rise to production of storage depends only on the type of product, not on the

producer. If a farmer produces a seasonal crop and then stores most of it to sell bit by bit throughout the year, he records the benefits of the increase in value due to storage in his output. However, if he sells all of his crop at harvest time to another unit (for example, a wholesaler) and that unit puts it in inventories and sells it continuously throughout the year, then that unit derives the benefits from holding the crop in storage and records in his output these benefits that would otherwise have been recorded by the farmer as output. However many times a type II good changes hands between its production and sale, the value of output due to storage will be the same. It is likely that every time it changes hands, the associated intermediate consumption will increase so that value added will decrease but the level of output will not be affected. Thus an increase in value accrues to the unit holding the goods, if they are type II goods and the holder is a wholesaler or retailer, he may have output just as the original producer may.

#### 5. When is output due to storage recorded?

A6.20 Output due to storage is produced on a continuous basis. In order to have an articulated set of information on production and inventories, output from storage must be calculated period by period. If the goods that are changing value remain in inventories, the owner of the goods has output that is treated as an addition to inventories. Even though the quantity of the inventories may not change, the quality-adjusted measures do change to reflect the increase in price that is treated as a quality change and not as a holding gain.

#### Some examples

A6.21 These simple examples show how the approximate approach to calculating storage works under different assumptions.

#### Example 1

- A6.22 Unit A purchases goods to the value of 100 and they rise in value to 110 by the middle of year 2 when he sells them. At the end of the year the value of the goods is 108. There is no general inflation in the period.
- A6.23 In year 1, A records output of 8 and additions to inventories of 108 in total. In year 2, A records output of 2, additions to inventories of 2 and sales of the withdrawals from inventories of 110.

#### *Example 2*

- A6.24 The goods bought in example 1 also increase in line with inflation so that they are worth 115 by the end of year 1 and 120 on disposal.
- A6.25 The recordings in year 1 are complemented by holding gains of 7 in year 1. At the end of year 1, it is necessary to re-estimate the expected price level on disposal. If this is estimated to be 117, showing the same absolute increase as previously expected, for example, then a holding gain of 3 will be recorded in year 2.

#### Example 3

- A6.26 The goods in example 1 are sold to unit B for 105 part way through the year. B then holds the goods until selling them at the same point in time in year 2 for 110.
- A6.27 In year 1, A has output of 5 and acquisition of inventories of 105. A withdraws inventories of 105 and sells them to B. B has output in year 1 of 3, which is recorded as an addition to inventories. The value of B's total additions to inventories in year 1 is thus 108. In year 2, B has output of 2, additions to inventories of 2 and sales that represent withdrawals from inventories of 110.



### National Statistician's Committee for Advice on Standards for Economic Statistics

NSCASE October 2024 – Chapter 7 NSCASE Meeting Minutes

# System of National Accounts 2025 – Chapter 7: Production Account

- 1. David and Robert led the discussion on this paper.
- 2. Cliodhna introduced the chapter. She informed the Committee that the ONS were broadly happy with the chapter but disagreed with the position that depreciation models were to be used in capital, which advocated that geometric would be the first point of call for capital. The chapter also touched on crypto but she observed that crypto was discussed more in the guidance notes; she reinforced that the UK argued against the UN position which classified crypto assets without liabilities as non-produced, non-financial assets. She highlighted that the largest change to the chapter was the recording of depletion as a cost of production. She added that the chapter was impacted by the inclusion of natural capital in the accounts alongside the appreciation of capital stock depletion of natural resources. Other minor changes included clarification on the role of solar panels in heat generation and subletting for household production and its inclusion within the production boundary. There was clarification on free products, and the SNA would include advice on the construction of the extended accounts for the recording of free products. There was also information on the measurement of output of central banks, including a change in the methodology, and clarification on the measurement of financial services and the role of crypto assets without liability and their non-impact on output.
- 3. David raised a comment on paragraph 7.9 that recognised that countries would ideally use measures net of depletion and depreciation but as countries had always used gross measures, the guidance would be presented in gross terms. He argued that the manual should not advise using gross only because it was what had been done historically. He emphasised that countries were aware that gross measures, without taking account of depletion, could lead to distorted results and could have a negative effect on policy. He suggested a change to the drafting to give greater emphasis to net measures over gross measures, and noted that it could be a stepping-stone for the user community towards net measures which in some senses, better reflected economic reality than gross measures.
- 4. Robert raised that this point was discussed at the EEWG meeting in terms of implementation and agreed with David's point. He added that ONS currently produced net measures only on an annual basis.
- 5. Cliodhna added that the ONS had lots of discussions about the practicality of net measures, especially with the user community. She highlighted that this would feed into a broader cultural shift outside of headline net measures that would be picked up by journalists and users in economic modelling. She noted that if there



was to be a move towards net measures, this needed to be done in lockstep as an international community. As a result, she stated that the ONS position was that if the SNA would advocate net measures as the headline measures, the ONS would push strongly for international co-ordination of the change. She understood from the introductory chapters that the SNA regarded them as equally important but expected that countries would be likely to headline gross measures.

- 6. David thanked Cliodhna for this information and agreed that an internationally coordinated push was necessary. He suggested also advocating further explanation of the issues around gross measures and benefits of net measures in representing economic reality.
- 7. Robert noted that the SNA would only provided guidance, not recommendations. To encourage compilation of net measures he suggested that getting recommendations through the AEG and Statistical Commission may be a better route to influencing the international community. He also noted changes in the IMF's SDDS to give more emphasis to the net measures would support their compilation.
- 8. Robert raised a concern over the new terminology that changed 'resources' to 'revenues' in paragraph 7.6. He considered economic activity to be about resources and their use. He also highlighted that the chapter's discussion of solar panels as household production of energy. He highlighted that solar panels classified as producing electricity output from the household sector would presumably be classified as gross fixed capital investment of households instead of durable goods. In 7.127, the SNA suggested that if a building used solar panels but was rented out, the rental value would be divided up between housing services and purchase of electricity. He questioned how the ONS would deal with this compilation challenge as it applied to multiple contexts; he believed it would be challenging to measure household activity if split between production of energy for a third party and consumption for own use but understood the economic point for the proposed recording guidance.
- 9. David agreed that this would be a significant measurement challenge.
- 10. Cliodhna noted that the ONS perceived this as a clarification and less so a conceptual change. She informed the Committee that the ONS would consider a materiality test and consider how it would affect other measures. If it was not a large area, it would not take priority for development of their accounts. She was unable to comment on what the ONS' current approach was.
- 11. Paul questioned how the ONS determined whether something was consumed or used in production. He noted that during the COVID pandemic, there was a large transition towards home working, where people who had internet connections for leisure purposes began using them for production purposes as well.
- 12. Cliodhna suggested it would be determined by whether the company or individual paid the expenses.
- 13. Nick believed this was retrograde as he considered expenditures to be monetary transactions but part of the emphasis of the SNA was about depletion,



depreciation and wider measures. He believed maintaining the terminology of 'uses' instead of 'expenditures' would be clearer and more consistent with the direction the SNA was going in, and suggested it was odd that the SNA placed more emphasis on non-monetary measures or imputation of wider transactions.

- 14. The Chair referred to paragraph 7.186 and raised a question on maturity structures. He asked if the ONS used the same reference interest rate for deposit account or short-term loans as they did for 30-year mortgages. Paul added that the reference rate should be the risk-free rate at the same maturity. The Chair noted that if the ONS was not doing this then there would be a case for divergence from the SNA.
- 15. The Chair also believed the information on when equipment was immediate consumption and when it was capital goods was not clear. David added that the ESA had a monetary limit to divide capital items and suggested that was a pragmatic way to handle the divide.
- 16. David believed that the argument in paragraph 7.29 against including own account production of domestic services in the accounts was weak and did not consider evidence from time-use surveys which indicated that people valued domestic services quite highly. He referred to paragraph 7.141 on non-market output. The paragraph included a return to non-financial assets used in production. He asked if the ONS had considered the implications of this change and questioned how they would calculate the implicit return of a financial asset employed by a non-market producer.
- 17. Cliodhna noted the ONS was supportive of this on the practical point of having the price of capital be comparable between market and non-market production. There has been some initial work to look at where the ONS would draw the data from and what the mark up would be but they had not confirmed what the methodology would be.
- 18. Tom Orford asked if the ONS expected the SNA to include more guidance on the methodology. Cliodhna stated the information would be useful.
- 19. The Chair asked what sorts of capital would be excluded under 7.41 which stated city parks and historical monuments would be excluded. He believed this was a narrow and vague definition. Cliodhna answered that when there was a consultation on returns on non-financial assets in the public sector, countries highlighted the same point. She agreed a more specific definition of what would be excluded would be needed for the ONS to take this on. The Chair suggested there should be a separate category with some examples. David asked if any countries had given examples about the potential impact of this in the consultation. Cliodhna agreed to review the consultation.
- 20. Nick observed that this was a huge ask and questioned if the SNA suggested imputing a return on schools, hospitals, motorways and the entire general government capital stock. He suggested, notwithstanding the narrow set of exclusions, if every general government non-financial asset would be in scope. Cliodhna confirmed this was what the SNA suggested.



- 21. David noted this was a good example of where an assessment was needed on the implications on the accounts prior to the Committee recommending whether to adhere or deviate. The Chair agreed and added that it would be useful to understand what other countries planned to do.
- 22. David expressed concern that they would be applying an uncertain number (rate of return) to an uncertain number (value of the underlying asset). Cliodhna recognised this concern and anticipated there would be greater clarity in the revised version of the chapter. The Chair added that this would affect government historical statistics.
- 23. Cliodhna replied that there were discussions around the issue of inconsistency of when a piece of capital moved from being owned by the private sector to the general government as the private sector would have had the return to capital included in its output, but under general government ownership it would be excluded.
- 24. Ian McCafferty added that there was a risk of inconsistency between this chapter and Chapter 14: Balance Sheet. David emphasised that it would be helpful to see it fully articulated in the accounts.
- 25. Paul raised concerns around the measurement of pensions and insurance. He believed current practice was to add the fee incomes of the institutions and the claims they paid, but he noted there was a significant time gap between those two activities. He stated that what was done with the fee income while the claims materialised was a significant component in the earnings of both pensions and insurance companies and this needed to be taken into account. He highlighted that liabilities of pension funds could be affected by small movements in interest rates; he cited the USS pension fund which went from huge deficits to moderately good surplus in a relatively short time, and emphasised that it was not as simple as adding up the in-and-out flows. The Chair highlighted that there was a category of income which was the income accruing to general insurance companies on the policyholders' money that they look after.
- 26. David also raised a question on crypto miners as producers of validation services. Cliodhna noted that the UK did not convey its position on the classification of crypto assets without corresponding liabilities as they had conveyed this consistently throughout the consultation process and in other multilateral fora.
- 27. David noted that the chapter (paragraph 7.231) stated that research and development undertaken by government universities was non-market production and was valued on the basis of total production costs. He argued that universities were, for the most part, market producers of research and asked Committee members if they were happy that the value of the research could be equated with the costs of production of the research. He noted that if research spun out it could earn quite a lot of money for the institution.
- 28. Paul proposed that Google was a counter example; he suggested it presumably was not expensive to come up with the idea of Google but that its value was in its intellectual property (IP).


- 29. David questioned whether the distinction between depletion and depreciation was clear enough in Section H. Cliodhna noted, from her understanding, that the distinction depended on which category it referred to but highlighted that the issue had been raised by multiple countries thus indicating it was unclear. The Chair had a question on mineral exploration and evaluation expenditures which were not treated as intermediate consumption. As they were needed to acquire new reserves, they were classified as gross fixed capital formation. He asked how they would be depreciated. He suggested they were more like an intermediate input as they had a life of less than one year. He believed guidance should be added to the chapter on how to depreciate them.
- 30. Nick commented that the lack of clarity between depreciation, depletion and a range of natural assets was raised as a concern across multiple chapters and thus was a structural issue the editorial team needed to address.
- 31. Robert criticised the drafting in paragraphs 7.40 7.46 which was vague from a national accounting perspective. He highlighted inconsistencies across chapters and argued that other sentences were unclear. He took issue with the statement that creating content for leisure purposes was outside the SNA production boundary and argued that this concept could exclude a significant amount of production. He criticised the changes to paragraphs 7.167 - 7.169 on supervision services. He believed this change implied that financial institutions paid fees to supervisory authorities as a current transfer to, instead of a payment for services from, supervisory authorities. There was some discussion about whether this should be a tax on production; the Committee agreed it would be tax as it was compulsory. Tom noted the ONS' recent decision on various bank levies. Perry Francis confirmed that the recent review concluded that the Bank of England levv was a tax on production and was a mandatory payment of a collective nature and not fully requited. The PRA levy and FMI fees were deemed to be proportionate to the service so were considered payment for a service whereas the Bank levy was deemed to be a tax on production.
- 32. Robert asked Perry if he was happy with the changes to paragraphs 7.167 –
  7.169. Perry stated he was primarily focused on the BPM but from his understanding he was happy with the changes.
- 33. Robert asked for the ONS' view on how the SNA revisions would affect how the ONS recorded FISIM. Cliodhna added that the ONS were still considering how the revisions would require changes to systems but that they had not flagged the issue as a conceptual challenge.

### Chapter 8: Earned income accounts (revised title) (OLD Chapter 7: The distribution of income accounts)

#### A. Introduction

- 8.1 There are two accounts that record how income arising from involvement in processes of production or from ownership of assets needed for production are distributed among institutional units and the second of these is further subdivided in two also:
  - a. The generation of <u>earned</u> income account;
  - b. The allocation of primaryearned income account;
    - The entrepreneurial income account; and
    - The allocation of other primaryearned income account.
- 8.2 Basic to all these accounts is the concept of primaryearned income. PrimaryEarned incomes are incomes that accrue to institutional units as a consequence of their involvement in processes of production or ownership of assets that may be needed for purposes of production. A major item of primaryearned income is compensationremuneration of employees that represents the income accruing to individuals in return for their labour input into production processes. Property income is that part of primaryearned incomes that accrues by lending financial resources or renting non-produced non-financial assets, financial orincluding natural resources; including land, to other units for use in production. Receipts from taxes on production and imports (less subsidies on production and imports) are treated as primaryearned incomes of governments even though not all of them may be recorded as payable out of the value added of enterprises. PrimaryEarned incomes do not include the payments of social contributions to social insurance schemes and the receipt of benefits from them, current taxes on income, wealth, etc. and other current transfers, such current transfers being recorded in the secondary distribution of income transfers other than social transfers in kind account.

#### 1. The generation of <u>earned</u> income account

- 8.3 The generation of <u>earned</u> income account (shown in table 7.18.1) represents a further extension or elaboration of the production account in which the <u>primarycarned</u> incomes accruing to government units and to the units participating directly in production are recorded. Like the production account, it may be compiled for establishments and industries as well as for institutional units and sectors. The generation of <u>earned</u> income account shows the sectors, subsectors or industries in which the <u>primarycarned</u> incomes originate, as distinct from the sectors or subsectors destined to receive such incomes. For example, the only <u>compensationremuneration</u> of employees recorded in the generation of <u>earned</u> income account for the household sector consists of the <u>compensationremuneration</u> of employees payable by unincorporated enterprises owned by households. This item is very different from the <u>compensationremuneration</u> of employees receivable by the household sector, which is recorded in the account below, the allocation of <u>primarycarned</u> income account.
- 8.4 The <u>resources</u> listed on the right-hand side of the generation of <u>earned</u> income account, consist of only a single item, value added, the balancing item carried forward from the production account. As stated in chapter <u>67</u>, value added may be measured before the deduction of <u>consumption of fixed capitaldepreciation and depletion</u> (gross) or after the deduction of <u>consumption of fixed capitaldepreciation</u> (net). Provision must also be made throughout the remaining accounts of the SNA for the relevant balancing items to be measured gross or net of <u>consumption of fixed capitaldepreciation and depletion</u>. The concept and measurement of <u>consumption of fixed capitaldepreciation and depletion</u> of <u>fixed capitaldepreciation and depletion</u>. The concept and measurement of <u>consumption of fixed capitaldepreciation and depletion</u> in chapter <u>67</u>. For simplicity, it will be assumed that value added is measured net, except when the context requires gross value added to be referred to explicitly.
- 8.5 The left-hand side of the generation of <u>earned</u> income account records the <u>usesexpenditures</u> of value added. There are only two main types of charges that producers have to meet out of value added: <u>compensationremuneration</u> of employees payable to workers employed in the production process and any taxes, less subsidies, on production payable or receivable as a result of engaging in production. *Compensation<u>Remuneration</u> of employees is defined*

as the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period. Taxes less subsidies on production consist of taxes payable or subsidies receivable on goods or services produced as outputs and other taxes or subsidies on production, such as those payable on the labour, machinery, buildings or other assets used in production. Taxes on production do not include any income taxes payable by the recipients of incomes accruing from production, whether employers or employees.

- 8.6 The content of the item taxes less subsidies on production payable out of value added varies according to the way in which output is valued. Value added tax (VAT), or other similar deductible tax, invoiced on output is never treated as part of the price receivable by the producer from the purchaser. Invoiced VAT is always omitted from value of output, whether output is valued at producers' or basic prices. Hence, invoiced VAT is not a charge against value added and is not recorded as a payable in the producer's generation of <u>earned</u> income account. However, when output is valued at producers' prices, any other tax on products payable on the output is treated as an integral part of the price receivable by the producer from the purchaser. The tax is recorded as being payable by the producer out of value added at producers' prices in the generation of <u>earned</u> income account, that is, as a component of the item "taxes less subsidies on production". Similarly, any subsidy on products receivable on the output is recorded as being receivable by the producer from government in the generation of <u>earned</u> income account as a supplement to value added at producers' prices. By convention, it is not recorded under resources<u>revenues</u> but as a component of "taxes less subsidies on production" as if it were a negative tax on output.
- 8.7 As explained in chapter 67, the basic price is obtained from the producer's price by deducting any tax on products payable on a unit of output (other than invoiced VAT already omitted from the producer's price) and adding any subsidy on products receivable on a unit of output. In consequence, no taxes on products or subsidies on products are to be recorded as payables or receivables in the producer's generation of <u>earned</u> income account when value added is measured at basic prices, the preferred valuation basis in the SNA. When basic prices are used to value output, the item "taxes less subsidies on production" refers only to other taxes or subsidies on production.
- 8.8 After deducting <u>compensation</u>remuneration of employees and taxes, less subsidies, on production from value added, the balancing item of the generation of <u>carned</u> income account is obtained. The balancing item is shown on the left-hand side of the account under <u>usesexpenditures</u>. It measures the surplus or deficit accruing from production before taking account of any interest, rent or similar charges payable on financial assets or <u>non-produced non-financial assets</u>, including non-produced natural resources, borrowed or rented by the enterprise, or any interest, rent or similar receipts receivable on financial assets or <u>non-produced non-financial assets</u>, including non-produced not by the enterprise.

#### **Operating surplus and mixed income**

- 8.9 The balancing item is described as operating surplus except for unincorporated enterprises owned by households in which the owner(s) or members of the same household may contribute unpaid labour inputs of a similar kind to those that could be provided by paid employees. In the latter case, the balancing item is described as mixed income because it implicitly contains an element of remuneration for work done by the owner, or other members of the household, that cannot be separately identified from the return to the owner as entrepreneur. In many cases, though, the element of remuneration may dominate the value of mixed income. In practice, all unincorporated enterprises owned by households that are not quasi-corporations are deemed to have mixed income as their balancing item, except owner-occupiers in their capacity as producers of housing services for own final consumption, households leasing dwellings and households employing paid domestic staff. For owner-occupiers and those leasing dwellings, all value added is operating surplus. For domestic staff all value added is compensationremuneration of employees (unless any taxes or subsidies on production are payable or receivable on the output).
- 8.10 As noted in chapter 67, gross domestic product (GDP) at market prices is equal to the sum of the gross value added of all resident enterprises plus those taxes, less subsidies, on products that are not payable on the values of the outputs of those enterprises, that is, taxes or subsidies on imports plus non-deductible VAT when output is valued at producers' prices, and all taxes or subsidies on products when output is valued at basic prices. For this reason, taxes and subsidies on imports and VAT must also be recorded under uses expenditures of GDP in the generation of earned income account for the total economy, even though they do not appear in the generation of

<u>earned</u> income account for individual institutional units or sectors.

- 8.11 As already noted, the preferred measure of value added is after deducting consumption of fixed capitaldepreciation and depletion, that is, net value added. However, provision is made in the accounts of the SNA for value added, and all subsequent balancing items that depend on value added, to be measured gross or net of consumption of fixed capitaldepreciation and depletion. Operating surplus and mixed income may therefore both be expressed as gross or net.
- 8.118.12 Operating surplus or mixed income is a measure of the surplus accruing from processes of production before deducting any explicit or implicit interest charges, rent or other property incomes payable on the financial assets, land or other -non-produced natural resources or other non-produced non-financial assets, required to carry on the production. It is, therefore, invariant as to whether:
  - a. The <u>non-produced non-financial assets</u>, <u>includingland or other</u> <u>non-produced</u> natural resources, used in production are owned or rented by the enterprise; and
  - b. The inventories, fixed assets, <u>non-produced non-financial assets</u>, <u>includingland or other non-produced</u> natural resources, owned by the enterprise and used in production are financed out of own funds (or equity capital) or out of borrowed funds (or loan capital).

 Table 7.18.1: The generation of earned income account - concise form - uses

 Table 7.18.1 (cont): The generation of earned income account - concise form - resources

 resources

- 8.128.13 Although operating surplus or mixed income is invariant to the extent to which land isnon-produced non-financial assets, including non-produced natural resources, are owned or assets in general are financed, it needs to be sufficient to cover both any explicit, or implicit, rent on landnon-produced non-financial assets, including non-produced natural resources, and the explicit, or implicit, interest charges on the value of all the assets owned by the enterprise in order to justify their continued use in production. The implicit interest costs of using the enterprise's own funds to purchase inventories, fixed assets or other assets are the opportunity costs of using the funds in this way rather than to acquire financial assets on which interest investment income could be earned. These costs are captured in estimates of capital services. The amounts of rent and interest actually payable on rented landnon-produced non-financial assets, including non-produced natural resources, and borrowed funds are recorded in the allocation of primaryearned income account and the entrepreneurial income account.
- 8.138.14 The operating surplus or mixed income of an individual producer unit is not invariant, however, to the extent to which the fixed assets used in production are owned or rented. When buildings, other structures, machinery or equipment are rented by an enterprise, the payments of rentals under an operating lease are recorded as purchases of services. These services form part of intermediate consumption. Thus, as explained in chapter 1727, the payment of the rental on a fixed asset tends to reduce gross value added below what it would be if the producer owned the asset. The impact on net value added is mitigated by the fact that a tenant, or lessee, incurs no consumption of fixed capitaldepreciation. However, even net value added will tend to be lower when a fixed asset is rented as the rental has to cover the lessor's operating and interest costs. At the level of the total economy, the lower surpluses accruing to tenants or lessees will tend to be counterbalanced by the operating surpluses earned by the lessors.

#### 2. The allocation of primary<u>earned</u> income account

8.148.15 Whereas the generation of <u>carned</u> income account focuses on resident institutional units or sectors in their capacity as producers whose activities generate <u>primarycarned</u> incomes, the allocation of <u>primarycarned</u> income account (shown in table 7.28.2) focuses on resident institutional units or sectors in their capacity as recipients of <u>primarycarned</u> incomes. The allocation of <u>primarycarned</u> income account shows where the items payable in the generation of <u>carned</u> income account are receivable and also includes the amounts of property incomes receivable and payable by institutional units or sectors. As already noted, the generation of <u>carned</u> income account, being

related to production activities, can be compiled for establishments and industries as well as for institutional units and sectors. However, the allocation of <u>primarycarned</u> income account has no such direct link with production and can only be compiled for institutional units and sectors.

- 8.158.16 Enterprises may invest surplus funds in financial assets or even <u>landnon-produced natural resources and other</u> non-produced non-financial assets, especially in times of uncertainty and high interest rates. Considerable property income may be received from such investments. The property income paid out by a corporation will be influenced by the amount of property income received as well as by its operating surplus. Thus, it is not appropriate to record all the property income paid out by an enterprise as if it were chargeable against operating surplus. Some interest costs, especially implicit costs, may be attributable to assets other than those used in production. For this reason, the explicit and implicit interest costs payable by an enterprise ought not to be recorded in the generation of <u>earned</u> income account in which the <u>resourcesrevenues</u> consist only of value added accruing from production. They are recorded in the allocation of <u>primaryearned</u> income account along with any property income receivable as well as the operating surplus.
- 8.168.17 There are two kinds of income listed under resources revenues on the right-hand side of the allocation of primarycarned income account. The first shows where primarycarned income already recorded in the generation of earned income account are receivable, as follows:
  - a. <u>CompensationRemuneration</u> of employees receivable by households or non-resident households;
  - b. Taxes (less subsidies) on production or imports receivable (or payable) by government units or a foreign government;
  - c. Operating surplus, or mixed income, of enterprises carried forward from the generation of <u>earned</u> income account.

The second kind of income consists of property incomes receivable from the ownership of financial assets or <u>non-produced</u> natural resources:

- a. Investment income receivable by the owners of financial assets from either resident or non-resident units;
- b. Rent receivable by owners of <u>non-produced non-financial assets</u>, <u>including non-produced</u> natural resources, leased to other units.

#### The balancing items and national income

- 8.178.18 The usesexpenditures, listed on the left-hand side of the allocation of primarycarned income account, consist only of the property incomes payable by institutional units or sectors to creditors, shareholders, landowners, etc. Except for rent on natural resources, tThese may be payable to non-residents as well as residents. The remaining item recorded under usesexpenditures is the balancing item, the balance of primarycarned incomes, defined as the total value of the primarycarned incomes receivable by an institutional unit or sector less the total of the primarycarned incomes. At the level of the total economy it is described as national income.
- 8.188.19 The composition of the balance of primarycarned incomes varies considerably from one sector to another as certain types of primarycarned incomes are receivable by certain sectors only or by non-residents. In particular, taxes are received only by the general government sector and non-residents while compensationremuneration of employees is received only by the household sector and non-residents. These balances are described below.
  - a. The balance of <u>primarycarned</u> incomes of the non-financial and financial corporate sectors consists only of operating surplus plus property income receivable less property income payable.
  - b. The balance of primarycarned incomes of the general government sector consists of taxes on production and on imports receivable less subsidies on production payable, plus property income receivable less property income payable. It may also include a smallcertain amount of operating surplus resulting from the production of non-market services and own account capital formation (see the annex to chapter 4 for more information on the valuation of the relevant output), as well as operating surplus from units within general government undertaking market production.

- c. The balance of primaryearned incomes of the household sector consists of compensationremuneration of employees and mixed incomes accruing to households, plus property income receivable less property income payable. It also includes the operating surplus from housing services produced for own <u>final</u> consumption by owner-occupiers.
- d. The balance of <u>primarycarned</u> incomes of the non-profit institutions serving households (NPISHs) sector consists almost entirely of property income receivable less property income payable. <u>It also includes a certain amount of operating surplus from the production of non-market services and own capital formation.</u>

#### Net national income and gross national income

- 8.198.20 Net national income (NNI) is the aggregate value of the net balances of primarycarned incomes summed over all sectors. Similarly, gross national income (GNI) is the aggregate value of the gross balances of primarycarned incomes for all sectors.
- 8:208.21 Gross value added is strictly a production measure defined only in terms of output and intermediate consumption. It follows that GDP is also a production measure as it is obtained by summing the gross value added of all resident institutional units, in their capacities as producers, and adding the values of any taxes, less subsidies, on production or imports not already included in the values of the outputs, and value added, of resident producers. GNI is obtained by summing the balance of primarycarned incomes of the same resident institutional units. It follows that the difference between the numerical values of GNI and GDP is equal to the difference between the total primarycarned incomes receivable by residents from non-residents and the total primarycarned incomes payable by residents to non-residents (that is, net income from abroad). However, as both GDP and GNI are obtained by summing over the same set of resident institutional units, there is no justification for labelling one as "domestic" and the other as "national". Both aggregates refer to the total economy defined as the complete set of resident institutional units or sectors. The difference between them is not one of coverage but the fact that one measures production while the other measures income. Both have an equal claim to be described as domestic or as national. However, as the terms "gross domestic product" and "gross national income" are deeply embedded in economic usage, it is not proposed to change them. Emphasis should be given, however, to the third rather than second letter of the acronym to emphasize the fact that GDP refers to production (output) and GNI to income.

Table 7.28.2: The allocation of primaryearned income account - concise form - usesexpenditures

 Table 7.28.2 (cont): The allocation of primaryearned income account - concise form - resources revenues

#### 3. The entrepreneurial income account

- 8.218.22 The allocation of primaryearned income account may be partitioned into two sub-accounts: the entrepreneurial income account and the allocation of other primaryearned income account. The purpose is to identify an additional balancing item, entrepreneurial income, that may be useful for market producers. Like operating surplus and mixed income, it is a balancing item that is relevant only to producers, but one that can be calculated only for institutional units and sectors and not for establishments and industries.
- 8.228.23 Entrepreneurial income is calculated by deducting from operating surplus any interest, investment income disbursements (i.e., investment income attributable to insurance policyholders, holders of pension entitlements, and collective investment fund shareholders) and rent payable and adding property incomes receivable. For the non-financial and financial corporations sectors, the only difference between entrepreneurial income and the balance of primaryearned incomes is that entrepreneurial income is measured before the payment of dividends, the withdrawals of income from quasi-corporations and reinvested earnings on foreign direct investment. Entrepreneurial income is not calculated for other sectors. Although government and households may contain unincorporated enterprises undertaking market production, the fact that the assets attributed to this activity cannot

be distinguished from the entirety of assets of the institution means that identification of property income relating to the activity is also difficult. (If the assets and property income could be identified, it is probable that the unincorporated enterprise could be treated as a quasi-corporation and included in one of the corporate sectors.)

8.238.24 Entrepreneurial income is an income concept that is close to the concept of profit or loss as understood in business accounting (at least when there is no inflation). On the other hand, it should be remembered that when profits are calculated at historic costs in business accounts, they also include nominal holding gains on the inventories and other assets owned by the enterprise; these holding gains and losses may be quite substantial during inflationary conditions.

#### 4. The allocation of other primary<u>earned</u> income account

- 8.248.25 When the entrepreneurial income account is compiled for an institutional unit or sector, it is followed by the allocation of other <u>primarycarned</u> income account in order to arrive at the balance of <u>primarycarned</u> incomes. In the allocation of other <u>primarycarned</u> income account, the first item listed under <u>resourcesrevenues</u> is entrepreneurial income, the balancing item carried forward from the entrepreneurial income account instead of operating surplus or mixed income, which are the balancing items carried forward from the generation of <u>earned</u> income account. The only item in the account, for non--financial and financial corporations, apart from the balancing items, is the entry for the distributed income of corporations.
- 8.258.26 For general government, households and NPISHs, the allocation of other primaryearned income account matches the allocation of primaryearned income account.

8.268.27 The entrepreneurial income account and the account for other primarycarned income are shown in table 7.38.3.

 Table 7.38.3: The entrepreneurial income and allocation of other primaryearned income accounts – usesexpenditures

 Table 7.38.3 (cont): The entrepreneurial income and allocation of other primaryearned income accounts - resources revenues

#### B. <u>CompensationRemuneration</u> of employees

#### 1. Identifying employees

8.278.28 It is not always self-evident whether a person is an employee or self-employed, for example, some workers paid by results may be employees while others may be self-employed. The boundary <u>may</u> also affects the subsectoring of the household sector. The definitions in the SNA are consistent with resolutions of the International Conference of Labour Statisticians (ICLS) concerning the definitions of the economically active population. For the SNA, though, the main objective of distinguishing between employees and self-employed persons is to clarify the nature of the employment relationship in order to fix the boundary between compensationremuneration of employees and other kinds of receipts. Some persons who in labour statistics may be included with the self-employed, in particular some owners of quasi-corporations and owner-managers of corporations, are treated in the SNA as employees. Further discussion on the measurement of the labour-force and definitions of the related terms appear in chapter <u>1916</u>.

#### The employment relationshipLabour input

8.288.29 In order to be classified as employed providing labour input, that is, either as an employee or self-employed, the person must be engaged in an activity that falls within the production boundary of the SNA. The relationship of employer to employee exists when there is a written or oral agreement, which may be formal or informal, between an enterprise and a person, normally entered into voluntarily by both parties, whereby the person works for the

enterprise in return for remuneration in cash or in kind. The remuneration is normally based on either the time spent at work or some other objective indicator of the amount of work done.

- 8.298.30 The self-employed are persons who work for themselves, when the enterprises they own are distinguished neither as separate legal entities nor as separate institutional units in the SNA. They may be persons who are the sole owners, or joint owners, of the unincorporated enterprises in which they work; members of a producers' cooperative or contributing family workers (that is, family members who work in an unincorporated enterprise without pay).
  - a. Workers engaged in production undertaken entirely for their own final consumption or own capital formation, either individually or collectively, are self-employed. Although a value may be imputed for the output of own-account production based on costs, including estimated labour costs, no imputation is made <u>explicitly</u> for the wages of workers engaged in such production, even in the case of collective, or communal, projects undertaken by groups of persons working together. The surplus of the imputed value of the output over any monetary costs or taxes on production explicitly incurred is treated as gross mixed income.
  - b. Contributing family workers, including those working without pay in unincorporated enterprises engaged wholly or partly in market production, are also treated as self-employed.
  - c. The whole of the equity of a corporation may be owned by a single shareholder or small group of shareholders. When those shareholders also work for the corporation and receive paid remuneration other than dividends, the shareholders are treated as employees. The owners of quasi-corporations who work in those quasi-corporations and receive paid remuneration other than withdrawal of earnings from the quasi-corporation are also treated as employees.
  - d. Outworkers may be either employees or self-employed depending on their exact status and circumstances. The treatment of outworkers is specified in more detail below.

8.308.31 The remuneration of the self-employed is treated as mixed income.

8.318.32 Students in their capacity as consumers of educational or training services are not employees. However, if students also have a formal commitment whereby they contribute some of their own labour as an input into an enterprise's process of production, for example, as apprentices or similar kinds of worker trainees, articled clerks, student nurses, research or teaching assistants, hospital interns, etc., they are treated as employees, whether or not they receive any remuneration in cash for the work that they do in addition to training received as in-kind payment.

#### Employers and own-account workers

8.328.33 Self-employed persons may be divided into two groups: those who do and those who do not engage paid employees on a continuous basis. Those who do engage employees on a continuous basis are described as employers and those without paid employees are described as own-account workers. The distinction ismay be used for purposes of subsectoring the household sector. Own-account workers may be further subdivided into outworkers who are under some kind of formal or informal contract to supply goods or services to a particular enterprise, and ordinary own-account workers who may be engaged in either market production or production for own final consumption or own capital formation.

#### Outworkers

8.338.34 An outworker is a person who agrees to work for a particular enterprise or to supply a certain quantity of goods or services to a particular enterprise, by prior arrangement or contract with that enterprise, but whose place of work is not within any of the establishments that make up that enterprise. The enterprise does not control the time spent at work by an outworker and does not assume responsibility for the conditions in which that work is carried out, although it may carry out checks on the quality of work. Most outworkers work at home but may use other premises of their own choice. Some outworkers are provided with the equipment or materials, or both, on which they work, by an enterprise but other outworkers may purchase their own equipment or materials, or both. In any

case, outworkers have to meet some production costs themselves: for example, the actual <u>rentals</u> or <u>imputed</u> <u>rentals of owner-occupied housing services</u> on the buildings in which they work; heating, lighting and power; storage or transportation; etc.

- 8.348.35 Outworkers have some of the characteristics of employees and some of the characteristics of self-employed workers. The way in which they are to be classified is determined primarily by the basis on which they are remunerated. A distinction can be drawn between two cases that, in principle, are quite different from one another:
  - a. The person is remunerated directly, or indirectly, on the basis of the amount of work done, that is, by the amount of labour that is contributed as an input into some process of production, irrespective of the value of the output produced or the profitability of the production process. This kind of remuneration implies that the worker is an employee.
  - b. The income received by the person is a function of the value of the outputs from some process of production for which that person is responsible, however much or little work was put in. This kind of remuneration implies that the worker is self-employed.
- 8.358.36 In practice it may not always be easy to distinguish between employees and self-employed on the basis of these criteria. Outworkers who employ and pay others to work for them must be treated as the self-employed owners of unincorporated enterprises, that is as employers. The issue, therefore, is to distinguish own-account workers from employees.
- **8.368.37** An outworker is considered an employee when an employment relationship exists between the enterprise and the outworker. This implies the existence of an implicit or explicit employment contract or agreement whereby it is agreed that the outworker is remunerated on the basis of the work done. Conversely, an outworker is considered to be an own-account worker when there is no such implicit or explicit employment contract or agreement and the income earned by the outworker depends on the value of the goods or services supplied to the enterprise. This suggests that decisions on markets, scale of operations and finance are likely to be in the hands of self-employed outworkers who are also likely to own, or rent, the machinery or equipment on which they work.

# Table 7.48.4 The generation of earned income account - compensation remuneration of employees - uses expenditures

 Table
 7.58.5:
 The allocation of primaryearned income account - compensationremuneration of employees - resources revenues

- 8.38 The status of an outworker has important implications for the accounts. When the outworker is an own-account worker, the payment from the enterprise to the outworker constitutes a purchase of intermediate goods or services. For the outworker, the payment from the enterprise represents the value of output and the excess over direct costs to the outworker (treated as intermediate consumption) is gross mixed income. When the outworker is an employee, the payment constitutes compensationremuneration of employees and so is paid out of the value added of the enterprise. Thus, the outworker's status affects the distribution of value added between enterprises as well as the distribution of incomes between compensationremuneration of employees of the employing enterprise and net mixed income of the household of the outworker.
- 8.378.39 Some employers offer their employees the opportunity to work for extended periods away from the office. In such cases, the territory of the principal residence of the employee may be difficult to establish if they work for periods in a different territory and may need to be determined on the basis of the territory in which the predominant amount of time is spent in the year. Remuneration of such workers is recorded as a cross-border transaction only if the employee is classified as being resident in a different economy than the employee.

#### 2. The components of compensation<u>remuneration</u> of employees

8.388.40 Compensation Remuneration of employees is recorded under uses expenditures in the generation of earned income account and under resources revenues in the allocation of primary earned income account. The uses expenditures side of the generation of earned income account showing the detailed entries for compensation remuneration of employees is given in table 7.48.4 and

the corresponding resources revenues part of the allocation of primarycarned income account in table 7.58.5. The only item, apart from the balancing items, relevant to these accounts that is not shown is the entry for compensationremuneration of employees payable by the rest of the world, which appears in the uses expenditures part of the allocation of primarycarned income account.

- 8.398.41 As noted above, <u>compensationremuneration</u> of employees is defined as the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period.
- 8.408.42 CompensationRemuneration of employees is recorded on an accrual basis; that is, it is measured by the value of the remuneration in cash or in kind that an employee becomes entitled to receive from an employer in respect of work done during the relevant period, whether paid in advance, simultaneously or in arrears of the work itself. No compensationremuneration of employees is payable in respect of unpaid work undertaken voluntarily, including the work done by members of a household within an unincorporated enterprise owned by the same household. CompensationRemuneration of employees does not include any taxes payable by the employer on the wage and salary bill, for example, a payroll tax; such taxes are treated as taxes on production in the same way as taxes on buildings, land or other assets used in production.

8.418.43 Compensation Remuneration of employees has two main components:

- a. Wages and salaries payable in cash or in kind;
- b. Social insurance contributions payable by employers, which include contributions to social security schemes; actual social contributions to other employment related social insurance schemes and imputed social contributions to other employment related social insurance schemes.

Social insurance schemes and the nature of benefits they provide are discussed in section D of chapter 82.

#### Wages and salaries

8.428.44 Wages and salaries include the values of any social contributions, income taxes, etc., payable by the employee even if they are actually withheld by the employer for administrative convenience or other reasons and paid directly to social insurance schemes, tax authorities, etc., on behalf of the employee. Wages and salaries may be paid in various ways, including goods or services provided to employees as remuneration in kind instead of, or in addition to, remuneration in cash.

#### Wages and salaries in cash

8.438.45 Wages and salaries in cash include the following kinds of remuneration:

- a. Wages or salaries payable at regular weekly, monthly or other intervals, including payments by results and piecework payments; enhanced payments or special allowances for working overtime, at nights, at weekends or other unsocial hours; allowances for working away from home or in disagreeable or hazardous circumstances; expatriation allowances for working abroad; etc.;
- b. Supplementary allowances payable regularly, such as housing allowances or allowances to cover the costs of travel to and from work, but excluding social benefits (see below);
- c. Wages or salaries payable to employees away from work for short periods, for example, on holiday or as a result of a temporary halt to production, except during absences due to sickness, injury, etc. (see below);
- d. Ad hoc bonuses or other exceptional payments linked to the overall performance of the enterprise made under incentive schemes;
- e. Commissions, gratuities and tips received by employees: these should be treated as payments for services rendered by the enterprise employing the worker, and so should also be included in the output and gross value added of the employing enterprise when they are paid directly to the employee by a third party.

8.448.46 Wages and salaries in cash do not include the reimbursement by employers of expenditures made by employees in order to enable them to take up their jobs or to carry out their work. For example:

- a. The reimbursement of travel, removal or related expenses made by employees when they take up new jobs or are required by their employers to move their homes to different parts of the country or to another country;
- b. The reimbursement of expenditures by employees on tools, equipment, special clothing or other items that are needed exclusively, or primarily, to enable them to carry out their work. The amounts reimbursed are treated as intermediate consumption by employers. To the extent that employees who are required by their contract of employment to purchase tools, equipment, special clothing, etc., are not fully reimbursed, the remaining expenses they incur should be deducted from the amounts they receive in wages and salaries and the employers' intermediate consumption increased accordingly. Expenditures on items needed exclusively, or primarily, for work do not form part of household final consumption expenditures, whether reimbursed or not.

8.458.47 Wages and salaries in cash also do not include social insurance benefits paid by employers in the form of:

- a. Children's, spouse's, family, education or other allowances in respect of dependeents;
- b. Payments made at full, or reduced, wage or salary rates to workers absent from work because of illness, accidental injury, maternity leave, etc.;
- c. Severance payments to workers or their survivors who lose their jobs because of redundancy, incapacity, accidental death, etc.

In practice, it may be difficult to separate payments of wages or salaries during short periods of absence due to sickness, accidents, etc., from other payments of wages and salaries, in which case they have to be grouped with the latter.

8.468.48 In some instances a benefit such as a car or extra pension contributions may not be provided free but be "purchased" from the employer by foregoing some salary. The attraction of such schemes lies in the tax advantages of doing so. A car bought by the employer and sold to the employee may be taxed at a lower rate than a car purchased by an individual; pension contributions may be taxed differently from other income if deducted at source. In these cases, the full salary should be recorded as payable in cash with the cost to the employee shown as consumption expenditure or pension contribution etc. as appropriate.

#### Wages and salaries in kind

8.478.49 Employers may remunerate their employees in kind for various reasons. For example:

- a. There may be tax advantages for the employer, the employee, or both by avoiding payments in cash;
- b. The employer may wish to dispose of outputs that are periodically in excess supply.
- 8.488.50 Income in kind may bring less satisfaction than income in cash because employees are not free to choose how to spend it. Some of the goods or services provided to employees may be of a type or quality that the employee would not normally buy. Nevertheless, they must be valued consistently with other goods and services. When the goods or services have been purchased by the employer, they should be valued at purchasers' prices. When produced by the employer, they should be valued at producers' prices. When provided free, the value of the wages and salaries in kind is given by the full value of the goods and services in question. When provided at reduced prices, the value of the wages and salaries in kind is given by the employees.
- 8.498.51 Goods or services that employers are obliged to provide to their employees in order for them to be able to carry out their work are treated as intermediate consumption by the employer: for example, special protective clothing. A list of such items is given in paragraph 6.222.7.222. Remuneration in kind, on the other hand, consists of goods and services that are not necessary for work and can be used by employees in their own time, and at their own discretion, for the satisfaction of their own needs or wants or those of other members of their households.

- 8.508.52 Almost any kind of consumption good or service may be provided as remuneration in kind. The following includes some of the most common types of goods and services provided without charge, or at reduced prices, by employers to their employees:
  - a. meals and drinks provided on a regular basis including any subsidy element of an office canteen (for practical reasons, it is unnecessary to make estimates for meals and drinks consumed as part of official entertainment or during business travel);
  - b. housing services or accommodation of a type that can be used by all members of the household to which the employee belongs;
  - c. the services of vehicles or other durables provided for the personal use of employees;
  - d. goods and services produced as outputs from the employer's own processes of production, such as free travel for the employees of railways or airlines<del>, or free coal for miners</del>;
  - e. sports, recreation or holiday facilities for employees and their families;
  - f. transportation to and from work, free or subsidized car parking, when it would otherwise have to be paid for;
  - g. childcare for the children of employees.
- <u>8.518.53</u> Some of the services provided by employers, such as transportation to and from work, car parking and childcare have some of the characteristics of intermediate consumption. However, employers are obliged to provide these facilities to attract and retain labour, and not because of the nature of the production process or the physical conditions under which employees have to work. On balance, they are more like other forms of <u>compensationremuneration</u> of employees than intermediate consumption. Many workers have to pay for transportation to and from work, car parking and childcare out of their own incomes, the relevant expenditures being recorded as final consumption expenditures.
- 8.528.54 A frequent item provided as income in kind is a car. The car may be provided free to the employee but for tax purposes an imputed cash amount is attached to the benefit. In a country where many cars are provided as a fringe benefit to employees, the purchasing power of the employer may be such as to obtain a significant discount on the purchase price of the car. Thus the employee receives a higher quality car than the cash equivalent would buy for an individual. The value of the car to the employee should be estimated at the actual cost to the employer.
- 8.538.55 Remuneration in kind may also include the value of the interest foregone by employers when they provide loans to employees at reduced, or even zero rates of interest for purposes of buying houses, furniture or other goods or services. Its value may be estimated as the amount the employee would have to pay if average mortgage, or consumer loan, interest rates were charged less the amount of interest actually paid. The sums involved could be large when nominal interest rates are very high because of inflation but otherwise they may be too small and too uncertain to be worth estimating.

#### Stock options

8.548.56 Another form of income in kind results from the practice of an employer giving an employee the option to buy stocks (shares) at some future date. The details of valuing and recording of stock options are described in part 6 of chapter 1725.

#### **Employers' social contributions**

8.558.57 Employers' social contributions are social contributions payable by employers to social security funds or other employment-related social insurance schemes to secure social benefits for their employees. Social security schemes are operated by general government; other employer related social insurance schemes may be operated by the employers themselves, by an insurance corporation or may be an autonomous pension scheme.

8.568.58 As employees' social contributions are made for the benefit of their employees, their value is recorded as one of

the components of compensationremuneration of employees together with wages and salaries in cash and in kind. The social contributions are then recorded as being paid by the employees as current transfers to the social security schemes or other employment related social insurance schemes. Although it is administratively more efficient for employers to pay the contributions on behalf of their employees, this must not be allowed to obscure the underlying economic reality. The payment made by the employer to the social security scheme or other employment related social insurance schemes is not, in fact, a current transfer to the fund on the part of the employer. The transfer takes place between the employee and the social security scheme or other employment related social insurance schemes are deducted by the employer. The situation is parallel to one in which income taxes payable by employees are deducted by employers from the wages or salaries and paid directly to the tax authorities. In this case, it is evident that the taxes are not current transfers payable by the employers. It is customary to describe the employers' social contributions as being re-routed in the accounts via the employees' primary and secondary distribution of are discorted income and transfer income accounts. However, the accounts depict the various payables and receivables correctly. The direct payment of social contributions, or income taxes, by employers to social security schemes, other employment related social insurance schemes or tax authorities is merely a short cut taken on grounds of administrative convenience and efficiency.

- 8.578.59 An amount equal in value to employers' social contributions is first recorded in the generation of <u>earned</u> income account as one of the components of <u>compensationremuneration</u> of employees and then recorded either in the <u>income transfers other than social transfers in kindsecondary distribution of income</u> account as being transferred by households to social security funds or other <u>employment</u> related social insurance schemes as the case may be, or is recorded in the use of income account as the payment by households for the financial services associated with running the schemes. The transactions are recorded simultaneously in all three accounts at the times when the work that gives rise to the requirement to pay the contributions is carried out. The contributions paid to social security schemes may be fixed amounts per employee or may vary with the levels of wages or salaries paid. The amounts paid under other <u>employment related</u> social insurance schemes depend on the arrangements agreed between employers and employees.
- 8.588.60 Social insurance schemes in respect of pensions are of two types, described as defined contribution schemes or defined benefit schemes. A defined contribution scheme is one where the benefits are determined by the contributions actually made to the scheme. Under a defined benefit scheme, the ultimate benefit is calculated by means of a formula embodied in the terms of the social insurance scheme. Similarly, the increase in the employee's entitlement due to the period of employment in the current accounting period can also be determined by the formula.
- <u>8.598.61</u>The contributions made by employers to social insurance schemes are divided into actual and imputed contributions.
- 8.608.62 For both actual and imputed contributions, the components relating to pensions and other benefits are shown separately.

#### **Employers' actual contributions to social insurance schemes**

8.618.63 The actual contributions by employers to social insurance schemes consist of actual contributions made to both social security and other employment related social insurance schemes. The contributions relating to pensions and other benefits are shown separately.

#### Employers' imputed contribution to social insurance schemes

Employers' imputed pension contributions

8.628.64 There are no imputed contributions to social security schemes.

8.638.65 For a defined contribution pension scheme, there are no imputed contributions unless the employer operates the scheme himself. In that case, the value of the costs of operating the scheme is treated as an imputed contribution payable to the employee as part of <u>compensationremuneration</u> of employees. This amount is also recorded as final consumption expenditure by households on financial services.

- 8.648.66 For a defined benefit pension scheme, there is an imputed contribution by the employer calculated as a residual. It must be such that the sum of the employer's actual contribution plus the sum of any contribution by the employee plus the imputed contribution by the employer is equal to the <u>current service increase (i.e., the increase in entitlements resulting from the employee service in the current period)</u> increase in benefit due to current period employment, including plus the costs of operating the scheme.
- 8.658.67 Some defined benefit pension schemes may be so well run that the funds available to the scheme exceed the liabilities of the scheme to present and past employees. It is possible that in this case the employer may take a "contribution holiday" and not make actual contributions for one or more periods. Nonetheless, an imputed contribution by the employer should be calculated and recorded as described here.
- 8.668.68 Some schemes may be expressed as non-contributory because no actual contributions are ever made by the employee. Nevertheless, an imputed contribution by the employer is calculated and imputed as just described.

#### Employers' imputed non-pension contributions

- 8.678.69 Some employers provide non-pension benefits themselves directly to their employees, former employees or dependents without involving an insurance enterprise or autonomous pension fund, and without creating a special fund or segregated reserve for the purpose. In this situation, existing employees may be considered as being protected against various specified needs or circumstances, even though no reserves are built up to provide future entitlement. Remuneration should therefore be imputed for such employees equal in value to the amount of social contributions that would be needed to secure the de facto entitlements to the social benefits they accumulate. These amounts take into account any actual contributions made by the employer or employee and depend not only on the levels of the benefits currently payable but also on the ways in which employers' liabilities under such schemes are likely to evolve in the future as a result of factors such as expected changes in the numbers, age distribution and life expectancies of their present and previous employees. Thus, the values that should be imputed for the contributions ought, in principle, to be based on the same kind of actuarial considerations that determine the levels of premiums charged by insurance enterprises.
- 8.688.70 In practice, however, it may be difficult to decide how large such imputed contributions should be. The enterprise may make estimates itself, perhaps on the basis of the contributions paid into similar funded schemes, in order to calculate its likely liabilities in the future, and such estimates may be used when available. Otherwise, the only practical alternative may be to use the unfunded non-pension benefits payable by the enterprise during the same accounting period as an estimate of the imputed remuneration that would be needed to cover the imputed contributions. While there are obviously many reasons why the value of the imputed contributions that would be needed may diverge from the unfunded non-pension benefits actually paid in the same period, such as the changing composition and age structure of the enterprise's labour force, the benefits actually paid in the current period may nevertheless provide the best available estimates of the contributions and associated imputed remuneration.
- 8.698.71 The fact that, failing other information, the value of contributions for a non-contributory scheme may be set equal to the value of benefits does not mean that the benefits themselves are treated as part of compensationremuneration of employees.

#### C. Taxes on production and on imports

#### 1. Recording of taxes on production and on imports

8.708.72 Taxes are compulsory, unrequited payments, in cash or in kind, made by institutional units to government units. They are described as unrequited because the government provides nothing <u>directly</u> in return to the individual unit making the payment, although governments may use the funds raised in taxes to provide goods or services to other units, either individually or collectively, or to the community as a whole.

8.718.73 The full classification of taxes on production and on imports consists of:

Taxes on products,

Value added type taxes (VAT),

Taxes and duties on imports excluding VAT,

#### Import duties,

Taxes on imports excluding VAT and duties,

Export taxes,

Taxes on products, excluding VAT, import and export taxes,

Other taxes on production.

- 8.728.74 At the highest level of the classification, taxes on production and on imports consist of taxes on products and other taxes on production. Taxes on products consist of taxes on goods and services that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation. The way in which taxes on products are recorded in the SNA depends on the valuation used for the recording of output as described below. Other taxes on production consist mainly of taxes on the ownership or use of land, buildings or other assets used in production or on the labour employed, or compensationremuneration of employees paid. Whatever the valuation of output used, other taxes on production are always recorded as a charge on value added in the generation of earned income account.
- 8.75 A full explanation of the content of each of the categories of taxes on production and on imports is given below after a discussion of the rules of recording taxes. This explanation provides links to the main publications of data on tax yields, the <u>IMF's Government Finance Statistics Manual (GFSM)2001 2014</u> and Revenue Statistics (Organisation for Economic Co-operation and Development (OECD), annual publication).
- 8.738.76In view of accounting for environmental sustainability, countries are encouraged to compile, as supplementary items, data on environmental taxes on production in line with the definition provided in chapter IV of the System of Environmental-Economic Accounting (SEEA) 2012 Central Framework.
- 8.748.77 In business accounting, taxes on production, except invoiced VAT, are usually regarded as costs of production that may be charged against sales or other receipts when calculating profits for tax or other purposes. They correspond to "indirect taxes" as traditionally understood, indirect taxes being taxes that supposedly can be passed on, in whole or in part, to other institutional units by increasing the prices of the goods or services sold. However, it is extremely difficult, if not impossible, to determine the real incidence of different kinds of taxes, and the use of the terms "direct" and "indirect" taxes has fallen out of favour in economics and is not used in the SNA.

#### The recording of taxes on production and on imports in the accounts

- <u>8.758.78</u>Taxes on production and imports are recorded under <u>usesexpenditures</u> in the generation of <u>earned</u> income account and under <u>resourcesrevenues</u> in the allocation of <u>primarycarned</u> income account.
- 8.768.79 In the generation of <u>earned</u> income account, taxes on imports are recorded only at the level of the total economy as they are not payable out of the value added of domestic producers. Moreover, at the level of an individual institutional unit or sector, only those taxes on products that have not been deducted from the value of the output of that unit or sector need to be recorded under <u>usesexpenditures</u> in its generation of <u>earned</u> income account. These vary depending upon the way in which output is valued. When output is valued at basic prices, all taxes (subsidies) on products payable (receivable) on the goods or services produced as outputs are deducted from (added to) the value of that output at producers' prices. Therefore they do not have to be recorded under <u>usesexpenditures</u> in the generation of <u>earned</u> income account of the units or sectors concerned, being recorded only at the level of the total economy, in the same way as taxes on imports. When output is valued at producers' prices, all taxes or subsidies on products payable or receivable on outputs have to be recorded under <u>usesexpenditures</u> in the generation of <u>earned</u> income accounts of the units or sectors concerned, except invoiced VAT or similar deductible taxes as invoiced VAT is never included in the value of output. Non-deductible VAT and similar taxes are recorded under <u>usesexpenditures</u> only at the level of the total economy, like taxes on imports.
- 8.778.80 Other taxes or subsidies on production, that is, taxes payable on the land, assets, labour, etc., employed in production are not taxes payable per unit of output and cannot be deducted from the producer's price. They are recorded as being payable out of the value added of the individual producers or sectors concerned.

8.788.81 In the allocation of primaryearned income account, taxes on production and imports appear under resources revenues only for the general government sector and the total economy, apart from any such taxes payable to foreign governments.

#### Taxes versus fees

- One of the regulatory functions of governments is to forbid the ownership or use of certain goods or the pursuit 8.82 of certain activities, unless specific permission is granted by issuing a licence or other certificate for which a fee is demanded. Price levels for these types of mandatory permissions are set by the government, often through some type of executive, legislative, or statutory power. Those seeking the permission or authorization frequently pay with no option to receive a refund should the licence (or similar) not be granted. The permission or authorization granted under these types of schemes is not transferable or tradeable, and so has no direct economic value. Indeed, for many such regulatory schemes the payer of the fee is not to be seen as the primary beneficiary, as the motivation behind the regulation or licencing of an activity or good is to protect society as a whole and ensure that those engaging in an activity or owning a good are able to do so safely in accordance with laws. For example, driving licences are intended to ensure that those using the road networks have the necessary skills and knowledge to do so safely. Although the payer benefits from being able to drive, the primary beneficiary is society. For the above reasons, mandatory payments for most regulatory licences, or similar certificates, are to be recorded as taxes, as they are by nature compulsory and unrequited. If the issue of such licences involves little or no work on the part of government, the licences being granted automatically on payment of the amounts due, it is likely that they are simply a device to raise revenue, even though the government may provide some kind of certificate, or authorization, in return. However, if the government uses the issue of licences to exercise some proper regulatory function, for example, checking the competence, or qualifications, of the person concerned, checking the efficient and safe functioning of the equipment in question, or carrying out some other form of control that it would otherwise not be obliged to do, the payments made should be treated as purchases of services from government rather than payments of taxes, unless the payments are clearly out of all proportion to the costs of providing the services. The borderline between taxes and payments of fees for services rendered is not always clear cut in practice (see paragraph 8.64(c) below for a further explanation of this matter in the case of households). The general case of government issued permits is discussed in part 5 of chapter 17.
- 8.798.83 Although most payments under mandatory regulatory schemes should be recorded as taxes, there may be cases where recording as a sale of service is appropriate despite the compulsory nature of the payment. For instance, the cost of a mandatory safety inspection may be based on the cost to government of conducting the inspection and could include a service element, such as providing guidance on how identified safety hazards can be rectified. In this case it might be appropriate to record the payment as a payment of service rather than a tax, but only if the service element of the payment is considered sufficiently material. To recap, the default recording for payments under government-imposed mandatory regulatory schemes should be as taxes, unless a significant service element can be identified leading to recording as a payment of service.
- 8.808.84A slightly different but related issue concerns the recording of stability fees for deposit insurance schemes. Governments may impose levies on financial corporations both as a form of payment for deposit insurance services provided by government and also as instruments to manage financial stability. Payments to stability schemes should be classified as either a tax or as a payment for an insurance-type of transaction. The criterion of proportionality between payments and the provision of an insurance-type of services (including payments for the risk element) should be examined on a case by case basis, whereby the existence of a fund functioning on insurance rules with a full set of accounts may indicate the provision of an insurance-type service, while in the case that the payments are not put aside, can be used for other purposes, or are compulsory as part of a mandatory regulatory scheme from which the financial corporation cannot opt out, would indicate a treatment of the payments as taxes.

#### Links with the IMF and OECD tax classifications

8.818.85 The coverage of taxes in the SNA coincides with that of "tax revenue" as defined in the GFSM2001 2014 except for implicit taxes resulting from the central bank imposing a higher rate of interest than the market rate. In contrast to "taxes" as defined in Revenue Statistics, the SNA includes imputed taxes or subsidies resulting from the

operation of official multiple exchange rates, imputed taxes and subsidies resulting from a central bank imposing interest rates above or below the market rate but does not classify social security contributions under the heading of taxes. Chapter 5 of the *GFSM2001\_2014* contains a detailed listing and classification of taxes according to the nature of the tax. Annex A of *Revenue Statistics* contains a closely related classification.

8.828.86 The categories of taxes distinguished in the SNA depend on the interaction of the following three factors, of which the nature of tax is only one:

- a. The nature of the tax, as specified in the GFSM<sup>2001</sup>2014/ OECD classification;
- b. The type of institutional unit paying the tax;
- c. The circumstances in which the tax is payable.

 Table 7.68.6: The generation of earned income account - taxes and subsidies on production – uses expenditures

 Table 7.78.7
 The allocation of primaryearned income account - taxes and subsidies on production - resources

8.838.87 Thus, payments of exactly the same tax may be recorded under two different headings in the SNA. For example, payment of an excise duty may appear under "taxes on imports, except value added taxes (VAT) and duties" or under "taxes on products, except VAT, import and export taxes" depending upon whether the excise duty is paid on an imported or domestically produced good. Similarly, payments of an annual tax on automobiles may be recorded under "other taxes on production" or under "current taxes on income, wealth, etc." depending upon whether the tax is paid by an enterprise or by a household. For this reason, it is not possible to arrive at the SNA categories simply by regrouping the GFSM2001\_2014/OECD classifications. However, in order to take advantage of the existence of these detailed classifications, each category of tax listed below contains a cross-reference to the corresponding GFSM2001\_2014 and OECD classifications. It should be noted, though, that the SNA categories are included within the GFSM2001\_2014 and OECD categories but may not be identical with them.

#### The accrual basis of recording

- 8.88 All taxes should be recorded on an accrual basis in the SNA, that is, when the activities, transactions or other events occur that create the liabilities to pay taxes. However, some economic activities, transactions or events, which under tax legislation ought to impose on the units concerned the obligation to pay taxes, permanently escape the attention of the tax authorities. It would be unrealistic to assume that such activities, transactions or events give rise to financial assets or liabilities in the form of payables and receivables. For this reason the amounts of taxes to be recorded in the SNA are determined by the amounts due for payment only when evidenced by tax assessments, declarations or other instruments, such as sales invoices or customs declarations, that create liabilities in the form of clear obligations to pay on the part of taxpayers. (In determining the amount of tax accruing, care must be taken not to include tax unlikely ever to be collected.) Nevertheless, in accordance with the accrual principle, the times at which the taxes should be recorded are the times at which the tax liabilities arise. For example, a tax on the sale, transfer or use of output should be recorded when that sale, transfer or use took place, which is not necessarily the same time as when the tax authorities were notified, when a tax demand was issued, when the tax was due to be paid or when the payment was actually made. Some flexibility is permitted, however, as regards the time of recording of income taxes deducted at source.
- 8.848.89 Government may establish tax amnesty programmes. Two broad types of such programmes can be distinguished:

   (i) amnesties to speed up, or encourage, payment of taxes which have been accrued but are unpaid (i.e., relating to already disclosed transactions, events, and/or assets); and (ii) amnesties to capture revenue from economic activities and/or assets that have previously escaped the attention of the tax authorities (i.e., relating to previously undisclosed transactions, events, and/or assets). The time of recording and measurement of revenue arising from tax amnesties will depend on the exact nature of the amnesty granted and whether the revenue has been previously accrued. However, in accordance with the accrual principle, if a tax amnesty establishes tax obligations for

previously undisclosed transactions, events or assets, then the tax revenue should be recorded when the tax obligation is established and not to a period prior to the tax amnesty.

8.858.90 In some countries, and for some taxes, the amounts of taxes eventually paid may diverge substantially and systematically from the amounts due to be paid to the extent that not all of the latter can be effectively construed as constituting financial liabilities as these are understood within the SNA. In such cases, it may be preferable for analytic and policy purposes to ignore unpaid tax liabilities and confine the measurement of taxes within the SNA to those actually paid. Nevertheless, the taxes actually paid should still be recorded on an accrual basis at the times at which the events took place that gave rise to the liabilities.

#### Interest, fines or other penalties

8.868.91 In principle, interest charged on overdue taxes or fines, or penalties imposed for the attempted evasion of taxes, should be recorded separately and not as taxes. However, it may not be possible to separate payments of interest, fines or other penalties from the taxes to which they relate, so that in practice they are usually grouped with taxes.

#### Taxes and subsidies within the primary distribution of earned income accounts

8.878.92 Table 7.68.6 shows the details of taxes and subsidies as usesexpenditures in the generation of <u>earned</u> income account; table 7.78.7 shows them as <u>resourcesrevenues</u> in the allocation of <u>primarycarned</u> income account. Because of the way that taxes on products and subsidies on products are recorded in the SNA, no details of payables by sector appear in table 7.68.6, only the totals. This is consistent with the presentation in table 6.17.1. Taxes and subsidies on products payable by the rest of the world appear in the <u>resourcesrevenues</u> part of the allocation of <u>primarycarned</u> income account, not shown here.

#### 2. Taxes on products

**8.888.93***A* tax on a product is a tax that is payable per unit of some good or service. The tax may be a specific amount of money per unit of quantity of a good or service (the quantity units being measured either in terms of discrete units or continuous physical variables such as volume, weight, strength, distance, time, etc.), or it may be calculated ad valorem as a specified percentage of the price per unit or value of the goods or services transacted. A tax on a product usually becomes payable when it is produced, sold or imported, but it may also become payable in other circumstances, such as when a good is exported, leased, transferred, delivered, or used for own consumption or own capital formation. An enterprise may or may not itemize the amount of a tax on a product separately on the invoice or bill that it charges its customers.

#### Value added type taxes

8.898.94A value added type tax (VAT) is a tax on goods or services collected in stages by enterprises but that is ultimately charged in full to the final purchasers. Such taxes have already been described in paragraphs 7.55 to 7.626.55
 to 6.62... They are described as a "deductible" tax because producers are not usually required to pay to the government the full amount of the tax they invoice to their customers, being permitted to deduct the amount of tax they have been invoiced on their own purchases of goods or services intended for intermediate consumption or fixed capital formation. VAT is usually calculated on the price of the good or service including any other tax on the product. VAT is also payable on imports of goods or services in addition to any import duties or other taxes on the imports (GFSM2001\_2014\_11411; OECD, 5111).

#### Taxes and duties on imports, excluding VAT

8.908.95 Taxes and duties on imports consist of taxes on goods and services that become payable at the moment when those goods cross the national or customs frontiers of the economic territory or when those services are delivered by non-resident producers to resident institutional units.

- 8.918.96 Imported goods on which all the required taxes on imports have been paid when they enter the economic territory may subsequently become subject to a further tax, or taxes, as they circulate within the economy. For example, excise duties or sales taxes may become due on goods as they pass through the chain of wholesale or retail distribution, such taxes being levied on all goods at the same point, whether those goods have been produced by resident enterprises or imported. Taxes payable subsequently on goods that have been already imported are not recorded as taxes on imports but as taxes on products, excluding VAT, import and export taxes.
- 8.928.97 Exceptionally, some taxes and duties may be payable on goods that physically enter the country but where there is no change of ownership so they are not treated as imports. Nevertheless, any such taxes and duties are still included in the heading of taxes and duties on imports.

#### Import duties

8.938.98 Import duties consist of customs duties, or other import charges, that are payable on goods of a particular type when they enter the economic territory. The duties are specified under customs tariff schedules. They may be intended as a means of raising revenue or discouraging imports in order to protect resident goods producers (GFSM 20012014, 1151; OECD, 5123).

#### Taxes on imports, excluding VAT and duties

#### 8.948.99 Taxes on imports, excluding VAT and duties consist of all taxes (except VAT and import duties) as defined in the GFSM/OECD classifications that become payable when goods enter the economic territory or services are delivered by non-residents to residents. They include the following:

- General sales taxes: these consist of general sales taxes (excluding VAT) that are payable on imports of goods and services when the goods enter the economic territory or the services are delivered to residents (GFSM\_2001-201-4, 11412; OECD, 5110-5113);
- Excise duties: excise duties are taxes levied on specific kinds of goods, typically alcoholic beverages, tobacco and fuels; they may be payable in addition to import duties when the goods enter the economic territory (*GFSM <u>20042014</u>*, 1142; OECD, 5121);
- c. *Taxes on specific services*: these may be payable when non-resident enterprises provide services to resident units within the economic territory (*GFSM\_20012014*, 1156; OECD, 5126);
- Profits of import monopolies: these consist of the profits transferred to governments of import marketing boards, or other public enterprises exercising a monopoly over the imports of some good or service. The justification for treating these profits as implicit taxes on products is the same as that shown in paragraph 7.96-8.101 (e) for fiscal monopolies (*GFSM\_20012014*, 1153; OECD, 5127);
- e. *Taxes resulting from multiple exchange rates*: these consist of implicit taxes resulting from the operation of multiple exchange rates by the central bank or other official agency (*GFSM2001\_2014*, 1154).

#### Export taxes

### **8.95**<u>8.100</u> Export taxes consist of taxes on goods or services that become payable by government when the goods leave the economic territory or when the services are delivered to non-residents. They include the following:

- a. *Export duties*: general or specific taxes or duties on exports (*GFSM\_20014*, 1152; OECD, 5124);
- Profits of export monopolies: these consist of the profits transferred to governments of export marketing boards, or other public enterprises exercising a monopoly over the exports of some good or service. The justification for treating these profits as implicit taxes on products is the same as that shown in paragraph 7.96.8.101 (e) for fiscal monopolies (*GFSM\_20012014*, 1153; OECD, 5124);
- c. *Taxes resulting from multiple exchange rates*: these consist of implicit taxes on exports resulting from the operation of an official system of multiple exchange rates. (*GFSM\_20012014*, 1154).

#### Taxes on products, excluding VAT, import and export taxes

8.968.101 Taxes on products, excluding VAT, import and export taxes, consist of taxes on goods and services that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation. They include the following commonly occurring taxes:

- a. General sales or turnover taxes: these include manufacturers', wholesale and retail sales taxes, purchase taxes, turnover taxes, and so on, but exclude VAT and other systems of deductible taxes (GFSM 2001/2011/4, 11412-11413; OECD, 5110-5113).
- Excise duties: these consist of taxes levied on specific kinds of goods, typically alcoholic beverages, tobacco and fuels (GFSM\_20012014, 1142; OECD, 5121).
- c. Taxes on specific services: these include taxes on transportation, communications, insurance, advertising, hotels or lodging, restaurants, entertainments, gambling and lotteries, sporting events, etc. (GFSM 20042014, 1144; OECD, 5126).
- d. Taxes on financial and capital transactions: these consist of taxes payable on the purchase or sale of non-financial and financial assets including foreign exchange. They become payable when the ownership of land or other assets changes, except as a result of capital transfers (mainly inheritances and gifts) (GFSM\_20012014, 1141434; OECD, 4400). They are treated as taxes on the services of the unit selling the asset.
- Profits of fiscal monopolies: these consist of the profits of fiscal monopolies that are transferred to e. government. Fiscal monopolies are public corporations, public quasi-corporations, or governmentowned unincorporated enterprises that have been granted a legal monopoly over the production or distribution of a particular kind of good or service in order to raise revenue and not in order to further the interests of public economic or social policy. Such monopolies are typically engaged in the production of goods or services that may be heavily taxed in other countries, for example, alcoholic beverages, tobacco, matches, petroleum products, salt, playing cards, etc. The exercise of monopoly powers is simply an alternative way for the government to raise revenue instead of the more overt procedure of taxing the private production of such products. In such cases the sales prices of the monopolies are deemed to include implicit taxes on the products sold. While in principle only the excess of the monopoly profits over some notional "normal" profits should be treated as taxes, it is difficult to estimate this amount and, in practice, the value of the taxes should be taken as equal to the amount of the profits actually transferred from fiscal monopolies to government (GFSM 20012014, 1143; OECD, 5122). When a public enterprise is granted monopoly powers as a matter of deliberate economic or social policy because of the special nature of the good or service or the technology of production (for example, public utilities, post offices and telecommunications, railways, etc.) it should not be treated as a fiscal monopoly. As a general rule, fiscal monopolies tend to be confined to the production of consumer goods or fuels. As the profits of a fiscal monopoly are calculated for the enterprise as a whole, it is not possible to estimate the average amount of the tax per unit of good or service sold when the enterprise has more than one good or service as output without introducing an assumption about the rates of tax on the different products. Unless there is good reason otherwise, it should be assumed that the same ad valorem rate of tax is applied to all products, this rate being given by the ratio of the total value of the implicit taxes to the value of total sales less the total value of the implicit taxes. It is necessary to establish this rate in order to be able to calculate the basic prices of the products concerned.

*— Taxes resulting from the central bank imposing a higher rate of interest than the market rate:* These taxes are described in paragraphs 7.122 to 7.126. (These taxes are not mentioned in *GFSM2001*.)

#### 3. Other taxes on production

8.978.102 Other taxes on production consist of all taxes except taxes on products that enterprises incur as a result of engaging in production. Such taxes do not include any taxes on the profits or other income received by the enterprise and are payable regardless of the profitability of the production. They may be payable on the land,

fixed assets or labour employed in the production process or on certain activities or transactions. Other taxes on production include the following:

- a. *Taxes on payroll or work force*: these consist of taxes payable by enterprises assessed either as a proportion of the wages and salaries paid or as a fixed amount per person employed. They do not include compulsory social security contributions paid by employers or any taxes paid by the employees themselves out of their wages or salaries (*GFSM\_20012014*, 112; OECD, 3000);
- Recurrent taxes on land, buildings or other structures: these consist of taxes payable regularly, usually each year, in respect of the use or ownership of land, buildings or other structures utilized by enterprises in production, whether the enterprises own or rent such assets (GFSM\_20012014, 1131; OECD, 4100);
- c. Business and professional licences: these consist of taxes paid by enterprises in order to obtain a licence to carry on a particular kind of business or profession. Examples are taxi licences and casino licences. Under limited circumstances such licenses might be considered as payments for services rather than taxes, and these are discussed in paragraphs 8.82 and 8.83. Licences such as taxi and easino licences are included. In certain circumstances, IL icences to use a natural resource, however, are generally not treated not as a tax-but as the sale of an asset. These circumstances are The treatment of these licences and permits is described in more detail in part 5 of chapter 1727. However, if the government carries out checks on the suitability, or safety of the business premises, on the reliability, or safety, of the equipment employed, on the professional competence of the staff employed, or on the quality or standard of goods or services produced as a condition for granting such a licence, the payments are not unrequited and should be treated as payments for services rendered, unless the amounts charged for the licences are out of all proportion to the costs of the checks carried out by governments (*GFSM201404*, 11452; OECD, 5210). (See also paragraph 8.649.65 (c) for the treatment of licences obtained by households for their own personal use.);
- d. Taxes on the use of fixed assets or other activities: these include taxes levied periodically on the use of vehicles, ships, aircraft or other machinery or equipment used by enterprises for purposes of production, whether such assets are owned or rented. These taxes are often described as licences, and are usually fixed amounts that do not depend on the actual rate of usage (*GFSM\_20012014*, 11451-11452 and 5.5.3; OECD, 5200);
- e. Stamp taxes: these consist of stamp taxes that do not fall on particular classes of transactions already identified, for example, stamps on legal documents or cheques. These are treated as taxes on the production of business or financial services. However, stamp taxes on the sale of specific products, such as alcoholic beverages or tobacco, are treated as taxes on products (*GFSM\_20012014*, 1161; OECD, 6200);
- f. Taxes on pollution: these consist of taxes levied on the emission or discharge into the environment of noxious gases, liquids or other harmful substances. <u>Payments for emission permits also qualify as taxes on production, to be recorded at issuance prices at the time of surrender of the permits.</u> They do not include payments made for the collection and disposal of waste or noxious substances by public authorities, which constitute intermediate consumption of enterprises (<u>GFSM\_20042014</u>, 11452; OECD, 5200);
- g. Taxes on international transactions: these consist of taxes on travel abroad, foreign remittances or similar transactions with non-residents (*GFSM\_20012014*, 1156; OECD, 5127).

#### **D.** Subsidies

8.988.103 Subsidies are current unrequited payments that government units, including non-resident government units, make to enterprises on the basis of the levels of their production activities or the quantities or values of the goods or services that they produce, sell or import. They are receivable by resident producers or importers. In the case of resident producers they may be designed to influence their levels of production, the prices at which their outputs are sold or the remuneration of the institutional units engaged in production. Subsidies have the same impact as negative taxes on production in so far as their impact on the operating surplus is in the opposite direction to that of taxes on production.

<u>8.104</u> Subsidies are not payable to final consumers; current transfers that governments make directly to households as consumers are treated as social benefits. Subsidies also do not include grants that governments may make to enterprises in order to finance their capital formation, or compensate them for damage to their capital assets, such grants being treated as capital transfers.

8.998.105 In view of accounting for environmental sustainability, countries are encouraged to compile, as supplementary items, data on environmental subsidies in line with the definition provided in chapter IV of the System of Environmental-Economic Accounting (SEEA) 2012 Central Framework.

#### 1. Subsidies on products

8.1008.106\_\_\_\_\_A subsidy on a product is a subsidy payable per unit of a good or service. The subsidy may be a specific amount of money per unit of quantity of a good or service, or it may be calculated ad valorem as a specified percentage of the price per unit. A subsidy may also be calculated as the difference between a specified target price and the market price actually paid by a buyer. A subsidy on a product usually becomes payable when the good or service is produced, sold or imported, but it may also be payable in other circumstances such as when a good is transferred, leased, delivered or used for own consumption or own capital formation.

#### **Import subsidies**

- 8.101<u>8.107</u> Import subsidies consist of subsidies on goods and services that become payable when the goods cross the frontier of the economic territory or when the services are delivered to resident institutional units. They include implicit subsidies resulting from the operation of a system of official multiple exchange rates. They may also include losses incurred as a matter of deliberate government policy by government trading organizations whose function is to purchase products from non-residents and then sell them at lower prices to residents (see also export subsidies in paragraph 8.1097.103).
- 8.1028.108 As in the case of taxes on products, subsidies on imported goods do not include any subsidies that may become payable on such goods after they have crossed the frontier and entered into free circulation within the economic territory of the country.

#### **Export subsidies**

- 8.1038.109 Export subsidies consist of all subsidies on goods and services that become payable by government when the goods leave the economic territory or when the services are delivered to non-resident units. They include the following:
  - a. *Direct subsidies* on exports payable directly to resident producers when the goods leave the economic territory or the services are delivered to non-residents;
  - Losses of government trading organizations: these consist of losses incurred as a matter of deliberate government policy by government trading organizations whose function is to buy the products of resident enterprises and then sell them at lower prices to non-residents. The difference between the buying and selling prices is an export subsidy (see also paragraph <u>8.1117-105</u>(b));
  - c. *Subsidies resulting from multiple exchange rates*: these consist of implicit subsidies resulting from the operation of an official system of multiple exchange rates.

#### *Exclusions from export subsidies*

8.1048.110 Export subsidies do not include the repayment at the customs frontier of taxes on products previously paid on goods or services while they were inside the economic territory. They also exclude the waiving of the taxes that would be due if the goods were to be sold or used inside the economic territory instead of being exported. General taxes on products such as sales or purchase taxes, VAT, excise taxes or other taxes on products are usually not payable on exports.

#### Other subsidies on products

- 8.1058.111 Other subsidies on products consist of subsidies on goods or services produced as the outputs of resident enterprises, or on imports, that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation. The most common types are the following:
  - a. *Subsidies on products used domestically*: these consist of subsidies payable to resident enterprises in respect of their outputs that are used or consumed within the economic territory;
  - b. Losses of government trading organizations: these consist of the losses incurred by government trading organizations whose function is to buy and sell the products of resident enterprises. When such organizations incur losses as a matter of deliberate government economic or social policy by selling at lower prices than those at which they purchased the goods, the difference between the purchase and the selling prices should be treated as a subsidy. Entries to the inventories of goods held by such organizations are valued at the purchasers' prices paid by the trading organizations and the subsidies are recorded at the time the goods are sold;
  - c. Subsidies to public corporations and quasi-corporations: these consist of regular transfers paid to public corporations and quasi-corporations that are intended to compensate for persistent losses (that is, negative operating surpluses) incurred on their productive activities as a result of charging prices that are lower than their average costs of production as a matter of deliberate government economic and social policy. In order to calculate the basic prices of the outputs of such enterprises, it will usually be necessary to assume a uniform ad valorem implicit rate of subsidy on those outputs determined by the size of the subsidy as a percentage of the value of sales plus subsidy.

Subsidies resulting from the central bank accepting a lower rate of interest than the market rate: These subsidies are described in paragraphs 7.122 to 7.126. (These subsidies are not mentioned in GFSM2001.)

#### 2. Other subsidies on production

8.1068.112 Other subsidies on production consist of subsidies except subsidies on products that resident enterprises may receive as a consequence of engaging in production. Examples of such subsidies are the following:

- a. *Subsidies on payroll or workforce*: these consist of subsidies payable on the total wage or salary bill, or total work force, or on the employment of particular types of persons such as physically handicapped persons or persons who have been unemployed for long periods. The subsidies may also be intended to cover some or all of the costs of training schemes organized or financed by enterprises;
- b. <u>Subsidies to maintain business:</u> government support, for example provided during the period of the COVID-19 pandemic to employers and self-employed, to maintain their business, and in case of the employers, to keep their employees on the payroll, with a view to having a quick return to production;
- c. *Subsidies to reduce pollution*: these consist of subsidies intended to cover some or all of the costs of additional processing undertaken to reduce or eliminate the discharge of pollutants into the environment.

#### E. Property incomes

#### 1. Defining property income

8.1078.113 Property income accrues when the owners of financial assets and <u>non-produced non-financial assets</u>, <u>including non-produced natural resources</u>, put them at the disposal of other institutional units. The income payable for the use of financial assets is called investment income while that payable for the use of a <u>non-produced natural</u> resource <u>or another non-produced non-financial asset</u> is called rent. *Property income is the sum of investment income and rent.* 

- 8.1088.114 Investment income is the income receivable by the owner of a financial asset in return for providing funds to another institutional unit. The terms governing the payment of investment income are usually specified in the financial instrument created when the funds are transferred from the creditor to the debtor. Such arrangements are typically made only for a limited period of time, after which the funds must be returned. The period of time may be several months or several years, though the arrangements may be renewed.
- 8.1098.115 Rent is the income receivable by the owner of a non-produced natural resource or another non-produced non-financial assets (the lessor or landlord) for putting the natural resource or another non-produced non-financial asset at the disposal of another institutional unit (a lessee or tenant) for use of the assetnatural resource in production. The terms under which rent on a non-produced natural resource or another non-produced nonfinancial is payable are often expressed in a resource lease. Such aA resource lease is an agreement whereby the legal owner of a non-produced natural resource or another non-produced non-financial asset-that the SNA treats as having an infinite life makes it available to a lessee in return for a regular payment recorded as property income and described as rent. A resource lease may apply to any non-produced natural resource recognized as an asset in the SNA. For resources such as land it is assumed that, at the end of the resource lease, the land is returned to the legal owner in the same state as when the lease started. For resources such as subsoil assets, though the resources potentially have an infinite life, they are not all returned to the legal owner at the end of the lease since the purpose of the lease is to permit extraction and disposal of the resource. AlthoughAs the resource may suffer depletion-in excess of any new discoveries or re-evaluations (or natural replenishmentsregeneration for renewable resources) the fact that, rent is shown together without an explicit deduction for any consumption depletion of natural resources borne by the legal owner means that, in the SNA, the resource is effectively treated as having an infinite life as far as income generation is concerned. For more information, see chapter 27.
- 8.1108.116 The regular payments made by the lessees of non-produced non-financial assets, including non-produced natural resources such as subsoil assets are often described as royalties, but they are treated as rent in the SNA. The term "rent" is reserved in this manualthe SNA/BPM for rent on non-produced non-financial assets, including non-produced natural resources, payments under operating leases being described as "rentals".

8.111<u>8.117</u> Property incomes are classified in the following way in the SNA:

Investment income

Interest and similar returns

Distributed income of corporations

Dividends

Withdrawals from income of quasi-corporations

Reinvested earnings on foreign direct investment

Other investment income

Investment income attributable to insurance policyholders

Investment income payable on pension entitlements

Imputed investment income attributable to the surplus/shortfall in defined benefit pension funds

Investment income attributable to collective investment fund shareholders

#### Rent

Each of these items is described in more detail below.

 Table 7.88.8
 The allocation of primarycarned income account - property income - uses

 uses
 expenditures

 Table 7.88.8 (cont): The allocation of primaryearned income account - property income

 - resourcesrevenues

8.1128.118 Table 7.88.8 shows an expansion of table 7.28.2 to include the details of property income payable and receivable.

#### 2. Interest and similar returns

- 8.1138.119 Interest and similar returns is a form of investment income or interest-like income that is receivable by the owners of certain kinds of financial assets, namely: deposits, debt securities, loans and (possibly) other accounts receivable and some similar instruments in the case of Islamic finance, for putting the financial asset at the disposal of another institutional unit. Income on SDR holdings and allocations is also treated as interest and similar returns. The financial assets giving rise to interest and similar returns are all claims of creditors over debtors. Creditors lend funds to debtors that lead to the creation of one or other of the financial instruments listed above. The amount the debtor owes the creditor is known as the principal. Over time, the amount due to the creditor declines as the debt is repaid and increases as interest and similar returns accrues. The balance at any time is referred to as the principal outstanding.
- 8.120 Interest and similar returns may be a predetermined sum of money or a fixed or variable percentage of the principal outstanding, or, in the case of Islamic finance, a pre-determined share of profit related to the sourcing or the use of certain types of funds. If some or all of the interest and similar returns accruing to the creditor is not paid during the period in question, it may be added to the amount of the principal outstanding or it may constitute an additional, separate liability incurred by the debtor. However, the interest and similar returns may not necessarily be due for payment until a later date and sometimes not until the loan, or other financial instrument matures.
- 8.121 All fees payable to the owners of securities used for securities lending and to the owners of gold used for gold loans (whether from allocated or non-allocated gold accounts) should be recorded by convention as interest. The interest may need to be adjusted for implicit financial services on loans and deposits, if the unit providing the loan is classified as a financial corporation.
- 8.122 The guidance below is mainly focusing on interest as commonly known. Specific types of interest-like income, as practiced in Islamic finance, are further elaborated in chapter 26.

#### The accrual basis of recording

8.1148.123 Interest and similar returns is recorded on an accrual basis, that is, interest and similar returns is recorded as accruing continuously over time to the creditor on the amount of principal outstanding. The interest and similar returns accruing is the amount receivable by the creditor and payable by the debtor. It may differ not only from the amount of interest and similar returns actually paid during a given period but also the amount due to be paid within the period. Some financial instruments are drawn up in such a way that the debtor is obliged to make regular interest payments of interest and similar returns, period by period, as the interest, or similar returns, accrues but in other cases there may be no such requirement. As explained in part 4 of chapter 1725, there are many different kinds of financial instruments and new instruments are continually being developed. Interest and similar returns may therefore be paid in various different ways, not always explicitly described as interest, or interest-like income. However, streams of net settlement payments under a swap or forward rate agreement contract (possibly described as "interest" in the contract) are not considered as property income but are to be recorded as transactions in financial derivatives in the financial account (see paragraphs 12.111 to 12.11541.111

#### The recording of negative interest and interest under reverse transactions

- 8.124 In some periods of economic distress, negative interest rates can be observed, not only on central bank deposits but also on deposits issued by other financial corporations and on government debt securities. In these cases, the interest payable is to be recorded as a negative expenditure, and not as positive revenue.
- 8.125 In the case the legal ownership of securities changes under a reverse transaction, the economic owner of securities continues recording the accrual of interest and dividends on the securities, including when the security is further

on-sold to a third party. If the reverse transaction covers the period when interest and dividends are payable, and during that period the taker has on-sold the asset, then the security taker (borrower) is typically obliged to compensate the security provider (lender). In such cases, it is recommended to record positive credit in interest, or dividends, for the security lender, and negative credit in interest, or dividends, for the security borrower,

#### Interest payable and receivable on loans and deposits

8.1158.126 As explained in chapter 67, the amounts of interest on loans and deposits payable to and receivable from financial corporations include a margin that represents an implicit payment for the services provided by the financial corporations in providing loans and accepting deposits. The actual payments or receipts to or from financial corporations, described as bank interest, need to be partitioned so that SNA interest and the service charges may be recorded separately. The amounts of SNA interest paid by borrowers to financial corporations are less than bank interest by the estimated values of the charges payable, while the amounts of SNA interest receivable by depositors is higher than bank interest by the amount of the service charge payable. The values of the charges are recorded as sales of services in the production accounts of financial corporations and as usesexpenditures in the accounts of their customers

8.1168.127 If bank interest is unpaid, it must be the case that both SNA interest and the service charge are unpaid. In other words, the amount of principal outstanding increases by both the amount of SNA interest unpaid plus the unpaid service charge.

#### Interest payable on debt securities

8.1178.128 Certain financial instruments, for example, bills and zero coupon bonds, are such that the debtor is under no obligation to make any payments to the creditor until the asset matures. In effect, no interest becomes due for payment until the end of the asset's life at which point the debtor's liability is discharged by a single payment covering both the amount of the funds originally provided by the creditor and the interest accumulated over the entire life of the asset. In such cases the amount of interest payable over the life of the security is derived as the difference between the value at which the instrument is acquired and its value when it matures.

#### **Further elaboration**

8.1188.129 Chapter 1725 contains in part 4 a section detailing how all the transactions and other flows associated with financial instruments are to be recorded in the accounts. It contains, in particular, specific recommendations on how interest on each of the relevant financial instruments is to be calculated.

#### Nominal and real interest

- 8.1198.130 When a debtor discharges the principal by making payments equal in money value to the funds borrowed plus the interest accruing at the agreed rate over the time the debt exists, the associated interest payments are described as "nominal". Such interest payments do not represent the "real" return to the creditor when, as a result of inflation, the purchasing power of the funds repaid is less than that of the funds borrowed. In situations of chronic inflation the nominal interest payments demanded by creditors typically rise in order to compensate them for the losses of purchasing power that they expect when their funds are eventually repaid.
- 8.1208.131 In practice, the interest recorded in the allocation of primarycarned income account is not partitioned in this way. The interest recorded is always the amount of nominal interest receivable or payable (plus or minus the charges for services of financial intermediaries for which no explicit charges are made, when relevant). However, the information needed to calculate real interest is provided within the SNA as a whole since the real holding losses incurred by creditors are recorded in the revaluation account.

| {<br>.2]<br>€<br>₽    | 3.121—<br>The central bank's main responsibility is to formulate and carry out part of economic policy. It therefore often acts differently than   |
|-----------------------|--|
| .2]<br>e<br>t         | The central bank's main responsibility is to formulate and carry out part of economic policy. It therefore often acts differently than   |
| e<br>te               | $d = 0 \qquad \qquad d = 1 \qquad \qquad d = $ |
| ł                     | sther financial corporations and generally has received the authority from government to enforce its views. In cases where the central   |
| F                     | pank uses its special powers to oblige market participants to pay transfers without a direct quid pro quo, it is appropriate to record the<br>proceeds as implicit taxes. Conversely, in cases when the central bank makes payments that are clearly for policy rather than commercial   |
| ۴<br>۶                | purposes, it may be argued that implicit subsidies are paid. Three cases are considered:   |
|                       |  |
|                       | <ul> <li>a. The central bank is able to dictate below market rates for reserve deposits;</li> <li>b. The central bank pays above market rates in a situation where the external value of the currency is<br/>under pressure;</li> </ul>  |
| S                     | c.— The central bank acts as a development bank offering loans at below market rates to priority industries.   |
| t                     | 5.123  |
| . <del>3 I</del><br># | if central bank interest rates are out of line with those of commercial banks, then the difference between flows calculated using the reference rate and the actual rate set by the central bank should be recorded not as market output, specifically FISIM, but as implicit  |
| e<br>e<br>{           | axes and subsidies as described immediately below. This procedure is analogous to and consistent with the practice of treating the<br>difference between the market exchange rate and an alternative exchange rate imposed by the central bank as an implicit tax or subsidy.<br>8.124 —   |
| ł                     | Below market rates on reserve deposits   |
| +<br>4{               | Suppose the central bank pays only three per cent to a commercial bank on reserve deposits when the market rate is five per cent. The  |
| f                     | following recording is made in the SNA:  |
|                       | <ul> <li>Although the commercial bank actually receives only three per cent as "interest", it is recorded as receiving five per cent as interest and paying two per cent to government as a tax on production;</li> <li>Government is recorded as receiving two per cent from the commercial bank as a tax on production and as making a payment of a current transfer of two per cent to the central bank (both these flows are notional); and</li> <li>The central bank actually pays three per cent to the commercial bank but is recorded as paying five per cent to the commercial bank but is recorded as paying five per cent to the central bank but is recorded as paying five per cent to the central bank actually pays three per cent to the commercial bank but is recorded as paying five per cent to the commercial bank actually pays three per cent to the commercial bank but is recorded as paying five per cent to the commercial bank but is recorded as paying five per cent to the commercial bank and receiving two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current component in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent from government in the form of a current transfer of two per cent form government in the form of a current transfer of two per cent form government in the form of a current transfer of two per c</li></ul>   |
| ŧ                     | 3.126—   |
| Ę                     | 8.127 No financial account transactions are involved with this re-routing.   |
| Ę                     | <u>8.128</u>   |
| Ŧ                     | Above market rates for currency support  |
| \$                    | 8.129-   |
| . <u>5 </u> {         | Suppose the central bank pays seven per cent to a commercial bank for a limited period when the currency is under pressure at a time   |
| ¥                     | when the market rate is five per cent. The following recording is made in the SNA:   |
|                       | <ul> <li>g. Although the commercial bank actually receives seven per cent as "interest", it is recorded as receiving five per cent as interest and receiving another two per cent from government as a subsidy on production;</li> <li>h. Government is recorded as paying two per cent to the commercial bank as a subsidy on production and as receiving a current transfer of two per cent from the central bank (both these flows are notional); and</li> <li>i. The central bank actually pays seven per cent to the commercial bank but is recorded as paying five per cent to the commercial bank but is recorded as paying five per cent to the commercial bank of a current transfer.</li> </ul>  |
| ٤                     | 3.130  |
| Ę                     | 8.131 No financial account transactions are involved with this re-routing.   |
| Ę                     | 8.132  |
| 4                     | Below market rates to priority industries  |

#### 8 1 2 2 86 Suppose the central bank charges only three per cent to a priority industry when the market rate is five per cent. The following recording is made in the SNA: Although the priority industry actually pays only three per cent as "interest", it is recorded as paying five per cent as interest but receiving two per cent from government as a subsidy on production; Government is recorded as paying two per cent to the priority industry as a subsidy on production and as receiving a current transfer of two per cent from the central bank (both these flows are notional); and The central bank actually receives three per cent from the priority industry but is recorded as receiving five per cent from the priority industry and paying two per cent to government in the form of a current transfer. 8 134 No financial account transactions are involved with this re-routing. <u> 2125</u> 8.136 3. **Distributed income of corporations**

#### **Dividends**

- 8.1378.132 Corporations obtain funds by issuing shares in their equity that entitle the holders to a proportion of both distributed profits and the residual value of the assets of the corporation in the event of its liquidation. Shareholders are the collective owners of a corporation.
- 8.1388.133 \_\_\_\_\_\_Dividends are a form of investment income to which shareholders become entitled as a result of placing funds at the disposal of corporations. Raising equity capital through the issue of shares is an alternative to borrowing as a way of raising funds. In contrast to loan capital, however, equity capital does not give rise to a liability that is fixed in monetary terms and it does not entitle the holders of shares of a corporation to a fixed or predetermined income.
- 8.134 Just as corporations are understood in the SNA to cover a set of institutional units engaged in production that may be described by different names such as private or public corporations, private or public companies, cooperatives and limited liability partnerships, so dividends must also be understood to cover all distributions of profits by corporations to their shareholders or owners, by whatever name they are called. Dividends may occasionally take the form of an issue of shares, but this excludes issues of bonus shares that simply represent a reclassification between own funds, reserves and undistributed profits.
- 8.1398.135 Share buybacks are not treated as the distribution of dividends. They are recorded as financial transactions, in these cases the purchases of own shares by the relevant corporations. For the treatment of dividends under reverse transactions, see paragraph 8.125.

#### Time of recording

8.1408.136 Although dividends represent a part of income that has been generated over a substantial period, often six or twelve months, dividends are not recorded in the SNA on a strict accrual basis. For a short period after a dividend is declared but before it is actually payable, shares may be sold "ex dividend" meaning that the dividend is still payable to the owner at the date the dividend was declared and not to the owner on the date payable. A share sold "ex dividend" is therefore worth less than one sold without this constraint. The time of recording of dividends in the SNA is the point at which the share price starts to be quoted on an ex dividend basis rather than at a price that includes the dividend. In some cases, such as when the equity is unlisted, the ex-dividend date may not be known, and the payment date can be used.

#### Super-dividends

8.1418.137 Although dividends are notionally paid out of the current period's operating surplus, corporations often smooth the payments of dividends, often paying out rather less than operating surplus but sometimes paying out a little more, especially when the operating surplus itself is very low. For practical reasons, no attempt is made in the SNA to align dividend payments with earnings except in one circumstance. The exception occurs when the

dividends are disproportionately large relative to the recent level of dividends and earnings. In order to determine whether the dividends are disproportionately large, it is helpful to introduce the concept of distributable income. Distributable income of a corporation is equal to entrepreneurial income, plus all current transfers receivable, less all current transfers payable and less the adjustment for the change in pension entitlements relating to the pension scheme of that corporation. From this it is possible to look at the ratio of dividends to distributable income over the recent past and assess the plausibility that the current level of dividends declared is in line with past practice, accepting some degree of smoothing from year to year. If the level of dividends declared is greatly in excess of this, the excess should be treated as a financial transaction, specifically the withdrawal of owners' equity from the corporation. There is more discussion on the case of publicly controlled corporations in chapter 30.

8.1428.138 This treatment applies to all dividends paid by corporations, whether incorporated or quasi-corporate, to their direct owners. However, an exception is made for foreign direct investment enterprises. For these enterprises, all dividends payable to direct investors are treated as earned income, including dividends sourced from accumulated reserves. Distributions beyond that would not be included in dividends. Such distributions could be funded, for example, from the sale of financial or non-financial assets of the corporation, and should be recorded as a withdrawal of equity in the financial account). (For a definition of foreign direct investment enterprises, see paragraph 8.143.)

#### 8.143

8.1448.139 As a consequence of the above difference between the treatment of super-dividends for domestically controlled corporations, as compared to the treatment of such dividends for foreign direct investment enterprises, the recording of super-dividends, and the recording of dividends more generally may come across as being inconsistent. However, this was considered acceptable, as the current guidance also restricts the recording of retained earnings to foreign direct investment enterprises, as discussed below. It may be useful, however, to separately identify payments from accumulated reserves to foreign direct investors for their analytical value and for reasons of comparability with domestic super-dividends. Countries are therefore encouraged to compile additional supplementary data on dividends distributed by foreign direct investment enterprises that are sourced from accumulated retained savings or other reserves.

#### Withdrawals of income from quasi-corporations

- 8.1458.140 Withdrawal of income from a quasi-corporation consists of that part of distributable income that the owner withdraws from the quasi-corporation. The income that the owners of quasi-corporations withdraw from them is analogous to the income withdrawn from corporations by paying out dividends to their shareholders. It is therefore treated as property income accruing to the owners of quasi-corporations. The withdrawal of income by the owners of quasi-corporations needs to be identified in order to be able to establish a full set of accounts for the entity and to treat it as an institutional unit separate from that of its owner.
- 8.1468.141 Withdrawals of income from a quasi-corporation do not include withdrawals of funds realized by the sale or disposal of the quasi-corporation's assets: for example, the sale of inventories, fixed assets, land or other non-produced assets. Such sales would be recorded as disposals in the capital account of the quasi-corporation and the transfer of the resulting funds would be recorded as a withdrawal from the equity of quasi-corporations in the financial account of the quasi-corporation and as a receivable by its owner(s). Similarly, funds withdrawn by liquidating large amounts of accumulated retained savings or other reserves of the quasi-corporation, including those built up out of provisions for consumption of fixed capitaldepreciation, are treated as withdrawals from equity. This situation corresponds to the treatment of super\_dividends payable by listed enterprises described immediately above.
- 8.1478.142 Conversely, any funds provided by the owner(s) of a quasi-corporation for the purpose of acquiring assets or reducing its liabilities should be treated as additions to its equity. Just as there cannot be a negative distribution from the distributable income of corporations in the form of negative dividends, it is not possible to have a negative distribution from the distributable income of quasi-corporations in the form of negative withdrawals. However, if the quasi- corporation is owned by government, and if it runs a persistent operating deficit as a matter of deliberate government economic and social policy, any regular transfers of funds into the enterprise made by government to cover its losses should be treated as subsidies, as explained in paragraph 7.105-8.111 (c) above.

#### Reinvested earnings on foreign direct investment

- 8.1488.143 As explained in chapter 2633, a foreign direct investment enterprise is a corporate or unincorporated enterprise in which a foreign investor has made a foreign direct investment. A foreign direct investment enterprise may be either:
  - m.a. The (unincorporated) branch of a non-resident corporate or unincorporated enterprise: this is treated as a quasi-corporation; or
  - **m**.<u>b.</u> A corporation in which at least one foreign investor (which may, or may not, be another corporation) owns sufficient shares to have an effective voice in its management.
- 8.1498.144 Actual distributions may be made out of the distributable income of foreign direct investment enterprises in the form of dividends or withdrawals of income from quasi-corporations. The payments made in these ways to foreign direct investors are recorded in the accounts of the SNA and in the balance of payments as international flows of investment income. However, both systems also require the retained earnings of a foreign direct investment enterprise to be treated as if they were distributed and remitted to foreign direct investors in proportion to their ownership of the equity of the enterprise and then reinvested by them by means of additions to equity in the financial account. The imputed remittance of these retained earnings is classified in the SNA as a form of distributed income that is separate from, and additional to, any actual payments of dividends or withdrawals of income from quasi-corporations.
- 8.1508.145 The rationale behind this treatment is that since a foreign direct investment enterprise is, by definition, subject to control, or influence, by a foreign direct investor or investors, the decision to retain some of its earnings within the enterprise must represent a deliberate investment decision on the part of the foreign direct investor(s). In practice, the great majority of direct investment enterprises are subsidiaries of foreign corporations or the unincorporated branches of foreign enterprises, which are completely controlled by their parent corporations or owners.
- 8.1518.146 Retained earnings of a corporation or quasi-corporation are equal to the distributable income less the dividends payable or withdrawal of income from the corporation or quasi-corporation respectively. If the foreign direct investment enterprise is wholly owned by a single foreign direct investor (for example, a branch of a foreign enterprise), the whole of the retained earnings is deemed to be remitted to that investor and then reinvested, in which case the saving of the enterprise must be zero. When a foreign direct investor owns only part of the equity of the direct investment enterprise, the amount that is deemed to be remitted to, and reinvested by, the foreign investor is proportional to the share of the equity owned.

#### Retained earnings of domestic enterprises

8.1528.147 <u>A suggestion hasRecommendations have</u> been made to extend the treatment of distributing retained earnings to the owners of other corporations, in particular of public corporations. Investigation of this suggestion is part of the research agenda. However, these recommendations have not yet been implemented in the sequence of economic accounts. Instead, countries are encouraged to compile supplementary information on an alternative recording of retained earnings for all corporations, by treating these retained earnings as being distributed and subsequently reinvested. A possible change in the guidance, after having gained more experience on this alternative recording, has been put on the 2025 SNA research agenda; see <u>Annex 5</u>.

#### 4. Investment income disbursements

#### Investment income attributed to insurance policyholders

8.1538.148 Investment income attributable to insurance policyholders should be divided between holders of nonlife and life policies.

8.1548.149 For non-life policies, the insurance corporation has a liability towards the policyholder of the amount of

the <u>actual premium</u> deposited with the corporation but not yet earned, the value of any claims due but not yet paid and a reserve for claims not yet notified or notified but not yet settled. Set against this liability, the insurance corporation holds technical reserves. The investment income on these reserves is treated as income attributable to the policyholders, then distributed to the policyholders in the allocation of <u>primarycarned</u> income account and paid back to the insurance corporation as a premium supplement in the <u>secondary distribution of</u> income <u>transfers</u> <u>other than social transfers in kind</u> account. The reserves concerned are those where the insurance corporation recognizes a corresponding liability to the policyholders.

- 8.1558.150 For an institutional unit operating a standardized guarantee scheme against fees, there may also be investment income earned on the reserves of the scheme and this should also be shown as being distributed to the units paying the fees (who may not be the same units which stand to benefit from the guarantees) and treated as supplementary fees in the secondary distribution of income transfers other than social transfers in kind account.
- 8.1568.151 For life insurance policies and annuities, the insurance corporations have liabilities towards the policyholders and annuitants equal to the present value of <u>futureexpected</u> claims. Set against these liabilities, the insurance corporations have funds belonging to the policyholders consisting of bonuses declared for with-profits policies as well as provisions for both policyholders and annuitants of the payment of future bonuses and other claims. These funds are invested in a range of financial assets and possibly non-financial assets such as property and land. The insurance enterprises receive investmentproperty income from the financial assets and land, and earn net operating surpluses from the renting or leasing of residential and other buildings. In addition they make holding gains or losses on the financial assets held. The bonuses declared to holders of life policies should be recorded as investment income receivable by the policyholders (resident and possibly non-resident households) and are treated as premium supplements paid by the policyholders to the insurance corporations. As with interest and dividends, the source of the investment income payable may not be investment income itself, but for the SNA, the decisive criterion for recording this as investment income is that of the recipient who regards these payments as the rewards for putting financial assets at the disposal of the insurance corporation.
- 8.1578.152 The investment income attributed to life insurance policyholders is recorded as payable by the insurance company and receivable by households in the allocation of primarycarned income account. This amount carries through automatically to saving without the need of an adjustment item as is the case for changes in pension entitlements. The <u>relevant</u> investment income is treated as premium supplements and so forms part of the <u>net</u> premiums less service charges, less claims, recorded in the financial account as payable by households and receivable by insurance corporations as changes in life insurance and annuities entitlements.
- 8.1588.153 Unlike the case of non-life insurance or pensions, the amount carries through to saving and is then recorded as a financial transaction, specifically an increase in the liabilities of life insurance corporations, in addition to new premiums less the service charge offset by claims payable.

#### Investment income payable on pension entitlements

- 8.1598.154 As explained in part 2 of chapter 1724, pension entitlements arise from one of two different types of pension schemes. These are defined contribution schemes (sometimes described as money purchase schemes) and defined benefit schemes.
- 8.1608.155 A defined contribution scheme is one where contributions by both employers and employees are invested on behalf of the employees as future pensioners. No other source of funding of pensions is available and no other use is made of the funds. The investment income payable on defined contribution entitlements is equal to the investment income on the funds plus any net operating surplus earned by renting land or buildings owned by the fund.
- 8.1618.156 A defined benefit scheme is one where the benefits payable are defined in terms of a formula. The formula often takes the form of a link to final salary (hence the alternative terminology final salary schemes) or average salary over some defined period. The formula may be expressed in many ways including, for example, a variation on a defined contribution scheme such as the growth in earnings of the funds or a minimum percentage growth.
- 8.157 Because the benefits are calculated according to a formula, it is possible to determine the level of entitlements necessary at any point in time to meet future obligations. The value of the entitlements is the present value of all

future payments, calculated using actuarial assumptions about life lengths and economic assumptions about the interest or discount rate. The present value of the entitlements existing at the start of the year increases because the date when the entitlements become payable has become one year nearer. The amount of the increase is not affected by whether the pension scheme actually has sufficient funds to meet all the obligations nor by the type of increase in the funds, whether it is investment income or holding gains, for example.

8.1628.158 For defined benefit schemes, the investment income payable on pension entitlements is calculated as the unwinding of the pension entitlements using the discount rate used to calculate these entitlements. The source of this investment income, be it interest, dividends or holding gains, is irrelevant for determining the investment income payable on pension entitlements.

# Imputed investment income attributable to the surplus/shortfall in defined benefit pension funds

8.159 In the case where a pension sponsor (for example, an employer) is responsible for meeting the liabilities of a defined benefit pension scheme in case of any shortfall, this sponsor is known as a "pension manager". The shortfall should be recorded as a claim of the pension fund on the pension manager, or a negative claim in case of a surplus. The imputed investment income on this claim is equal to the shortfall (or excess) in property income payable by the pension fund (i.e., the investment income payable on defined benefit pension entitlements (see paragraph 8.158) minus the investment income receivable on the assets accumulated by the pension fund. The income flow is recorded as a (negative) payable and a (negative) receivable between the pension manager and the pension fund.

#### Investment income attributed to investment fund shareholders

- 8.1638.160 Investment income attributed to holders of shares or units in investment funds (including mutual funds and unit trusts) is shown as two separate items. The first of these is the dividends distributed to investment fund shareholders. The second is retained earnings attributed to investment fund shareholders.
- 8.161 The dividend component is recorded in exactly the same manner as dividends for individual corporations, as described above. The retained earnings component is recorded using the same principles as those described for foreign direct investment enterprises but is calculated excluding any reinvested earnings on foreign direct investment. That is to say, the remaining retained earnings are distributed to the shareholders (leaving the investment fund with no saving) and are reinjected into the fund by the shareholders in a transaction recorded in the financial account.
- 8.1648.162 The investment income payable to investment fund shareholders is recorded without any deduction of costs incurred by the fund in its day-to-day operations. These financial services, including those paid by the investment fund on behalf of the shareholders, are recorded as being provided directly by the original service providers to the shareholders. This may also include implicit financial services on loans and deposits.

#### 5. Rent

#### **Rent distinguished from rentals**

8.1658.163 The distinction between rent and the rentals receivable and payable under operating leases is basic to the SNA as rent is a form of property income and rentals are treated as sales or purchases of services. Rentals are payments made under an operating lease to use a fixed asset belonging to another unit where that owner has a productive activity in which the fixed assets are maintained, replaced as necessary and made available on demand to lessees. Rent is a payment made under a resource-lease for the use of a non-produced natural resource or another non-produced non-financial asset. Not only is the type of asset leased different as between rent and rentals, so is the nature of the lease. The distinction between different types of leases is explained in part 5 of chapter 1727.

#### **Rent**-on natural resources

8.1668.164 \_\_\_\_\_\_Rent is the income receivable by the owner of a <u>non-produced</u> natural resource <u>or another non-produced</u> non-financial asset (the lessor or landlord) for putting the natural resource <u>or another non-produced non-financial</u> asset at the disposal of another institutional unit (a lessee or tenant) for use of the natural resource <u>or another non-produced non-financial asset</u> in production. TwoThree particular cases of resource-rent are considered;, rent on land, and rent on <u>mineral and energysubsoil</u> resources, and rent on <u>non-produced non-financial assets other than natural resources</u>. Resource rRent on <u>other non-produced natural resources other than land and mineral and energy resources</u> follows the pattern laid out by these first two instances.

#### **Rent on land**

- 8.1678.165 Rent on land is recorded as accruing continuously to the landowner throughout the period of the contract agreed between the landowner and the tenant. The rent recorded for a particular accounting period is equal to the value of the accumulated rent payable over that period of time, as distinct from the amount of rent due to be paid during that period or the rent actually paid.
- 8.1688.166 Rent may be paid in cash or in kind. Under share-cropping or similar schemes, the value of the rent payable is not fixed in advance in monetary terms and is measured by the value at basic prices of the crops that the tenants are obliged to provide to the landowner under the contract between them. Rent on land also includes the rent payable to the owners of inland waters and rivers for the right to exploit such waters for recreational or other purposes, including fishing.
- 8.1698.167 A landowner may be liable to pay land taxes or incur certain maintenance expenses solely as a consequence of owning the land. By convention, such taxes or expenses are treated as payable by the tenant who is deemed to deduct them from the rent that he or she would otherwise be obliged to pay to the landowner. Rent reduced in this way by taxes or other expenses for which the landowner is liable is described as "after-tax rent". By adopting the convention that the tenant pays only the after-tax rent, the taxes or expenses are recorded in the production or generation of <u>earned</u> income accounts of the tenant. This treatment does not change the income of the tenant. The convention avoids the necessity to create a notional enterprise for the landowner as the lessor.
- 8.1708.168 Rentals payable on buildings or other structures are treated as purchases of services. In practice, however, a single payment may cover both rent and rentals when an institutional unit rents land that consists of land improvements and land in its natural state and may include any buildings situated on it in a single contract, or lease, in which the two kinds of payments are not differentiated from each other. For example, a farmer may rent a farmhouse, farm buildings, cultivated and grazing farmland in a contract in which only a single payment is required to cover all four. If there is no objective basis on which to split the payment between rent on land and rental on the buildings, it is recommended to treat the whole amount as rent when the value of the grazing land is believed to exceed the value of the buildings and cultivated land, and as a rental otherwise.

#### Rent on mineral and energy resourcessubsoil assets

- 8.1718.169 The ownership of mineral and energy resourcessubsoil assets in the form of deposits of minerals or fossil fuels (coal, oil or natural gas) depends upon the way in which property rights are defined by law and also on international agreements in the case of deposits below international waters. In some cases the assets may belong to the owner of the ground below which the deposits are located but in other cases they may belong to a local or central government unit.
- 8.170 The owners of the assets, whether private or government units, may grant leases to other institutional units permitting them to extract such deposits over a specified period of time in return for the payment of rent. These payments are often described as royalties, but they are essentially rent that accrues to owners of the assets in return for putting them at the disposal of other institutional units for specified periods of time and are treated as such in the SNA. The rent may take the form of periodic payments of fixed amounts, irrespective of the rate of extraction or, more commonly, they may be a function of the quantity or volume of the asset extracted. Enterprises engaged in exploration may make payments to the owners of surface land in exchange for the right to make test drillings or investigate by other means the existence and location of subsoil resources. Such payments are also to be treated as rent even though no extraction is taking place.
- 8.171 Any payments made by the user/extractor of a non-produced natural resource to the owner of the natural resource,

which are linked to the use/extraction of that resource, in particular to the quantity and/or value of that resource, should be recorded as rent. These would include, for example, royalties, sur-taxes, and permits. However, payments that are paid by the user/extractor on the same basis as other corporations who are not users/extractors of natural resources (e.g., standard rate corporation taxes, dividends, payments for services) should not be recorded as rent.

#### Rent on other non-produced non-financial assets

8.172 Payments of rent may also refer to payments for getting the rights to use other non-produced non-financial assets. An example concerns payments for getting the rights to use marketing assets. Another example, related to the digitalization of the economy, concerns payments to, for example, households for giving explicit consent to monitor their behavioural patterns on the internet, and thereby providing the relevant enterprises the possibility to collect personal data.

### Chapter 9: Transfer income accounts (revised title)

#### (OLD Chapter 8: The redistribution of income accounts)

#### A. Introduction

- 9.1 This chapter describes two accounts that show how income is redistributed between institutional units by means of the payments and receipts of current transfers. This redistribution represents the second stage in the process of income distribution as shown in the accounts of the SNA. The two accounts are the secondary distribution of income transfers other than social transfers in kind account and the redistribution of incomesocial transfers in kind account.
- 9.2 The secondary distribution of income transfers other than social transfers in kind account shows how the balance of primaryearned incomes of an institutional unit or sector is transformed into its disposable income by the receipt and payment of current transfers excluding social transfers in kind.
- 9.3 The redistribution of incomesocial transfers in kind account takes the process of income redistribution one stage further. It shows how the disposable incomes of households, non-profit institutions serving households (NPISHs) and government units are transformed into their adjusted disposable incomes adjusted for social transfers in kind, by the receipt and payment of social transfers in kind. Non-financial and financial corporations are not involved in this process.
- 9.4 Much of this chapter is concerned with the detailed definition, description and classification of the various types of current transfers recorded in the secondary distribution of income transfers other than social transfers in kind account and the redistribution of income social transfers in kind accounts. As part of this description, there is discussion of the composition of social insurance schemes and their role as the recipients of social contributions and dispensers of social benefits.
- 9.5 Understanding the difference between four related concepts is crucial to an appreciation of the two accounts described in this chapter. These terms are social insurance, social security, social assistance and social transfers in kind. These are explained very briefly below and in greater detail in later parts of the chapter.
- 9.6 Social insurance schemes are schemes in which social contributions are paid by employees, <u>self-employed</u> or others, or by employers on behalf of their employees, in order to secure entitlement to social insurance benefits, in the current or subsequent periods, for the employees, <u>self-employed</u> or other contributors, their dependants or survivors. The social benefits payable by social insurance schemes are of two kinds, pensions and other benefits such as medical, education, housing or unemployment benefits. Pensions are always paid in cash; non-pension benefits may be payable in cash or in kind.
- 9.7 Two main types of social insurance schemes may be distinguished:
  - a. The first consists of social security schemes covering the entire community, or large sections of the community, that are imposed, controlled and financed by government units. Pensions payable under these schemes may or may not be related to levels of salary of the beneficiary or history of employment. Non- pension benefits are less frequently linked to salary levels.
  - b. The second type consists of other <u>employment relatedsocial insurance</u> schemes. These schemes <u>mainly</u> derive from an employer-employee relationship in the provision of pension entitlement that is part of the conditions of employment and where responsibility for the provision of benefits does not devolve to general government under social security provisions. <u>Such schemes may also relate to employer-independent schemes</u>, provided to, for example, certain groups of self-employed <u>persons</u>.
- 9.8 Social assistance benefits in cash are current transfers payable to households by government units or NPISHs to meet the same needs as social insurance benefits but which are not made under a social insurance scheme requiring participation usually by means of social contributions.
- 9.9 Social transfers in kind consist of social security benefits payable in kind and social assistance benefits payable in kind.

# 1. The secondary distribution of income transfers other than social transfers in kind account

- 9.10 Apart from the balance of primary earned incomes, the balancing item carried forward from the primary distribution of earned income accounts, and disposable income, the balancing item on the secondary distribution of income transfers other than social transfers in kind account, all the entries in the secondary distribution of income transfers other than social transfers in kind account consist of current transfers. A transfer is a transaction in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as a direct counterpart. Transfers are separated into current transfers and capital transfers. Capital transfers are unrequited transfers where either the party making the transfer realizes the funds involved by disposing of an asset (other than cash or inventories), relinquishing a financial claim (other than accounts receivable) or the party receiving the transfer is obliged to acquire an asset (other than cash) or both conditions are met. Capital transfers are often large and irregular but neither of these are necessary conditions for a transfer to be considered a capital rather than a current transfer. Other transfers are described as current. A current transfer is a transaction in which one institutional unit provides a good or service to another unit without receiving from the latter any good or service directly in return as counterpart and does not oblige one or both parties to acquire, or dispose of, an asset. The concept of a transfer is explained in more detail in section B below.
- 9.11 Table 8.19.1 shows the concise form of the secondary distribution of income transfers other than social transfers in kind account identifying the main kinds of transfers. Current transfers may take place between resident and non-resident units as well as between resident institutional units.
- 9.12 The transfers payable by an institutional unit or sector are recorded on the left-hand side of the account under uses<u>expenditures</u>. For example, in table <u>8.19.1</u>, <u>current</u> taxes on income, wealth etc. payable by the household sector are recorded at the intersection of the row for this item and the <u>uses</u><u>expenditures</u> column for the household sector. The transfers receivable by an institutional unit or sector are recorded on the right-hand side of the account under <u>resources</u><u>revenues</u>. For example, social benefits other than social transfers in kind receivable by the household sector are recorded at the intersection of the row for this item and the <u>resources</u> column for the household sector.
- 9.13 In accordance with the general accounting rules of the SNA, the entries in the account, apart from the balancing items, refer to amounts payable and receivable. These may not necessarily coincide with the amounts actually paid or received in the same accounting period. Any amounts payable and not paid or receivable and not receivable are recorded in the financial account, under <u>other</u> accounts receivable or payable.
- 9.14 Three main kinds of current transfers are distinguished in the secondary distribution of income transfers other than social transfers in kind account:
  - a. Current taxes on income, wealth, etc.;
  - b. Social contributions and benefits;
  - c. Other current transfers.

Their general nature and the purposes they serve are summarized in the following paragraphs.

#### Current taxes on income, wealth, etc.

9.15 Current taxes on income, wealth, etc. consist mainly of taxes on the incomes of households or profits of corporations and of taxes on wealth that are payable regularly every tax period (as distinct from capital taxes levied infrequently). In table 8.19.1, current taxes on income, wealth, etc. receivable appear under resourcesrevenues for the general government sector and possibly the rest of the world, while taxes payable appear under under uses expenditures for the household and non-financial and financial corporation sectors, and possibly for the non-profit institutions serving households (NPISHs) sector and the rest of the world.
## Social contributions and benefits

- 9.16 Social contributions are actual or imputed paymentscontributions payable to social insurance schemes to make provision for social insurance benefits to be paid. Social contributions may be made by employers on behalf of their employees. As such they form part of compensationremuneration of employees and are included in the balance of primarycarned income of households. In the secondary distribution of income transfers other than social transfers in kind account, these contributions together with payments made by households themselves in their capacity as employed, self-employed or unemployed persons, are recorded as payable by households and receivable by the units responsible for the social insurance schemes. Social contributions may be receivable by a unit in any sector in their capacity as unincorporated enterprises they run a social insurance scheme for their employees) or by a third-party unit designated as the institution responsible for the general government sector, including social security funds, and insurance corporations and pension funds in the financial corporations sector. Social contributions are recorded under usesexpenditures only for households, either resident or non-resident.
- 9.17 Social benefits are current transfers received by households intended to provide for the needs that arise from certain events or circumstances, for example, sickness, unemployment, retirement, housing, education or family circumstances. Social benefits may be provided under social insurance schemes or by social assistance.

 Table 8.19.1: The secondary distribution of income transfers other than social transfers

 in kind account - concise form - uses

 Table 8.19.1 (cont):\_The secondary distribution of income transfers other than social transfers in kind account - concise form - resources revenues

Table 8.29.2 (cont):\_The redistribution of incomesocial transfers in kind account - resourcesrevenues

9.18 Social insurance benefits in kind provided by employers are treated as if they were paid in cash and included in the secondary distribution of income transfers other than social transfers in kind account. If this were not so, the purchase of the goods and services concerned would have to be shown as incurred by employers but these products are not intermediate consumption and enterprises cannot have final consumption. However, social insurance benefits in kind provided under general social security schemes and all social assistance benefits in kind constitute social transfers in kind are therefore included only in the redistribution of incomesocial transfers in kind account. In table 8.19.1, social benefits, except social transfers in kind, are recorded under resources for the household sector, or the rest of the world, if it concerns non-resident households, and may, in principle, be recorded under uses expenditures for any sector operating a social insurance scheme in its capacity as an employer.

## **Other current transfers**

9.19 Other current transfers consist of all current transfers between resident institutional units, or between resident and non-resident units, other than current taxes on income, wealth, etc., social contributions and benefits, and

social <u>benefitstransfers</u> in kind. The group includes <u>net-premiums less service charges</u> and claims under nonlife insurance policies, current transfers between different kinds of government units, usually at different levels of government, and also between general government and foreign governments, as well as current transfers to and from NPISHs and between resident and non-resident households.

## 2. Disposable income

9.20 Disposable income is the balancing item in the secondary distribution of income transfers other than social transfers in kind account. It is derived from the balance of primaryearned incomes of an institutional unit or sector by:

- a. Adding all current transfers, except social transfers in kind, receivable by that unit or sector; and
- b. Subtracting all current transfers, except social transfers in kind, payable by that unit or sector.
- 9.21 Disposable income, like the balance of primaryearned incomes, may be recorded gross or net of consumption of fixed capitaldepreciation and depletion. As elsewhere, the net measure is conceptually preferable but it may be necessary to record the balancing items gross because of the difficulty of measuring consumption of fixed capitaldepreciation and depletion, even though consumption of fixed capital is adepreciation and depletion are costs of production and not ato be considered as components of income. The following discussion refers to the net concept of disposable income.
- 9.22 Disposable income is not all available in cash. The inclusion in the accounts of non-monetary transactions associated with production for own consumption or barter, or with remuneration in kind, means that households have no choice but to consume certain kinds of goods and services for which the values of the corresponding expenditures out of disposable income are imputed. Although social transfers in kind from government units or NPISHs to households are recorded separately in the redistribution of incomesocial transfers in kind account, other transfers in kind are recorded in the secondary distribution of income transfers other than social transfers in kind account together with transfers in cash. They may include international transfers of food, clothing, medicines, etc. to relieve the effects of famine or other hardships caused by natural disasters or wars. The recipients of transfers in kind, other than social transfers in kind, are, by convention, recorded as making imputed consumption expenditures on the goods or services in question as if the transfers were received in cash.
- 9.23 Households also receive several kinds of imputed property income flows that are not available to the household to spend as they wish. These include investment income on insurance, annuity and pension entitlements as well as income from investment fund shares or units. Income flows related to investment funds and to life insurance and annuities that are not treated as social insurance do carry through to disposable income even though they automatically go to increase the assets held by households in the financial institutions managing these funds and policies and the household therefore has no discretion about spending these amounts. Income flows that are related to non-life insurance and social insurance schemes are recorded in the secondary distribution of income transfers other than social transfer in kind account as if repaid to the non-life insurance corporation or social insurance schemes and are not included in disposable income except for the part already committed to meet the service charge associated with the insurance policy or social insurance scheme.
- 9.24 For households, disposable income includes the excess of SNA interest over bank interest on deposits by households and the excess of bank interest over SNA interest on loans to households. These differences are also pre\_committed to meeting the indirectimplicit service charges levied by financial institutions on loans and deposits (FISIM). (For other institutional sectors excluding financial intermediaries, FISIMthese implicit service charges are is treated as part of intermediate consumption, and thus so is excluded from income measures.)

## Links with economic theoretical concepts of income

9.25 Disposable income as measured in the SNA can be compared with the concept of income as it is generally

understood in economics. From a theoretical point of view, income is often defined as the maximum amount that a household, or other unit, can consume without reducing its real net worth. However, the real net worth of a unit may be changed as a result of the receipt or payment of capital transfers and as a result of real holding gains or losses that accrue on its assets or liabilities. It may also be changed by events such as natural disasters that change the volume of assets. Capital transfers, real holding gains or losses and other changes in the volume of assets due to the effect of events such as natural disasters are specifically excluded from disposable income as measured here. (Capital transfers are recorded in the capital account of the SNA, while other changes in the volume of assets (and liabilities) and real holding gains or losses are recorded in the other changes in assets and liabilities accounts.) Disposable income can be interpreted in a narrow sense as the maximum amount that a household or other unit can afford to spend on consumption goods or services during the accounting period without having to finance its expenditures by reducing its cash, by disposing of other financial or non-financial assets or by increasing its liabilities. This concept is equivalent to the economic theoretical concept only when the net worth at the beginning of the period is not changed by capital transfers, other changes in the volume of assets and liabilities or real holding gains or losses recorded during the period.

#### National disposable income

- 9.26 Most current transfers, whether in cash or in kind, can take place between resident and non-resident institutional units as well as between resident units. *Gross or net national disposable income may be derived from gross or net national income by:* 
  - a. Adding all current transfers in cash or in kind receivable by resident institutional units from nonresident units; and
  - b. Subtracting all current transfers in cash or in kind payable by resident institutional units to nonresident units.
- 9.27 Among the more important current transfers taking place between residents and non-residents are the following:
  - a. Social contributions or benefits;
  - b. Current taxes on income or wealth;
  - c. Non-life insurance premiums and claims;
  - d. Current international cooperation; that is, current transfers between different governments, such as transfers under aid programmes intended to sustain the consumption levels of populations affected by war or natural disasters such as droughts, floods or earthquakes;
  - e. Remittances between resident and non-resident households.
- 9.28 The net disposable income of a country is a better measure than its net national income (NNI) for purposes of analysing its consumption possibilities.

#### 3. The redistribution of incomesocial transfers in kind account

- 9.29 Apart from the balancing items, disposable income and adjusted-disposable income\_adjusted for social transfers in kind, all the entries in the redistribution of incomesocial transfers in kind account consist of social transfers in kind. Social transfers in kind consist only of social benefits in kind and transfers of individual non-market goods and services provided to resident households by government units, including social security funds, and NPISHs.
- 9.30 As social transfers in kind only take place between government units, NPISHs and households, the redistribution of incomesocial transfers in kind account is not needed for the non-financial and financial corporate sectors.
- 9.31 The social transfers in kind payable by government units or NPISHs are recorded on the left-hand side of

their redistribution of incomesocial transfers in kind accounts under usesexpenditures. For example, in table 8.29.2, the value of individual non-market goods or services provided free, or at prices that are not economically significant, by government units is recorded at the intersection of the row for this item and the usesexpenditures column for the general government sector. Social transfers receivable by the household sector are recorded on the right-hand side of their account under resourcesrevenues. As only the household sector receives social transfers in kind, the resourcesrevenues columns for the other four sectors are empty.

## 4. Adjusted dDisposable income adjusted for social transfers in kind

- 9.32 <u>Adjusted dD</u>isposable income <u>adjusted for social transfers in kind</u> is the balancing item in the <del>redistribution</del> of incomesocial transfers</del> in kind account. It is derived from the disposable income of an institutional unit or sector by:
  - a. Adding the value of the social transfers in kind receivable by that unit or sector; and
  - b. Subtracting the value of the social transfers in kind payable by that unit or sector.

Adjusted dD isposable income adjusted for social transfers in kind, like disposable income, may be recorded gross or net of consumption of fixed capitaldepreciation and depletion. Because social transfers in kind are payable only by government units and NPISHs and only receivable by households, it follows that the adjusted disposable incomes adjusted for social transfers in kind of the general government and NPISHs sectors are lower than their disposable incomes, while the adjusted-disposable income adjusted for social transfers in kind of the household sector exceeds its disposable income. In both cases, the value of the difference is equal to the total value of social transfers in kind, so adjusted disposable income adjusted for social transfers in kind for the total economy is the same as its disposable income.

9.33 The adjusted disposable income adjusted for social transfers in kind of a household can be interpreted as measuring the maximum value of the actual final consumption goods or services (see chapter 10) that it can afford to consume in the current period without having to reduce its cash, dispose of other assets or increase its liabilities for the purpose. Its consumption possibilities are determined not only by the maximum amount it can afford to spend on consumption goods and services (its disposable income), but also by the value of the consumption goods and services from government units or NPISHs as social transfers in kind. Conversely, the adjusted disposable income adjusted for social transfers in kind of general government can be interpreted as measuring the maximum value of the collective services that it can afford to provide to the community without having to dispose of assets or increase its liabilities.

## **B.** Current transfers

- 9.34 As defined above, a transfer is a transaction in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as a direct counterpart. A unit making a transfer receives no specific quantifiable benefit in return that can be recorded as part of the same transaction. Nevertheless, the payment of a social insurance contribution or non-life insurance premium may entitle the unit making the payment to some contingent future benefits. For example, a household may be entitled to receive some social benefit should certain events occur or certain conditions prevail. In addition, all resident households benefit from services provided by government units. However, the fact that a transfer has been made does not automatically mean a benefit will be received by the unit making the transfer nor, if it does, that the amount of the benefit is commensurate with the amount of the transfer. It is for this reason that the SNA holds there is no direct counterpart to the transfer.
- 9.35 The process of government collecting taxes and using the revenue generated to pay for the provision of government services and the process by which an insurance corporation accepts premiums for non-life insurance in a year from many policyholders and pays claims to a relatively small number of them are essentially distributive in nature. Within a single accounting period, an institutional unit (the government or the insurance corporation) receives and disburses funds according to a given set of procedures but the events giving rise to payments to and disbursements by these units are not directly related.

- 9.36 In contrast, payments of premiums on individual life insurance policies taken out by members of households on their own initiative outside any social insurance scheme, and the corresponding benefits, are not transfers. For life insurance, the insurance corporation manages funds on behalf of named households. There is relatively little redistribution among the various households holding similar policies and each household is able to predict with a reasonable degree of certainty what they will receive and when. Such policies therefore constitute the acquisition and disposal of financial assets and are recorded as such in the financial accounts of the SNA as components of the change in the life insurance and annuities entitlements.
- 9.37 It could be argued that pension schemes function in a manner similar to life insurance schemes and that they should be treated as savings schemes of individual households. There are three reasons in the SNA why the designation of social insurance scheme is used to cover employment-related pensions, a designation that brings with it the recording of contributions and benefits as transfers. The first is that social security is essentially a process of redistribution across a wide section of the population with many individuals contributing so that those in need may benefit. A second reason is that pensions provide a regular and stable source of funding post-retirement. In other economic applications, such as surveys of income and expenditure, pensions are regarded as income rather than dis-saving. The third reason for treating pensions as income rather than dis-saving is that they frequently cease when the pensioner (or survivor) dies. In this respect, pension entitlements are distinct from other financial assets that are unaffected by the death of the owner.

#### 1. The distinction between current and capital transfers

- 9.38 Transfers may be either current or capital. In order to distinguish one from the other, it is preferable to focus on the special characteristics of capital transfers. As noted above, a capital transfer is one that is linked to the acquisition or disposal of an asset, either financial or non-financial. Institutional units must be capable of distinguishing capital from current transfers and must be presumed to treat capital transferred during the course of the accounting period in the same way as capital held throughout the period. For example, a prudent household will not treat a capital transfer that happens to be received during a particular period as being wholly available for final consumption within the same accounting period. Conversely, a household making a capital transfer (for example, the payment of an inheritance tax) will not plan to reduce its final consumption by the whole amount of the transfer. Unless institutional units are capable of distinguishing capital from current transfers and react differently to them, it becomes impossible to measure income, both in theory and in practice.
- 9.39 Current transfers consist of all transfers that are not transfers of capital. They directly affect the level of disposable income and should influence the consumption of goods or services. In practice, capital transfers tend to be large, infrequent and irregular, whereas current transfers tend to be comparatively small and are often made frequently and regularly. However, while size, frequency and regularity help to distinguish current from capital transfers they do not provide satisfactory criteria for defining the two types of transfer. For example, social security benefits in the form of maternity or death benefits are essentially current grants designed to cover the increased consumption expenditures occasioned by births or deaths, even though the events themselves are obviously infrequent.
- 9.40 It is possible that some cash transfers may be regarded as capital by one party to the transaction and as current by the other. For example, the payment of an inheritance tax may be regarded as a capital transfer by the household but as a current transfer by government. Similarly, a large country that regularly makes investment grants to a number of smaller countries may regard the outlays as current, even though they may be specifically intended to finance the acquisition of assets. In an integrated system of accounts such as the SNA, however, it is not feasible to have the same transaction classified differently by the two parties. Accordingly, a transfer should be classified as capital for both parties if it clearly involves a transfer of an asset for one of the parties.

## 2. The recording of transfers

9.41 Although no good, service or asset is received in return as a direct counterpart to a transfer, the recording of a transfer nevertheless must give rise to four entries in the accounts. The ways in which transfers (whether in cash or in kind) and social transfers in kind are recorded are shown below in the following examples.

## **Transfers in cash**

9.42 The first example is of a current transfer in cash, such as the payment of a social security benefit in cash. The transfer is recorded as payable by the social security fund and receivable by the household in the secondary distribution of income transfers other than social transfers in kind account. (If the transfer were a capital transfer, it would be recorded in the capital account instead of the secondary distribution of income transfers in kind account.) The consequence of the transfer is a reduction in the financial assets (or increase in the financial liabilities) of the social security scheme and an increase in the financial assets of the household. The eventual use of the cash by the household is recorded subsequently as a separate transaction.

|                   | Hous            | ehold              | Social security fund |                    |  |
|-------------------|-----------------|--------------------|----------------------|--------------------|--|
|                   |                 | ResourcesReven     |                      | Resources Reven    |  |
|                   | UsesExpenditu   | ues / Changes      | Uses Expenditu       | ues / Changes      |  |
|                   | res /           | in liabilities and | res/                 | in liabilities and |  |
|                   | Changes in      | net worth          | Changes in           | net worth          |  |
|                   | assets          |                    | assets               |                    |  |
| Secondary         |                 | <b>-</b> /         | - <i>'</i>           |                    |  |
| Distribution of   |                 | I ranster          | I ranster            |                    |  |
| income transfers  |                 | receivable         | Payable              |                    |  |
| other than social |                 |                    |                      |                    |  |
| transfers in kind |                 |                    |                      |                    |  |
| account           |                 |                    |                      |                    |  |
|                   | Increase in     | Increase in        | Decrease in          |                    |  |
| Financial account | financial asset | financial asset    | financial asset      |                    |  |

## Provisions of goods and services by enterprises

9.43 The next example is of an enterprise producing medicines that donates some of its output free of charge to a charity (NPISH). As mentioned above<u>In this case</u>, two transactions should be recorded, each with four entries. In this example, tThe first is the provision of a transfer by the enterprise to the NPISH, the second is the production of the medicine and the subsequent purchaseconsumption of the medicine by the NPISH-using the funds made available by the transfer. Both transactions <u>do not involve anyimply two</u> entries in the financial account and, if both transactions are completed in the same accounting period, these changes in financial assets will cancel each other for both units involved, leaving only four entries apparent in the accounts. However, if there is a difference in the timing between when the transfer is recorded and when the delivery of the medicine takes place, it will be necessary to include the entries in the financial accounts, specifically under other accounts receivable or payable.

|   | NP  | ISH   | Enterprise   |  |  |
|---|---|---|--|--|--|
|   | UsesExpenditu<br>res/<br>Changes in<br>assets | ResourcesReven<br>ues/ Changes<br>in liabilities and<br>net worth | Uses <u>Expenditu</u><br>res /<br>Changes in<br>assets | ResourcesReven<br>ues / Changes<br>in liabilities and<br>net worth |  |
| Secondary<br>Distribution of<br>income transfers<br>other than social<br>transfers in kind<br>account |   | Transfer<br>receivable  | Transfer<br>Payable                                    |  |  |
| Financial account   |   | Increase in<br>financial asset                                    | Decrease in<br>financial asset                         |  |  |
| Production<br>account   |   |   |  | Output/sale of<br>medicine   |  |
| Use of<br>disposable<br>income<br>account   | Expenditure on<br>medicine                    |   |  |  |  |
| Financial account   | Decrease in<br>financial asset                |   |  | Increase in<br>financial asset                                     |  |

9.44 A more complex variant occurs if enterprise A purchases the medicine from enterprise B and then gives it to an NPISH. Although A actually purchases the goods from B, they do not form part of A's intermediate consumption or capital formation. Nor can they be recorded as final consumption by A, since it is an enterprise. As before, a cash transfer is shown for the purchase of medicine by enterprise A from enterprise B. As this medicine is subsequently provided for free to the NPISH, the counterpart entry of the decrease in assets for enterprise A is as a transfer payable imputed from enterprise A to the NPISH and an imputed

purchase by the NPISH. If both transactions occur in the same accounting period, the two entries of the financial account for the NPISH will cancel, leaving only six of the eight entries apparent in the accounts. Again, if there is a difference in the timing between when the transfer is recorded and when the delivery of the medicine takes place, it will be necessary to include the entries in the financial accounts, specifically under other accounts receivable or payable.

|   | NPISH   |  | Enterprise A   |   | Enterprise B  |  |
|---|---|--|--|---|---|--|
|   | Uses <u>Expen</u><br>ditures/<br>Changes in<br>assets | Resources<br>Revenues /<br>Changes in<br>liabilities<br>and net<br>worth | Uses <u>Expen</u><br>ditures /<br>Changes in<br>assets | Resources<br>Revenues/<br>Changes in<br>liabilities<br>and net<br>worth | Uses <u>Expen</u><br>ditures/<br>Changes in<br>assets | Resources<br>Revenues /<br>Changes in<br>liabilities<br>and net<br>worth |
| Secondary<br>Distribution of<br>income transfers<br>other than social<br>transfers in kind<br>account |   | Transfer<br>receivable   | Transfer<br>Payable                                    |   |   |  |
| Financial account   |   | Increase in<br>financial<br>asset  | Decrease in<br>financial<br>asset                      |   |   |  |
| Production<br>account   |   |  |  |   |   | Output/sale<br>of medicine   |
| Use of<br>disposable<br>income<br>account   | Expenditure<br>on medicine                            |  |  |   |   |  |
| Financial account   | Decrease in<br>financial<br>asset                     |  |  |   | Increase in<br>financial<br>asset                     | Increase in<br>financial<br>asset  |

## Social transfers in kind

9.45 In the SNA, final consumption expenditure is incurred only by general government, NPISHs, the central bank and households. All consumption expenditure by households is incurred on their own behalf. Consumption expenditure by general government, on the other hand, is either for the benefit of the community at large (collective consumption) or for the benefit of individual households. Consumption expenditure by the central bank is considered to be produced for the benefit of the community at large, while consumption expenditure by the central bank is considered to be produced for the benefit of the community at large, while consumption expenditure by NPISHs is always treated as the provision of services for the benefit of individual households. This distinction between collective and individual consumption expenditures by general government and NPISHs on behalf of households (their individual consumption expenditures) are undertaken for the purpose of making social transfers in kind. They cover the non-market output of both general government and NPISHs delivered to households free, or at prices that are not economically significant, as well as goods and services bought from market producers and provided to households free or at prices that are not economically significant.

|   | General government                                     |  |  |  |
|---|--|--|--|--|
|   | UsesExpenditu<br>res./<br>Changes in<br>assets         | Resources <u>Reven</u><br>ues / Changes<br>in liabilities and<br>net worth |  |  |
| Production<br>account                     |  | Output of<br>education<br>services   |  |  |
| Use of<br>disposable<br>income<br>account | Consumption<br>expenditure of<br>education<br>services |  |  |  |

9.46 The next example is of an education service provided to a household by a non-market producer ownedcontrolled by a government unit. The provision of the service is actually recorded twice in the accounts of the SNA. First, it is recorded in the traditional way in national accounting as output by government in the production account and final consumption expenditure of government in the use of disposable income

account. As this transaction is recorded as an internal transaction within government, it leads to only two, not four entries, in the accounts, both being recorded under general government.

9.47 This method of recording does not portray the fact that in reality the education service <u>(an individual</u> <u>consumption expenditure of government)</u> is actually provided to a household as a social transfer in kind paid for by government.

|   | Hous   | ehold   | General government                            |  |  |
|---|--|---|---|--|--|
|   | Uses <u>Expenditu</u><br>res./<br>Changes in<br>assets | ResourcesReven<br>ues/ Changes<br>in liabilities and<br>net worth | UsesExpenditu<br>res/<br>Changes in<br>assets | ResourcesReven<br>ues / Changes<br>in liabilities and<br>net worth |  |
| Production<br>account<br>Redistribution of<br>incomeSocial<br>transfers in kind<br>account<br>Use of adjusted | Actual   | Social transfers<br>in kind<br>receivable                         | Social transfer in kind payable               | Output of<br>education<br>services                                 |  |
| disposable<br>income <u>adjusted</u><br>for social transfers<br>in kind account                               | consumption of<br>education<br>services                |   |   |  |  |

- 9.48 For a social transfer in kind, the consumption of the education service is recorded as actual consumption by households in the use of adjusted disposable income adjusted for social transfers in kind account. The resourcesrevenues for this are provided via social transfers in kind from government to households in the redistribution of incomesocial transfers in kind account. (The distinction between actual consumption and consumption expenditure for households, general government and NPISHs is further elaborated in chapter 910.)
- 9.49 The final example is a more complex case involving two interrelated transactions in which a government unit, or NPISH, purchases a good or service, such as a medicine, from a market producer and then provides it free to a household.
- 9.50 Under the normal recording in the SNA, four entries would be required showing the sale of the medicine by the enterprise and the purchase as final consumption expenditure of government with consequences for the financial accounts for both units. The purchase would be recorded as consumption expenditure by government. When explicitly recording social transfers in kind, the entry for the consumption expenditure by government is replaced by two entries for the social transfers in kind and one for actual consumption by households. The entries for the financial account remain as under the normal recording of government purchases.

|   | Household  |  | General government                                    |  | Enterprise  |   |
|---|--|--|---|--|---|---|
|   | Uses <u>Expen</u><br>ditures /<br>Changes in<br>assets | Resources<br>Revenues /<br>Changes in<br>liabilities<br>and net<br>worth | Uses <u>Expen</u><br>ditures/<br>Changes in<br>assets | Resources<br>Revenues /<br>Changes in<br>liabilities<br>and net<br>worth | Uses <u>Expen</u><br>ditures/<br>Changes in<br>assets | Resources<br>Revenues/<br>Changes in<br>liabilities<br>and net<br>worth |
| Production<br>account<br>Redistribution of<br>incomeSocial<br>transfers in kind<br>account  |  | Social<br>transfers in<br>kind<br>receivable                             | Social<br>transfer in<br>kind<br>payable              |  |   | Output/sale<br>of medicine  |
| Use of adjusted<br>disposable<br>income adjusted<br>for social transfers<br>in kind account | Actual<br>consumption<br>of medicine                   |  | Decrease in   |  | Increase in   | Increase in   |
| Financial account   |  |  | financial<br>asset                                    |  | financial<br>asset                                    | financial<br>asset  |

9.51 This example also covers the case in which

the household purchases the medicine directly from a pharmacist and is then reimbursed by the social security

fund, other government unit or NPISH that ultimately bears the cost. In this case, the household is not recorded as actually incurring any expenditure, the expenditure being attributed to the social security fund or other unit that ultimately bears the cost. Any difference between the time when the household incurs the expense and the time when it is reimbursed is shown as an other account receivable (by households) and payable (by the unit ultimately bearing the cost).

# C. Current taxes on income, wealth, etc.

## 1. Taxes in general

- 9.52 Taxes are compulsory, unrequited payments, in cash or in kind, made by institutional units to government units. They are transfers because the government provides nothing directly in return to the individual unit paying the tax, although governments do provide goods and services to the community as a whole or to individual units, or groups of units, depending on their general economic and social policy. Current taxes on income, wealth, etc. consist mainly of taxes levied on the incomes of households and corporations. They constitute charges against income and are recorded under usesexpenditures for the households and corporations sectors in the secondary distribution of income transfers other than social transfers in kind account. The taxes may also be payable by non-residents or possibly by government units or NPISHs. Current taxes on income, wealth, etc. were described as "direct taxes" in the past, but the terms "direct" and "indirect" are no longer used in the SNA, as explained in chapter 78. The taxes cannot be described simply as "current taxes on income and wealth" because they include some periodic taxes on households that are assessed neither on the income nor the wealth of the household or its members, for example, poll taxes.
- 9.53 The general nature of taxes and the accounting rules governing their recording in the SNA were described in paragraphs 7.80 to 7.868.81 to 8.90. For convenience, these relevant paragraphs are repeated below.

#### Taxes versus fees

- One of the regulatory functions of governments is to forbid the ownership or use of certain goods or the 9 54 pursuit of certain activities, unless specific permission is granted by issuing a licence or other certificate for which a fee is demanded. Price levels for these types of mandatory permissions are set by the government, often through some type of executive, legislative, or statutory power. Those seeking the permission or authorization frequently pay with no option to receive a refund should the licence (or similar) not be granted. The permission or authorization granted under these types of schemes is not transferable or tradeable, and so has no direct economic value. Indeed, for many such regulatory schemes the payer of the fee is not to be seen as the primary beneficiary, as the motivation behind the regulation or licencing of an activity or good is to protect society as a whole and ensure that those engaging in an activity or owning a good are able to do so safely in accordance with laws. For example, driving licences are intended to ensure that those using the road networks have the necessary skills and knowledge to do so safely. Although the payer benefits from being able to drive the primary beneficiary is society. For the above reasons, mandatory payments for most regulatory licences, or similar certificates, are to be recorded as taxes, as they are by nature compulsory and unrequited. If the issue of such licences involves little or no work on the part of government, the licences being granted automatically on payment of the amounts due, it is likely that they are simply a device to raise revenue, even though the government may provide some kind of certificate, or authorization, in return. However, if the government uses the issue of licences to exercise some proper regulatory function, for example, checking the competence, or qualifications, of the person concerned, checking the efficient and safe functioning of the equipment in question, or carrying out some other form of control that it would otherwise not be obliged to do, the payments made should be treated as purchases of services from government rather than payments of taxes, unless the payments are clearly out of all proportion to the costs of providing the services. The borderline between taxes and payments of fees for services rendered is not always clear cut in practice (see paragraph 8.64 (c) for a further explanation of this matter in the case of households).
- 9.55 Although most payments under mandatory regulatory schemes should be recorded as taxes, there may be cases where recording as a sale of service is appropriate despite the compulsory nature of the payment. For instance, the cost of a mandatory safety inspection may be based on the cost to government of conducting the inspection and could include a service element, such as providing guidance on how identified safety hazards

can be rectified. In this case it might be appropriate to record the payment as a payment of service rather than a tax, but only if the service element of the payment is considered sufficiently material. To recap, the default recording for payments under government-imposed mandatory regulatory schemes should be as taxes, unless a significant service element can be identified leading to recording as a payment of service.

## Links with the IMF and OECD tax classifications

- 9.549.56 The coverage of taxes in the SNA coincides with that of "tax revenue" as defined in the <u>IMF's Government</u> <u>Finance Statistics Manual GFSM\_20012014</u>, and also with "taxes" as defined in <u>OECD's</u> Revenue Statistics. In contrast to the latter, the SNA includes imputed taxes or subsidies resulting from the operation of official multiple exchange rates, <u>imputed taxes and subsidies resulting from a central bank imposing interest rates</u> above or below the market rate and <u>but</u> does not classify social security contributions under the heading of taxes. Chapter 5 of the GFSM\_20012014 contains a detailed listing and classification of taxes according to the nature of the tax. Annex A of Revenue Statistics contains a closely related classification.
- 9.559.57 The categories of tax distinguished in the SNA depend on the interaction of the following three factors, of which the nature of tax is only one:
  - a. The nature of the tax, as specified in the GFSM <u>20012014</u>/ OECD classification;
  - b. The type of institutional unit paying the tax;
  - c. The circumstances in which the tax is payable.
- 9.569.58 Thus, payments of exactly the same tax may be recorded under two different headings in the SNA. For example, payment of an excise duty may appear under "taxes on imports, except value added taxes (VAT) and duties" or under "taxes on products, except VAT, import and export taxes" depending upon whether the excise duty is paid on an imported or domestically produced good. Similarly, payments of an annual tax on automobiles may be recorded under "other taxes on production" or under "current taxes on income, wealth, etc." depending upon whether the tax is paid by an enterprise or by a household. For this reason, it is not possible to arrive at the SNA categories simply by regrouping the GFSM2001 2014/OECD classifications. However, in order to take advantage of the existence of these detailed classifications, each category of tax listed below contains a cross-reference to the corresponding GFSM2001 and OECD classifications. It should be noted, though, that the SNA categories are included within the GFSM 20012014 and OECD categories but may not be identical with them.

## The accrual basis of recording

9 59 All taxes should be recorded on an accrual basis in the SNA, that is, when the activities, transactions or other events occur that create the liabilities to pay taxes. However, some economic activities, transactions or events, which under tax legislation ought to impose on the units concerned the obligation to pay taxes, permanently escape the attention of the tax authorities. It would be unrealistic to assume that such activities, transactions or events give rise to financial assets or liabilities in the form of payables and receivables. For this reason the amounts of taxes to be recorded in the SNA are determined by the amounts due for payment only when evidenced by tax assessments, declarations or other instruments, such as sales invoices or customs declarations, that create liabilities in the form of clear obligations to pay on the part of taxpayers. (In determining the amount of tax accruing, care must be taken not to include tax unlikely ever to be collected.) Nevertheless, in accordance with the accrual principle, the times at which the taxes should be recorded are the times at which the tax liabilities arise. For example, a tax on the sale, transfer or use of output should be recorded when that sale, transfer or use took place, which is not necessarily the same time as that at which the tax authorities were notified, at which a tax demand was issued, at which the tax was due to be paid or the payment was actually made. Some flexibility is permitted, however, as regards the time of recording of income taxes deducted at source (see paragraph 8.61).9.63).

9.579.60 Government may establish tax amnesty programmes. Two broad types of such programmes can be distinguished: (i) amnesties to speed up, or encourage, payment of taxes which have been accrued but are

unpaid (i.e., relating to already disclosed transactions, events, and/or assets); and (ii) amnesties to capture revenue from economic activities and/or assets that have previously escaped the attention of the tax authorities (i.e., relating to previously undisclosed transactions, events, and/or assets). The time of recording and measurement of revenue arising from tax amnesties will depend on the exact nature of the amnesty granted and whether the revenue has been previously accrued. However, in accordance with the accrual principle, if a tax amnesty establishes tax obligations for previously undisclosed transactions, events or assets, then the tax revenue should be recorded when the tax obligation is established and not to a period prior to the tax amnesty.

9.589.61 In some countries, and for some taxes, the amounts of taxes eventually paid may diverge substantially and systematically from the amounts due to be paid to the extent that not all of the latter can be effectively construed as constituting financial liabilities as these are understood within the SNA. In such cases, it may be preferable for analytic and policy purposes to ignore unpaid tax liabilities and confine the measurement of taxes within the SNA to those actually paid. Nevertheless, the taxes actually paid should still be recorded on an accrual basis at the times at which the events took place that gave rise to the liabilities.

#### Interest, fines or other penalties

<u>9.599.62</u> In principle, interest charged on overdue taxes or fines, or penalties imposed for the attempted evasion of taxes, should be recorded separately and not as taxes. However, it may not be possible to separate payments of interest, fines or other penalties from the taxes to which they relate, so that in practice they are usually grouped with taxes.

## 2. Taxes on income

- 9.609.63 Taxes on income consist of taxes on incomes, profits and capital gains. They are assessed on the actual or presumed incomes of individuals, households, NPISHs or corporations. They include taxes assessed on holdings of property, land or real estate when these holdings are used as a basis for estimating the income of their owners. In some cases the liability to pay income taxes can only be determined in a later accounting period than that in which the income accrues. Some flexibility is therefore needed in the time at which such taxes are recorded. Income taxes deducted at source, such as pay-as-you-earn taxes and regular prepayments of income taxes, may be recorded in the periods in which they are paid and any final tax liability on income can be recorded in the period in which the liability is determined. Taxes on income include the following types of taxes:
  - a. Taxes on individual or household income: These consist of personal income taxes, including those deducted by employers (pay-as-you-earn taxes), and surtaxes. Such taxes are usually levied on the total declared or presumed income from all sources of the person concerned: compensationremuneration of employees, property income, pensions, etc., after deducting certain agreed allowances. Taxes on the income of owners of unincorporated enterprises are included here (GFSM\_20014\_0, 1111; OECD, 1110);
  - b. Taxes on the income of corporations: These consist of corporate income taxes, corporate profits taxes, corporate surtaxes, etc. Such taxes are usually assessed on the total incomes of corporations from all sources and not simply profits generated by production (GFSM\_20012014, 1112; OECD, 1210);
  - c. Taxes on capital gains: These consist of taxes on the capital gains (described as holding gains in the SNA) of persons or corporations that become due for payment during the current accounting period, irrespective of the periods over which the gains have accrued. They are usually payable on nominal, rather than real, capital gains and on realized, rather than unrealized, capital gains (GFSM\_20012014, 1111-1113; OECD, 1120, 1220);
  - d. *Taxes on winnings from lotteries or gambling*: These are taxes payable on the amounts received by winners as distinct from taxes on the turnover of producers that organize gambling or lotteries, which are treated as taxes on products (*GFSM\_20012014*, 1111-113; OECD, 1120).

9.619.64 The calculation of taxes due on income frequently exempts some part of income from taxes; such exemptions being described as tax allowances. In addition, or as an alternative, a government may determine an amount that is treated as if it is tax already paid; such an amount is called a tax credit. In some cases, if the tax due is less than the tax credit, the balance may be payable to the beneficiary; this is called a payable tax credit. There is more discussion on tax credits in chapter 2230.

## 3. Other current taxes

#### **Current taxes on capital**

- 9.629.65 Current taxes on capital consist of taxes that are payable periodically, usually annually, on the property or net wealth of institutional units, excluding taxes on land or other assets owned or rented by enterprises and used by them for production, such taxes being treated as other taxes on production. They also exclude taxes on property or wealth levied infrequently and at irregular intervals, or in exceptional circumstances (for example, death duties), such taxes being treated as capital taxes. They also exclude income taxes assessed on the basis of the value of the property owned by institutional units when their incomes cannot be estimated satisfactorily, such taxes being recorded under the previous heading, taxes on income. Current taxes on capital include the following:
  - Current taxes on land and buildings: These consist of taxes payable periodically, in most cases annually, on the ownership of land or buildings excluding taxes on land or buildings rented or owned by enterprises and used by them in production including use for owner-occupied dwelling services (GFSM <u>20012014</u>, 1131; OECD, 4100);
  - b. Current taxes on net wealth: These consist of taxes payable periodically, in most cases annually, on the value of land or fixed assets less any debt incurred on those assets, excluding taxes on assets owned by enterprises and used by them in production (GFSM 20012014, 1132; OECD, 4200);
  - c. *Current taxes on other assets:* These include taxes payable periodically, usually annually, on assets such as jewellery or other external signs of wealth (*GFSM\_20012014*, 1136; OECD, 4600).

#### **Miscellaneous current taxes**

9.639.66 Miscellaneous current taxes consist of various different kinds of taxes payable periodically, usually annually, of which the most common are the following:

- Poll taxes: These are taxes levied as specific amounts of money per adult person, or per household, independently of actual or presumed income or wealth. The amounts levied may vary, however, according to the circumstances of the person or household (GFSM 20012014, 1162; OECD, 6000);
- b. Expenditure taxes: These are taxes payable on the total expenditures of persons or households instead of on their incomes. Expenditure taxes are alternatives to income taxes and may be levied at progressively higher rates in the same way as personal income taxes, depending upon the total level of expenditure. They are uncommon in practice (GFSM\_20012014, 11413+162; OECD, 6000);
- c. Payments by households to obtain certain licences: As explained in paragraphs 9.54 and 9.55, mandatory payments by persons or households in order to obtain licences to own or use certain goods or to engage in the pursuit of certain activities should generally be recorded as taxes. Examples of payments which would normally be treated as current taxes are licences to own or use vehicles, boats or aircraft, driving or pilot's licences, firearm licences, licences for recreational hunting, shooting or fishing, visa fees, airport fees and court fees. Payments by persons or households for licences to own or use vehicles, boats or use vehicles, boats or aircraft and for licences for recreational hunting, shooting or fishing are treated as current taxes. Payments for all other kinds of licences (for example, driving or pilot's licences, television or radio licences, firearm licences, etc.) or fees to government (for example, payments for passports, airport fees, court fees, etc.) are treated as purchases of services rendered by governments. The boundary between taxes and purchases of services is based on the practices

actually followed in the majority of countries in their own accounts (GFSM\_20012014, 114511451 and 11452; OECD, 5200);

*Taxes on international transactions:* These consist of taxes on travel abroad, foreign remittances, foreign investments, etc. except those payable by producers (*GFSM\_2001\_2014*, <u>1155 and 1156</u>) 156;;
 OECD, 5127).

## **D.** Social insurance schemes

9.649.67A social insurance scheme is an insurance scheme where the following two conditions are satisfied:

- a. the benefits received are conditional on participation in the scheme and constitute social benefits as this term is used in the SNA; and
- b. at least one of the three conditions following is met:
- Participation in the scheme is obligatory either by law or under the terms and conditions of employment of an employee, or group of employees;
- The scheme is a collective one operated for the benefit of a designated group of workers, whether employedes or self-employed persons, which may also include persons temporarily without employment or non-employed, participation being restricted to members of that group;
- An employer makes a contribution (actual or imputed) to the scheme on behalf of an employee, whether or not the employee also makes a contribution.

The second of these conditions implies that employer-independent schemes established specifically to provide social benefits for groups of self-employed persons may qualify as social insurance schemes; see paragraph 9.79 for a further elaboration.

9.659.68 Social insurance schemes may be organized privately or by government units. Social insurance benefits may be provided in cash or in kind. They become payable when certain events occur, or certain circumstances exist, that may adversely affect the welfarematerial well-being of the households concerned either by imposing additional demands on their resources or reducing their incomes. The contingencies covered are liable to vary from scheme to scheme. However, the identification of certain receivables as social insurance benefits depends not just on the contingencies covered but also the way in which coverage is provided.

## 1. The extent of social benefits

9.669.69 Social benefits may be payable under social insurance schemes or social assistance but similar circumstances may be covered under both.

- 9.679.70 Social benefits may be divided into two main classes; pensions and all other social benefits, described in the SNA as non-pension benefits. The most important type of pension is one paid to an individual when they cease employment on retirement. Pensions may also be payable to other individuals, for example a bereaved spouse or someone suffering from a permanent disability. Payments made while a person is temporarily unemployed or suffering a medical condition that prevents them from working for a period are treated as non-pension benefits.
- 9.689.71 Six kinds of circumstances illustrate when non pension social benefits may be payable as follows More generally, as noted before, social benefits become payable when certain events occur, or certain conditions exist, that may adversely affect the material well-being of the households concerned either by imposing additional demands on their resources or reducing their incomes. Social benefits may be provided in cash or in kind. There are a number of circumstances in which social benefits may be payable:
  - a. The beneficiaries, or their dependants, require medical, dental or other treatments, or hospital, convalescent or long-term care, as a result of sickness, injuries, maternity needs, chronic invalidity, old age, etc. The social insurance benefits are usually provided in kind in the form of treatment or care provided free or at prices that are not economically significant, or by reimbursing expenditures made by households. Social insurance benefits in cash may also be payable to beneficiaries needing

health care;

- b. The beneficiaries have to support dependants of various kinds: spouses, children, elderly relatives, invalids, etc. The social insurance benefits are usually paid in cash in the form of regular dependants' or family allowances;
- c. The beneficiaries suffer a reduction in income as a result of not being able to work full-time. The social insurance benefits are usually paid regularly in cash for the duration of the condition. In some instances a lump sum may be provided additionally or instead of the regular payment. People may be prevented from working for various different reasons, including involuntary unemployment, including temporary lay-offs and short-time working, and sickness, accidental injury, the birth of a child, etc. that prevents a person from working, or from working full-time;
- d. The beneficiaries suffer a reduction in income because of the death of the main income earner. The social insurance benefits are usually paid in cash in the form of regular allowances or, in some instances, a lump sum;
- e. The beneficiaries are provided with housing either free or at prices that are not economically significant or by reimbursing expenditure made by households;
- f. The beneficiaries are provided with allowances to cover education expenses incurred on behalf of themselves or their dependants; education services may occasionallyalso be provided in kind.
- 9.699.72 The above are typical circumstances in which social benefits are payable. However, the list is illustrative rather than exhaustive. It is possible, for example, that under some schemes other benefits may be payable. Conversely, by no means do all schemes provide benefits in all the circumstances listed above. In practice, the scope of social benefits is liable to vary significantly from country to country, or from scheme to scheme within the same country.
- 9.709.73 In cases where no qualifying contribution has to have been paid in order to receive benefits, these are treated as part of social assistance. Typically social assistance is provided by government to all persons who are in need without any formal requirement to participate as evidenced by the payment of contributions, for example. The extent of social assistance varies very considerably from country to country. In many countries, benefits are only payable to people on low incomes. This is often described as saying the benefits are "means-tested", where the term "means" is used in the sense of indicating a maximum qualifying level of income or wealth.

## 2. The organization of social insurance schemes

- 9.719.74 Social insurance schemes are intended to cover beneficiaries and their dependants during their working lives and usually also into retirement, whether they are employees, employers, own account workers, or persons temporarily without employment. Eligibility for social insurance benefits requires social contributions to have been paid by, or on behalf of, the beneficiaries or their dependants in the current or previous accounting periods. As already noted, the social contributions may be payable not only by the participants themselves but also by employers on behalf of their employees.
- 9.729.75 Social insurance schemes must be organized collectively for groups of workers or be available by law to all workers or designated categories of workers, possibly including non-employed persons as well as employees. They may range from private schemes arranged for selected groups of workers employed by a single employer, private schemes organized for selected groups of self-employed persons, to social security schemes covering the entire labour force of a country. Participation in such schemes may be voluntary for the workers concerned, but it is more common for it to be obligatory. For example, participation in schemes organized by individual employers may be required by the terms and conditions of employment collectively agreed between employers and their employees. Participation in nationwide social security schemes organized by government units may be compulsory by law for the entire labour force, except perhaps for persons who are already covered by private schemes.
- <u>9.739.76</u>Many social insurance schemes are organized collectively for groups of workers so that those participating do not have to take out individual insurance policies in their own names. In such cases, there is no difficulty about distinguishing social insurance from insurance taken out on a personal basis. However, some social insurance schemes may permit, or even require, participants to take out policies in their own names. In order

for an individual policy to be treated as part of a social insurance scheme the eventualities or circumstances against which the participants are insured must be of the kind listed in paragraphs 9.718.65, and in addition, one or more of the following both conditions listed under a) and b) of paragraph 9.67 must be satisfied.

Participation in the scheme is obligatory either by law for a specified category of worker, whether employer or non employed, or under the terms and conditions of employment of an employee, or group of employees;

The scheme is a collective one operated for the benefit of a designated group of workers, whether employees or non-employed, participation being restricted to members of that group;

An employer makes a contribution (actual or imputed) to the scheme on behalf of an employee, whether or not the employee also makes a contribution.

The premiums payable, and claims receivable, under individual policies taken out under a social insurance scheme are recorded as social contributions and social insurance benefits.

 Table 8.39.3: The secondary distribution of income transfers other than social transfers

 in kind account - with details for taxes and social contributions – uses

Table 8.39.3 (cont): The secondary distribution of income transfers other than social transfers in kind account - with details for taxes and social contributions - resources revenues

- 9.77 Social insurance schemes are essentially schemes in which workers are obliged, or encouraged, by their employers or by general government to take out insurance against certain eventualities or circumstances that may adversely affect their welfarematerial well-being or that of their dependants. Such schemes may also be organized for groups of self-employed persons. When individuals take out insurance policies in their own names, on their own initiative and independently of their employers or government, the premiums payable and claims receivable are not treated as social contributions and social insurance benefits, even though the policies may be taken out against the same kinds of eventualities or situations as are covered by social insurance schemes such as accident, ill health, retirement, etc. The premiums payable and claims receivable under such individual insurance policies are recorded as current transfers in the <u>secondary distribution of</u> income transfers other than social transfers in kind account in the case of non-life insurance, while the premiums payable and claims receivable under individual life insurance policies are recorded as acquisitions and disposals of financial assets in the financial account.
- 9.78 In the case of employer-employee relationships, the determinants for the insurance to count as a social insurance policy, and not as an individual insurance policy, are that the benefits must be of the social benefit type (see paragraphs 9.70 and 9.71), and an employer makes an actual or imputed contribution to the scheme on behalf of an employee. If participation to a scheme is not obligatory, but only encouraged, it can become more difficult to differentiate between social insurance type of schemes and individual insurance policies. It is clear, however, that insurance policies solely taken out by individuals would not qualify as social insurance, even if, for example, a discount is arranged for a designated group of people.
- 9.749.79Schemes providing social benefits may also be established for groups of self-employed persons. When organized by government, as part of a broader arrangement, such schemes would typically qualify as social insurance. If government is not directly involved, the default option is to not treat such types of schemes as part of social insurance, unless the schemes are collective arrangements which provide policies, for certain industries or professions, with a strong resemblance to similar arrangements organized by employers or government. These schemes may, or may not, be encouraged by government; in the former case, this would

strengthen the case for a classification as social insurance. In addition, to qualify as social insurance, generally separate institutional units should be established, which are subject to regulation or supervision in line with or similar to other social insurance schemes. In the case of pension-related schemes, an additional criterion for the qualification as social insurance is that accumulated contributions are set aside for retirement income.

9.759.80 As can be seen from the consideration of individual insurance policies, the nature of the benefit is by no means sufficient to identify the social nature of the transactions. For example, the receipt of free medical services does not always constitute a social benefit. If the medical services received by one household are paid for by another, they are not social benefits but transfers between households. First aid rendered to employees at work is not a social benefit, the costs involved being recorded as intermediate consumption of the employer. In general, social benefits cannot be provided by one household to another except in the relatively rare case in which an unincorporated enterprise owned by a household operates a social insurance scheme for the benefit of its employees.

9.769.81 All social insurance schemes are founded on an employment relationship even if the participants are selfemployed or currently unemployed. Two main types of social insurance schemes may be distinguished:

- a. The first consists of social security schemes covering the entire community, or large sections of the community, that are imposed, controlled and financed by government units. Pensions payable under these schemes may or may not be related to levels of salary of the beneficiary or history of employment. Non-pension benefits are less frequently linked to salary levels.
- b. The second type consists of other <u>employment relatedsocial insurance</u> schemes. These schemes <u>mainly</u> derive from an employer-employee relationship in the provision of pension and possibly other entitlements that are part of the conditions of employment and where responsibility for the provision of benefits does not devolve to general government under social security provisions. <u>They</u> may also relate to collective arrangements organized for self-employed persons (see paragraph 9.79).

Making this distinction is difficult in some countries where the ultimate responsibility for administering the scheme and paying benefits is undertaken by government on behalf of many employers not working for general government. In countries where there is no such arrangement, social insurance schemes organized by government units for their own employees, as opposed to the working population at large, should, if possible, be included in the group of other employment related social insurance schemes and not remain within social security schemes.

#### Social security schemes

9.779.82 In many countries, social security schemes are by far the most important category of social insurance schemes and it is worth summarizing their main characteristics. Social security schemes are schemes imposed, controlled and financed by government units for the purpose of providing social benefits to members of the community as a whole, or of particular sections of the community. When social security funds are established for this purpose and are organized and managed separately from other government funds, they are treated as separate institutional units. Their receipts consist mainly of contributions paid by individuals and by employers on behalf of their employees, but they may also include transfers from other government funds. The payment of social security contributions by, or on behalf of, certain specified individuals, such as employees and self-employed, including persons temporarily without employment, is generally compulsory by law, but some other individuals may choose to pay voluntarily in order to qualify for the receipt of social security benefits.

#### Other employment-related social insurance schemes

9.789.83 The terms of employment related other social insurance schemes are typically determined by employers, possibly in conjunction with their employees and may be administered by the employers themselves. They may also be organised for selected groups of self-employed persons. Very often, though In the case of schemes organised by employers for their employees, the funds may form a separate institutional unit (e.g., an

autonomous pension fund) or <u>they</u> may be managed by an insurance corporation on behalf of the employer. <u>Collective agreements for selected groups of self-employed persons are generally restricted to those managed</u> by a separate institutional unit (see paragraph 9.79).

9.799.84Not all employment relatedOther social insurance schemes aremay not be adequately funded, particularly in the case of pension schemes organized by employers for their employees. In the case of the employer being responsible for any shortfall, transactions are recorded, ... In the secondary distribution of income transfers other than social transfers in kind account, transactions are recorded as if the schemes are adequately funded and any discrepancies are recorded in the financial account under claims of pension funds to pension managersother accounts receivable or payable. A complete overview of the recording of pension schemes is given in part 2 of chapter 1724.

# E. <u>Net sSocial contributions less service charges</u>

9.809.851n the SNA, all contributions to social insurance schemes are shown as made by households. There are, however, several elements to the amounts paid. The first is the amount of actual and imputed contributions made by the employer on behalf of the employee. This amount is part of compensation remuneration of employees and is received by households in the generation of earned income account and thus forms part of the balance of primary earned income of households. The second element consists of actual payments made by households in the current period to cover their share of the pension and other provisions relating to the current period. These payments may be made by employees, or self-employed persons, which may also include persons temporarily without employment persons or non-employed persons. A third element consists of contribution supplements, or imputed payments by households, which represent the reinvestment of the property income earned on pension entitlements the return to the pension fund of the property income earned on the start of year pension entitlement and on any reserves established for non-pension benefits. These are attributed to households in the allocation of primaryearned income account and, like the employers' contributions, are included in the balance of primarycarned incomes for households. Set against these is the service fee charged by the unit administering the pension scheme. This may be an service explicit charge made by a unit separate from the employer or may be the sum of costs incurred by the employer in administering the scheme if it is not a separate unit. Depending on the nature of the scheme, either the contribution by the employer or the property income includes the value of the service charge

 Table 8.49.4: The secondary distribution of income transfers other than social transfers in kind account - with details of social benefits - uses expenditures

 Table 8.49.4 (cont): The secondary distribution of income transfers other than social transfers in kind account - with details of social benefits - resources revenues

9.819.86 Table 8.39.3 shows table 8.19.1 with social contributions disaggregated according to these criteria. For practical reasons, the tables show the employers' contributions and property income at the same value as recorded in the distribution of primarycarned income accounts with the service charge shown separately. This charge, though, is not a redistributive transaction but part of output and consumption expenditure. It is included in the table to clarify the way in which social insurance is funded. Each heading is discussed briefly in turn below. A more extensive discussion of the transactions to be recorded for pension schemes is given in part 2 of chapter 1724.

## 1. Components of social contributions

<u>9.829.87</u>Net <u>sS</u>ocial contributions <u>less service charges</u> are the actual <u>orand</u> imputed contributions made by households to social insurance schemes to make provision for social benefits to be paid. Fees charged by the administrators of the schemes are excluded from contributions payable. These fees are treated as consumption expenditure by households in the use of <u>disposable</u> income account.

## 2. Employers' actual social contributions

9.839.88 This item is exactly the same as that recorded in the allocation of primarycarned income account and described in paragraph 7.62.8.62.

## 3. Employers' imputed social contributions

9.849.89 This item is exactly the same as that recorded in the allocation of primary earned income account and described in paragraphs 7.63 to 7.69.8.63 to 8.70.

## 4. Households' actual social contributions

9.859.90 Households' actual social contributions are social contributions payable on their own behalf by employees, or self-employed persons, which may include persons temporarily without employment, or non-employed persons to social insurance schemes. They are recorded on an accrual basis. For those in work, this is at the times when the work that gives rise to the liability to pay the contributions is carried out.

#### 5. Households' social contribution supplements

9.869.91 Households' social contribution supplements consist of the property income earned during the accounting period on the stock of pension and non-pension entitlements. This amount is included in property income payable by the administrators of pension funds to households in the allocation of primaryearned income account.

## F. Social benefits other than social transfers in kind

- 9.879.92 Social benefits are current transfers received by households intended to provide for the needs that arise from certain events or circumstances. Benefits are divided into two groups, the first consists of pensions and the second of all other benefits, described as non-pension benefits. These cover, for example, payments due in respect of sickness, unemployment, housing, education or family circumstances.
- 9.889.93 The way in which the receipt of social benefits is recorded in the accounts depends on a number of intersecting factors. As well as the type of social benefit, pension or non-pension, it is necessary to specify whether the benefits are payable under a social insurance scheme or not, whether they are paid by government or not<sub>a</sub> and whether they are paid in cash or not. The following sections discuss the different institutional arrangements for paying benefits, then the different types of benefits<sub>a</sub> before summarizing how these appear in the accounts.

#### 1. Institutional arrangements

### Social insurance schemes or social assistance

9.899.94 Social benefits may be payable as part of a social insurance scheme or by government as social assistance. Unlike social assistance, all social insurance schemes require formal participation by the beneficiaries. This participation is linked to employment and is usually evidenced by the payment of contributions to the scheme either by the participants, an employer or both. Social security is an important kind of social insurance and like social assistance, is provided by government. It is therefore necessary to determine when a social benefit provided by government is made as part of social security and when it is part of social assistance.

#### Social security and social assistance

9.909.95 There is a fundamental difference between government provision of benefits under social security and under social assistance although the proportion of benefits allocated to one or the other heading varies considerably

from country to country depending on national institutional arrangements.

- 9.919.96 Social security is one form of a social insurance scheme. The beneficiary is enrolled in the scheme or participates usually by paying a contribution to the scheme or having one paid to the scheme on his behalf. The payment may be made by the employer or a family member or even in some cases by government itself (perhaps for the duration of unemployment, for instance). Because it is a contributory scheme, there is some sort of contract between the government and the beneficiaries. In some countries this contract has a strict legal form and cannot be altered retrospectively; in others the contract is much looser and retroactive adjustments are possible. For all social security schemes, the difference between the contributions receivable and the benefits payable is monitored in the context of the government budget since persistent deficits cannot be sustained for ever without intervention to raise contributions, lower benefits or both.
- 9.929.97 Social assistance is distinguished from social security in that eligibility to receive social assistance benefits is not dependent on having elected to participate as demonstrated by the payment of contributions. Usually all members of resident households are entitled to apply for social assistance but the conditions under which it is granted are often restrictive. Frequently there is an assessment of available income/wealth in relation to the perceived needs of a household and only those households falling below a given threshold may be entitled to this type of social assistance. (This process is often described as "means-testing".)
- 9.939.98 The extent to which social assistance provides incomes to households varies extensively from country to country. In some countries, indeed, there is no social security and all provision by government of income to meet social needs is provided without contribution but this is not the general case.

## 2. Types of social benefits

9.949.99 Social benefits may be paid under three different sorts of institutional arrangements. They may be paid by government as either social assistance or social security or they may be paid by other employment related social insurance schemes. Pensions under all three arrangements are recorded in a similar way but with a distinction drawn between those that are made under social assistance and those that are made under social insurance. Non-pension benefits payable in cash are also recorded in a similar way but with a distinction drawn between those that are made under social assistance and those that are made under social insurance. Non-pension benefits payable in kind are recorded differently for those payable by government, whether as social assistance or social security.

#### Pensions

- 9.959.100 The main social benefit payable in cash is pension provision for retirees. However, others may be entitled to pensions, for example widows and the permanently disabled. Pensions are almost always paid in cash though there may be some circumstances where housing is available free or at a reduced rate to some pensioners in which case the value of this housing benefit is treated as part of the cash payment with the same amount showing as purchase of housing services from the provider.
- 9.969.101 As noted, pensions payable under social insurance pensions are distinguished from those payable as social assistance.

#### Non-pension benefits payable in cash

9.979.102 While the nature of a pension payment is generally unambiguous, other social insurance payments must be carefully distinguished from other payments made to households. Once such the latter payments are eliminated, non-pension benefits in cash are recorded under social insurance non-pension benefits and social assistance benefits in cash.

#### Receivables by households that are not social benefits

9.989.103 Government may make payments to a household in respect of the production activities of the

household. An example might be a payment to encourage the production of a particular agricultural crop. Such payments are treated as subsidies to the household enterprise. Less common, but conceptually possible, is if government makes a payment to permit the household to acquire a fixed asset for use in production, this would be recorded as an investment grant (a capital transfer).

- 9.999.104 An employer, whether government or not, may provide an employee with equipment that is necessary to carrying out the labour services the employee provides. Examples are uniforms or small tools, such as scissors for hairdressers or bicycles for delivering mail. This equipment is recorded as intermediate consumption of the employing enterprise and is never recorded as being acquired by the household to which the employee belongs. The same convention applies to services provided to employees carrying out their tasks, for example the cost of food and hotel accommodation when travelling on business is treated as intermediate consumption of the employer and not final consumption of the employee.
- 9.1009.105 When an employer makes available to the employee a good or service that the employee does use other than in the course of his employment, these goods and services are treated as the provision of wages and salaries in kind that are recorded as being in cash with corresponding expenditure by the employees on the goods and services. Examples include the provision of free housing or making a car available to the employee to use for personal purposes as well as for business. Typically the value of these goods and services will be treated as part of the employee's income for tax purposes.
- 9.1019.106 Households may receive significant gifts from other households, both resident in the same economy and abroad, or may receive compensation from another unit in respect of an injury sustained or wrongful arrest, for example. Even though these payments may enable the household to improve their standard of living (as might a lottery win also) they are not treated as social benefits in the SNA. Other current transfers, both those payable and receivable by households and other sectors of the economy also, are discussed in more detail in section G.

#### Non-pension benefits payable in kind

9.1029.107 All benefits arising from employment-related social insurance schemes other than social security are recorded as if they are received in cash. Even if the employee does not initially pay for health treatment, for example, but simply sends the bill to his social insurance scheme for payment by them, the amount paid by the social insurance scheme is recorded as paid to the employee and the expenditure on the health service is then recorded as being undertaken by the employee. The rationale for this is that a private social insurance scheme operates simply as a financial corporation and cannot have final consumption expenditure. Some services provided by an employer are regarded as intermediate consumption by the employer, for example a medical service at the workplace to provide assistance to someone falling ill at work or training that it is in the interests of the employer that the employee should undertake. However, general health and education provision via a social insurance scheme are part of the compensation package of the employee and not part of the intermediate consumption of the employer.

#### Benefits provided in kind by government

- 9.1039.108 Social benefits paid in cash allow households to use this cash indistinguishably from income coming from other sources. When social benefits are payable in kind, the household has no discretion over the use of the benefit; the benefits simply relieve the household from having to meet these expenses out of income from other sources. However, governments all over the world take on responsibility to provide households with services they can make use of but not trade for other services or exchange them with other households. These are the individual services provided by government to households either free or at prices that are not economically significant. These benefits are described as social transfers in kind. They are recorded not in the secondary distribution of income transfers other than social transfers in kind account but in the redistribution of income transfers in kind account as described below in section H.
- 9.1049.109 A special case of benefits payable in kind is that of reimbursements, when the household initially makes a cash outlay but the government reimburses some or all of the expense. For example, when a payment

is made by an employee or other member of a resident household for health or education benefits and these are subsequently reimbursed by government, they are not shown as a social insurance benefit and thus as part of <u>compensationremuneration</u> of employees but as part of the expenditure by government on health services provided to individual household members. The expenditure by government on individual services is part of government final consumption expenditure and not part of household final consumption expenditure nor of <u>compensation</u>remuneration of employees.

- 9.1059.110 If a household is reimbursed by government for only a part of the health (or other) services provided, the part that is reimbursed is treated as government final consumption expenditure and the part that is not reimbursed by government as household final consumption expenditure. Only if the employer explicitly agrees to reimburse the part of the expenditure not reimbursed by government is it treated as part of compensationremuneration of employees.
- 9.1069.111 All social benefits in kind provided by government are treated in the same way with no attempt made to separate these into social security and social assistance.

## 3. Social benefits recorded in the <u>income transfers other than social transfers in kind</u> secondary distribution of income account

9.1079.112 Taking the foregoing considerations into account, social benefits recorded in the secondary distribution of income transfers other than social transfers in kind account are structured as follows:

Social benefits other than social transfers in kind

Social security benefits in cash

Social security pension benefits

Social security non-pension benefits in cash

Other social insurance benefits

Other social insurance pension benefits

Other social insurance non-pension benefits

Social assistance benefits in cash.

- 9.1089.113 Social security benefits in cash are social insurance benefits payable in cash to households by social security funds. The benefits are divided between pensions and non-pension benefits.
- 9.1099.114 Other employment related social insurance benefits are social benefits payable by social insurance schemes other than social security to contributors to the schemes, their dependants or survivors. The benefits are divided between pensions and othernon-pension benefits.
- 9.1109.115 Social assistance benefits in cash are current transfers payable to households by government units or NPISHs to meet the same needs as social insurance benefits but which are not made under a social insurance scheme requiring participation usually by means of social contributions. They therefore exclude all benefits paid by social security funds. The benefits are divided between pensions and other benefits.
- 9.1119.116 Social assistance benefits do not include current transfers paid in response to events or circumstances that are not normally covered by social insurance schemes. Thus, social assistance benefits do not cover transfers in cash or in kind made in response to natural disasters such as drought, floods or earthquakes. Such transfers are recorded separately under other current transfers.

9.1129.117 Table 8.49.4 shows table 8.19.1 with the disaggregation of social benefits described here.

# G. Other current transfers

- 9.1139.118 Other current transfers consist of all current transfers between resident institutional units, or between residents and non-residents, except for current taxes on income, wealth, etc. and social contributions and benefits. Other current transfers include a number of different kinds of transfers serving quite different purposes. The four categories are insurance-related transactions, transfers within government, current international cooperation and miscellaneous current transfers. Each of these is described in turn below.
- 9.1149.119 \_\_\_\_\_ Table 8.59.6 shows table 8.19.1 with this disaggregation of current transfers.

 Table 8.59.6:
 The secondary distribution of income transfers other than social transfers in kind account - with details of current transfers - uses expenditures

 Table 8.59.6 (cont): The secondary distribution of income transfers other than social transfers in kind account - with details of current transfers - resources revenues

#### 1. Insurance-related transactions

- 9.1159.120 There are three types of transactions included under the heading of insurance. These are net premiums less service charges and claims related to direct insurance, net-premiums less service charges and claims related to reinsurance and payments related to standardized guarantees. Each of these is described below. A more detailed description of transactions to be recorded for insurance appears in part 1 of chapter 1724 and for standardized guarantees in part 3 of chapter 1725.
- 9.1169.121 It should be noted that in this context "netless service charges" as applied to premiums implies that the service charge for the insurance services has been deducted from actual premiums paidearned plus premium supplements. There is no netting between direct insurance and reinsurance; each is recorded in full and separately from the other.

#### Net nNon-life insurance premiums less service charges

Non-life insurance policies provide cover against various events or accidents resulting in damage to 9,1179,122 goods or property or harm to persons as a result of natural or human causes (for example, fires, floods, crashes, collisions, sinkings, theft, violence, accidents, sickness, etc.) or against financial losses resulting from events such as sickness, unemployment, accidents, etc. Such policies are taken out by enterprises, government units, NPISHs or individual households. The policies taken out by individual households are those taken out on their own initiative and for their own benefit, independently of their employers or government and outside any social insurance scheme. Net nNon-life insurance premiums less service charges comprise both the actual premiums payable by policyholders to obtain insurance cover during the accounting period (actual premiums earned) and the premium supplements payable out of the investment income attributed to insurance policyholders less the service charges payable to the insurance corporation. The way in which the service charges are calculated is explained in paragraphs 7.185 to 7.1916.184 to 6.191. After deducting the service charges from the sum of non-life insurance actual premiums and premium supplements, the remainder is described as net-non-life insurance premiums less service charges. Only the net-non-life insurance premiums less service charges constitute current transfers and are recorded in the secondary distribution of income transfers other than social transfers in kind account. The service charges constitute purchases of services by the policyholders and are recorded as intermediate or final consumption, as appropriate.

#### Non-life insurance claims

9.1189.123 Non-life insurance claims are the amounts payable in settlement of damages that result from an event covered by a non-life insurance policy during the current accounting period. Claims normally become due at the moment when the eventuality occurs that gives rise to a valid claim under the terms of the policy. An exception is made in cases where the possibility of making a claim is recognized only long after the event has happened. For example, an important series of claims were recognized only when exposure to asbestos

was established as a cause of serious illness. In such cases the claim is recorded at the time that the insurance company accepts the liability. This may not be the same time as when the size of the claim is agreed on or when the claim is paid.

- 9.1199.124 The settlement of a non-life insurance claim is treated as a transfer to the claimant. The claimant is usually but not invariably the policyholder. Claims are usually treated as current transfers, even when large sums may be involved as a result of the accidental destruction of a fixed asset or serious personal injury to an individual. The amounts received by claimants are usually not committed for any particular purpose and goods or assets that have been damaged or destroyed need not necessarily be repaired or replaced.
- 9.1209.125 Some claims arise because of damages or injuries that the policyholders cause to the property or persons of third parties, for example, the damages or injuries that insured drivers of vehicles may cause to other vehicles or persons. In these cases, valid claims are recorded as being payable directly by the insurance enterprise to the injured parties and not indirectly via the policyholder.
- 9.1219.126 In exceptional circumstances, some proportion of claims may be recorded not as current transfers but as capital transfers. The description of the functioning of the insurance activity in part 1-of chapter 1724 explains when this is deemed to be appropriate.

#### NetNon-life reinsurance premiums less service charges and non-life reinsurance claims

- 9.1229.127 Direct insurers provide a means of redistribution amongst regular policyholders. Instead of a large loss on an irregular basis, policyholders face regular smaller costs in the knowledge that, when and if a large loss happens, it will be settled by the insurance company and thus avoid the policyholder from bearing a large loss in that year. Reinsurance policies work in the same way to allow direct insurers (and other reinsurers) to protect themselves against particularly heavy claims by taking out a policy with another insurance corporation that specializes in reinsurance.
- 9.1239.128 <u>NetNon-life</u> reinsurance premiums less service charges and non-life insurance claims are calculated in exactly the same manner as non-life insurance premiums and claims. However, because the reinsurance business is concentrated in a few countries, globally most reinsurance policies are with non-resident units.

#### Fees and calls under standardized guarantees

- 9.1249.129 Some units, especially government units, may provide a guarantee against a creditor defaulting in conditions that have many of the same characteristics as non-life insurance. This happens when many guarantees of the same sort are issued and it is possible to make a realistic estimate of the probable level of defaults overall. In this case, the fees payable (and the property income earned on them) are treated in the same way as non-life insurance premiums and the calls under the guarantees are treated in the same way as non-life insurance claims. Part 3 of eChapter 1725 discusses the topic of standardized guarantees in detail.
- 9.1259.130 Standardized guarantees provide cover only for financial instruments and do not extend to product warranties.

#### 2. Current transfers within general government

- 9.1269.131 Current transfers within general government consist of current transfers between different government units. They include current transfers between different levels of government, such as frequently occur between central and state or local government units, and between general government and social security funds. They do not include transfers of funds committed to finance gross fixed capital formation, such transfers being treated as capital transfers.
- 9.1279.132 One government unit may act as an agent on behalf of a second government unit by, for example, collecting taxes that are due to the second unit, at the same time as it collects its own taxes. Taxes collected on behalf of the second unit in this way are to be recorded as accruing directly to the second unit and are not to be treated as a current transfer from the first to the second unit. Delays in remitting the taxes from the first to the second government unit give rise to entries under "other accounts receivable or payable" in the financial account.

## 3. Current international cooperation

# 9.1289.133 Current international cooperation consists of current transfers in cash or in kind between the governments of different countries or between governments and international organizations. These include:

- a. Transfers between governments that are used by the recipients to finance current expenditures, including emergency aid after natural disasters; they include transfers in kind in the form of food, clothing, blankets, medicines, etc.;
- b. Annual or other regular contributions paid by member governments to international organizations (excluding taxes payable to supranational organizations);
- c. Payments by governments or international organizations to other governments to cover the salaries of those technical assistance staff who are resident in the country in which they are working and are employed by the host government.

Current international cooperation does not cover transfers intended for purposes of capital formation, such transfers being recorded as capital transfers.

#### 4. Miscellaneous current transfers

9.1299.134 Miscellaneous current transfers consist of current transfers other than insurance-related premiums and claims, current transfers within general government and current international cooperation. Some of the more important examples are described below.

Current transfers between the central bank and general government

As described in paragraph 6.155, a current transfer representing the value of non-market output of the central bank is recorded as payable by the central bank to general government. The non-market output consists of monetary policy services, which are regarded as collective consumption.

This item may also include transfers between the central bank and government that are recorded when the central bank charges interest at a rate that is out of line with market rates for policy purposes. The recording in such cases is described in paragraphs 7.122 to 7.126.

#### **Current transfers to NPISHs**

9.1309.135 Current transfers to NPISHs consist of transfers received by NPISHs from other resident or nonresident institutional units in the form of membership dues, subscriptions, voluntary donations, etc. whether made on a regular or occasional basis. Transfers to NPISHs are intended to cover the costs of the non-market production of NPISHs or to provide the funds out of which current transfers may be made to resident or nonresident households in the form of social benefits. Transfers in the form of gifts of food, clothing, blankets, medicines, etc. to charities for distribution to resident or non-resident households are included to the extent that they are newly acquired and are treated as transfers in cash used to purchase these commodities. Gifts of unwanted or used articles from households typically do not have a market value and so do not feature in the accounts as transfers. Gifts of valuables are treated as transfers of the value of the valuable in the balance sheet. Payments of membership dues or subscriptions to market NPIs serving businesses, such as chambers of commerce or trade associations, are treated as payments for services rendered and are therefore not transfers (see paragraph 4.885.88). They are recorded in the production account as intermediate consumption and not in the secondary distribution of income transfers other than social transfers in kind account.

## Current transfers between households

- 9.1319.136 Current transfers between households consist of all current transfers made, or received, by resident households to or from other resident or non-resident households. The transfers include all cash transfers and the value of transfers in kind. In the context of remittances, current transfers between households are often referred to as personal transfers. They include regular remittances between members of the same family resident in different parts of the same country or in different countries, usually from a member of a family working in a foreign country for a period of a year or longer. Earnings remitted by seasonal workers to their families are not international transfers as the workers remain resident in their country of origin (that is, they are still members of their original households) when they work abroad for periods of less than a year. Their earnings are recorded as compensationremuneration of employees from abroad if they have the status of an employee in the non-resident country while they are working there or as the provision of services otherwise.
- 9.1329.137 Transfers from non-resident households to resident households (and vice versa) are an item of considerable policy interest. In addition, memorandumsupplementary items in the balance of payments are suggested for personal remittances and total remittances. Personal remittances from abroad are equal to personal transfers from abroad plus compensationremuneration of employees from abroad less expenditure abroadtaxes and social contributions related to employment paid abroad less transport and travel expenditure by the employees plus capital transfers received from households. Personal remittances thus show the total flows into an economy resident household-from households abroad or from a member of the household working abroad for part of the year. Total remittances from abroad are equal to personal remittances plus social benefits (including pensions due from abroad in relation to earlier work abroad by a member of the household). Payments to abroad are defined correspondingly. For more details, reference should be made to chapter 2633 and to BPM76.

#### **Fines and penalties**

- <u>9.138</u> Fines and penalties are compulsory payments imposed on institutional units by courts of law or quasijudicial bodies. However, fines or other penalties imposed by tax authorities for the evasion or late payment of taxes cannot usually be distinguished from the taxes themselves and are, therefore, grouped with the latter in practice and not recorded under this heading; nor are payments of fees to obtain government licences, such payments being either taxes or payments for services rendered by government units (see paragraphs 8.54).<u>9.54</u> and 9.55).
- 9.139 Fines and penalties should be distinguished from payments of compensation (see paragraph 9.146). While fines and penalties are compulsory payments that are punitive in nature, that is, are intended to punish and/or deter certain activities or behaviour, compensation payments are intended to remedy specific harms, such as property damage or loss of income. As such, it may be appropriate to treat certain fines and penalties that are identified in legal documents as a fine/penalty, but are actually intended to compensate for damages, as payments for compensation of damages. Fines and penalties are always recorded as a current transfer.
- 9.1339.140 Given the number of appeals that often follow an initial ruling, fines and penalties should not be recorded until the unit issuing the fine/penalty has an unconditional claim to the funds. If a judgment or ruling is subject to further appeal, an unconditional claim only exists when the appeal is resolved. Fines and penalties accrued but not yet paid should be recorded as other accounts receivable and payable.
- 9.1349.141 Some fines and penalties may be established in contracts of mergers and acquisitions where the contract may include contingent fines or penalties based on, for example, profitability, or a pending lawsuit, and resulting in a payment between the buyer and seller after the initial transaction. In these cases, the fines and penalties would be interpreted as an adjustment or update of the exchange value of the acquired enterprise, and treated as a direct investment transaction (or a portfolio investment transaction if the buyer has less than 10 percent of the voting power), instead of a current transfer.

## Lotteries and gambling

9.1359.142 The amounts paid for lottery tickets or placed in bets consist of two elements: the payment of a service charge to the unit organizing the lottery or gambling and a residual current transfer that is paid out to

the winners. The service charge may be quite substantial and may have to cover taxes on the production of gambling services. The transfers are regarded in the SNA as taking place directly between those participating in the lottery or gambling, that is, between households.

- 9.1369.143 Some lotteries may be organized with three components, the two as just described and a third element that is donated to charity. This element shows as a transfer to the charity, usually an NPISH.
- 9.1379.144 When non-resident households take part there may be significant net transfers between the household sector and the rest of the world.
- 9.1389.145 In some cases the winner of a lottery does not receive a lump sum immediately but a stream of income over future periods. In the SNA this should be recorded as the receipt of the lump sum and the immediate purchase of an annuity. The recording of annuities is described in part 1 of chapter 1724.

## **Payments of compensation**

- 9.146 Payments of compensation consist of current transfers paid by institutional units to other institutional units in compensation for injury to persons or damage to property caused by the former that are not settled as payments of non-life insurance claims. Payments of compensation could be either compulsory payments awarded by courts of law, or ex gratia payments agreed out of court. This heading covers compensation for injuries or damages caused by other institutional units and ex gratia payments made by government units or NPISHs in compensation for injuries or damages caused by natural disasters. However, major compensation payments should be recorded as capital transfers (instead of current transfers) if they are intended to recover losses incurred over a multi-year period or to replace a financial or non-financial asset.
- 9.147 Regarding the time of recording of compensation payments, the same rules apply as the ones for fines and penalties (see paragraph 9.140).

## **Citizenship by investment programmes**

9.1399.148 Individuals may obtain an additional citizenship, or passport, by making economic contributions to another country. If these contributions take the form of non-refundable contributions to the government, nominated development funds, or possibly NPISHs, they should be recorded as current transfers, unless the contributions are specifically earmarked for capital investment projects. In the latter case, the contributions should be recorded as capital transfers.

# H. Social transfers in kind

- 9.1409.149 As explained in section G, the secondary distribution of income transfers other than social transfers in kind account is concerned with how income is redistributed among sectors by means of transfers in cash or transfers that are treated as if they are in cash. However, there remains an important class of transfers that are recorded as a transfer of consumption expenditure originally undertaken by general government and NPISHs. These are described as social transfers in kind. Social transfers in kind consist of goods and services provided to households by government and NPISHs either free or at prices that are not economically significant. These transfers are sufficiently distinctive that two separate accounts are devoted to recording them.
- 9.1419.150 Social transfers in kind consist of final consumption expenditure undertaken by government and NPISHs on behalf of households. For this reason they are described as individual goods and services. This is in distinction from public goods such as defence and street lighting, which the SNA refers to as collective services. (There is more discussion on the difference between individual and collective expenditure of government in chapter 910.) There are two main reasons why government may choose to provide individual services to households. One is that by meeting the needs of very large sections, or even all, the population centrally there are cost efficiencies to be realized. The other is that the government can ensure that these services are available to the population at reasonable cost to households, prescribe the standards of the service to be observed and can insist that households avail themselves of the services, for example by requiring

children to attend school.

9.1429.151 For some analytical purposes, it is instructive to consider a measure of household consumption that includes the goods and services provided as social transfers in kind. The expanded view of consumption, though, must be matched by a similarly extended view of income since household saving is unaffected by this different perspective. In order to accommodate this different view of household income and consumption, the SNA introduces two accounts, one of which derives an alternative measure of income (the redistribution of incomesocial transfers in kind account, described below. The second account shows the alternative measure of consumption (the use of adjusted disposable income adjusted for social transfers in kind account) and is described in chapter 910.

#### 1. The redistribution of incomesocial transfers in kind account

9.1439.152 The redistribution of incomesocial transfers in kind account takes the balancing item of the secondary distribution of income transfers other social transfers in kind account, disposable income, and adjusts this for the value of social transfers in kind to reach a new balancing item called adjusted disposable income adjusted for social transfers in kind. For households, adjusted disposable income adjusted for social transfers in kind is higher than disposable income; for government and NPISHs, it is lower.

## 2. Social transfers in kind paid to non-residents

9.1449.153 In principle, social transfers in kind may be paid to non-residents. One simple example is emergency medical care provided to a foreign tourist by a hospital within general government. However, just as non-resident households may benefit from social transfers in kind from the national government, so resident households may benefit from social transfers in kind paid by the government of another economy. In general these flows to non-residents will be small relative to the total level of social transfers in kind and, unless there is strong evidence to the contrary, by convention it may be assumed that the flows to non-residents are balanced by flows from governments (and NPISHs) of other economies. Subject to this convention, it is therefore the case that total disposable income for the total economy is exactly equal to total adjusted disposable income adjusted for social transfers in kind.

# Chapter 10: Use of income accounts (OLD Chapter 9: The use of income accounts)

# A. Introduction

- 10.1 The purpose of the use of income accounts is to show how households, government units, and non-profit institutions serving households (NPISHs), and the central bank allocate their disposable income between final consumption and saving. Throughout this chapter, unless otherwise stated, the expression consumption should be taken to mean final consumption. There are two use of income accounts that correspond to two concepts of disposable income and consumption. In the first account, the use of disposable income account, shown in table 9.10.1, attention is focused on disposable income and the expenditure on consumption goods and services that can be met out of that income. In the second account, the use of adjusted disposable income adjusted for social transfers in kind account, shown in table 9.210.2, attention is focused on the consumption goods and services acquired and used by institutional units, especially households, whether acquired by expenditure or by social transfers in kind. To explain the difference between the two accounts it is necessary to define some key terms.
- 10.2 A consumption good or service is defined as a good or service that is used (without further transformation in production as defined in the SNA) by households, <u>government</u>, NPISHs or <u>the central bankgovernment units</u> for the direct satisfaction of individual needs (or wants) or for the collective needs of members of the community.
- 10.3 An individual consumption good or service is one that is acquired by a household and used to satisfy the needs or wants of members of that household. Individual goods and services can always be bought and sold on the market, although they may also be provided free, or at prices that are not economically significant, as social transfers in kind. In practice, all goods and most services are individual.
- 10.4 A collective consumption service is a service provided simultaneously to all members of the community or to all members of a particular section of the community, such as all households living in a particular region. Collective services are automatically acquired and consumed by all members of the community, or section of the community, without any action on their part. Typical examples are public administration and the provision of security, either at a national or local level. Collective services are the "public goods" of economic theory. By their nature, collective services cannot be sold to individuals on a market, and they are financed by government units or the central bank, out of taxation or other revenues. The differences between individual and collective consumption goods or services are elaborated further in paragraphs 10.93 to 10.1009.91 to 9.98.
- 10.5 Some of the services provided by NPISHs to the members of the associations that own them have some of the characteristics of collective services; for example, some research carried out by NPISHs may benefit all members of the community. However, most of the services provided by NPISHs are individual in nature and, if it is not practicable to identify the outputs of NPISHs that may be considered to be collective in nature, all the services provided by NPISHs may be treated as individual.
- 10.6 As explained in later sections of this chapter, expenditure is attributed to the institutional units that bear the costs even if they are not the units to whom the goods or services are delivered. Thus, expenditures that government units or NPISHs make on individual goods and services that they provide to households as social transfers in kind are recorded as final consumption expenditure incurred by government units or NPISHs. Although they do not physically consume the goods and services provided as social transfers in kind, government units or NPISHs are the units that pay for them and take the decisions about the amounts to be provided. Information about their expenditure on such goods and services must, therefore, be recorded in the accounts of the SNA in conjunction with their disposable income. However, merely to record the expenditure is not sufficient when the goods and services are consumed by units different from those that control and finance the expenditure. In order to identify the units that benefit from their consumption it is necessary to recognize that the goods and services are in fact transferred to, and used by, households. From this stems the distinction between final consumption expenditure and actual final consumption.
- 10.7 In the use of disposable income account, the main resourcerevenue is disposable income, which is the

balancing item carried forward from the secondary distribution of income transfers other than social transfers in kind\_account. The main use is final consumption expenditure. *Final consumption expenditure is the amount of expenditure on consumption goods and services*. In the use of adjusted disposable income adjusted for social transfers in kind\_account, the main resourcerevenue is adjusted disposable income adjusted for social transfers in kind, which is the balancing item carried forward from the redistribution of incomesocial transfers in kind account. The main useexpenditure is actual final consumption. Actual final consumption measures the amount of consumption goods and services acquired.

- 10.8 In the <u>redistribution of incomesocial transfers</u> in kind account, described in chapter <u>89</u>, the <u>adjusted</u> disposable income <u>adjusted for social transfers in kind</u> of households is derived from their disposable income by adding the value of social transfers in kind receivable, while that for government units and NPISHs is derived by subtracting the value of social transfers in kind payable. Corresponding to the <u>redistribution of incomesocial transfers</u> in kind account, is the use of <u>adjusted</u> disposable income <u>adjusted for social transfers</u> in kind account in which the actual final consumption of households is derived from their final consumption expenditure by adding the value of social transfers in kind receivable, while the actual final consumption of government units and NPISHs is derived by subtracting the value of social transfers in kind receivable. Thus there are two accounts describing the derivation of disposable income in the SNA and two use of income accounts.
- 10.9 In both the use of disposable income account and the use of adjusted disposable income adjusted for social transfers in kind account, an adjustment item is needed in order to show the change in pension entitlements recorded in the financial account. Saving is the balancing item for both the use of disposable income account and the use of adjusted disposable income adjusted for social transfers in kind account. It is calculated as disposable income adjusted for social transfers in kind account. It is calculated as adjusted disposable income adjusted for social transfers in kind, which is also adjusted for the change in pension entitlements, less actual final consumption. It follows that saving is the same whether it is calculated in the use of disposable income account or the use of adjusted disposable income adjusted for social transfers in kind, which is also adjusted for social transfers in the use of disposable income account or the use of adjusted disposable income adjusted for social transfers in kind account.
- 10.10 For <u>Ssaving</u>, <u>likeas well as</u> disposable income and <u>adjusted</u>-disposable income <u>adjusted for social transfers</u> in kind, <u>net figures</u>, i.e., <u>after deducting may have to be recorded gross of consumption of fixed</u> capitaldepreciation and depletion, because of the difficulty of measuring the latter. As elsewhere, however, the net figures are conceptually preferable\_and although there may be measurement challenges the compilation of estimates on a net basis is strongly encouraged.
- 10.11 With the exception of the central bank who produces and consumes collective services, Corporations do not have final consumption expenditure. They may purchase the same kinds of goods or services as households use for final consumption (for example electricity or food) but such goods or services are either used for intermediate consumption or provided to employees as remuneration in kind. It is assumed in the SNA that corporations do not make transfers of consumption goods or services to households. As corporations neither make nor receive social transfers in kind, it is also not possible to draw a meaningful distinction between their disposable income and theiradjusted disposable incomes adjusted for social transfers in kind. It follows that both the use of disposable income account and the use of adjusted disposable income adjusted for social transfers in kind account for corporations are only dummy accounts that contain no entries for final consumption expenditure or actual final consumption. Apart from the adjustment item for pension entitlements referred to above and explained in more detail in paragraphs 10.20 to 10.259.20 to 9.25, the gross or net saving of corporations must be equal to their gross or net disposable income, or adjusted their disposable; incomes adjusted for social transfers in kind. As noted before, an exception is made for the central bank, where the final consumption of the collective services produced by them needs to be accounted for. In other contexts, the saving of corporations is often described as the "retained earnings" or "undistributed incomes" of corporations.

## 1. The use of disposable income account

10.12 As shown in Table 9.110.1, the use of disposable income account contains only three main entries apart from the balancing item, saving. Disposable income, the balancing item carried forward from the secondary distribution of income transfers other than social transfers in kind account, is recorded on the right-hand side

of the account under <u>resourcesrevenues</u>, while final consumption expenditure is recorded on the left-hand side under <u>usesexpenditures</u>. As just noted, the account is relevant mainly for the <u>threefour</u> sectors that incur final consumption expenditure, namely the general government, NPISHs, <u>financial corporations (i.e., the central bank)</u> and household sectors.

- 10.13 The balancing item for the account is saving. Before the balance is struck, however, an adjustment item showing the adjustment for the change in pension entitlements is entered in order to reallocate a certain amount of saving between sectors. This item is needed because of the way in which pension contributions and benefits are recorded in the secondary distribution of income transfers other than social transfers in kind accounts. The adjustment is shown on the right-hand side under resources for households and on the left-hand side under uses expenditures for financial corporations or other units responsible for pension liabilities.
- 10.14 Final consumption expenditure is shown in table <u>9.410.1</u>, disaggregated between individual consumption expenditure and collective consumption expenditure to bring out the accounting interrelationships described below. However, it is usually desirable to break down final consumption expenditure using a classification of expenditure by purpose or by type of good or service. Most users will expect at least some degree of disaggregation, for example, between expenditures on goods or services or between expenditures on durable and non-durable goods. Disaggregation by type of goods and services is needed for the supply and use tables, as explained in chapter <u>1415</u>.

 Table 9.110.1: The use of disposable income account - uses

Table 9.101.1 (cont): The use of disposable income account - resources revenues

#### 2. The use of adjusted disposable income adjusted for social transfers in kind account

- 10.15 As shown in Table 9.210.2, the use of adjusted disposable income adjusted for social transfers in kind account also contains three main entries apart from the balancing item, saving. Adjusted dD isposable income adjusted for social transfers in kind, the balancing item brought forward from the redistribution of incomesocial transfers in kind account, is recorded on the right-hand side of the account under resources revenues, while actual final consumption is recorded on the left-hand side under uses expenditures. As with the use of disposable income account, before the balancing item, saving, is struck, the adjustment for the change in pension entitlements is entered. The account is relevant mainly for the general government, NPISHs, financial corporations (i.e., the central bank) and household sectors.
- 10.16 The actual final consumption of households is obtained by augmenting their final consumption expenditure by the value of social transfers in kind receivable, while that for government units and NPISHs is obtained by subtracting from their final consumption expenditure the value of social transfers in kind payable. Some social transfers in kind may be receivable by non-residents, for example emergency medical treatment in a public hospital for a non-resident tourist, but the figures involved are likely to be <u>veryrelatively</u> small compared with total social transfers in kind. Further, residents abroad may also benefit from social transfers in kind from a non-resident government (or NPISH) in like manner. Unless there is strong reason to believe otherwise, therefore, it is assumed these two figures offset one another so that all social transfers in kind can be shown as payable to resident households. Thus, the value of actual final consumption for the total economy is equal to that of total final consumption expenditure.
- 10.17 The actual final consumption of households is a measure of the value of the consumption goods and services acquired by households, whether by purchase or by transfer from government units or NPISHs, and used by households for the satisfaction of their needs (or wants). It is therefore a better indicator of their living standards than their final consumption expenditure. In some countries, the value of the individual non-market goods and services provided to households as social transfers in kind may be quite large, depending upon the kinds of economic and social policies pursued by their governments, so that the value of the actual final consumption of households has sometimes been described as their "enlarged" consumption or their "total" consumption, although these terms are not used in the SNA. The actual final consumption of

the general government sector is correspondingly smaller than government final consumption expenditure.

#### 3. The relationship between the two versions of the use of income account

- 10.18 The two use of income accounts are neither sequential nor hierarchical. They are parallel accounts that serve different analytical or policy purposes. One shows which units incur expenditure; the other which unit benefits from the expenditure and the extent to which households' consumption levels are provided by themselves. The values of the goods and services involved in social transfers in kind are recorded in two different ways in the SNA, both of which represent uses of resources by government units or NPISHs:
  - a. As final consumption expenditure, payable by government units or NPISHs; and
  - b. As social transfers in kind, payable by government units or NPISHs but receivable by households and recorded as part of their actual final consumption.
- 10.19 Although the difference between disposable and <u>adjusted</u> disposable income <u>adjusted for social transfers in</u> <u>kind</u> is attributable to social transfers in kind, even disposable income should not be interpreted as if it were a measure of income available in cash. Its several non-cash elements, such as those associated with production for own consumption or remuneration in kind, were pointed out in paragraphs <u>8.22 and 8.23,9.22</u> and 9.23.

## 4. Adjustment for the change in pension entitlements

- 10.20 As individuals accrue pension entitlements in a social insurance scheme throughout their working lives, the corresponding entitlements become their assets and the liabilities of the units ultimately responsible for paying the pensions. Pensions due under social assistance are excluded because the amounts due do not necessarily accrue in a predictable fashion over time or for predictable reasons. Similar arguments apply to benefits due under social security. In some countries, government assumes responsibility for paying pensions even for non-government employees and self-employed persons, and these pensions are paid via social security funds. There is detailed discussion in part 2 of chapter 1724 about when the liabilities for these schemes can be integrated into the sequence of economic accounts and when they only appear in a supplementary table. In this chapter, the expression "pension scheme" is used to cover those parts of social security schemes where liabilities can be integrated into the sequence of economic accounts, including the accumulation accounts and balance sheets, together with all other employment related social insurance schemes.
- 10.21 Pension schemes are treated in the SNA as having liabilities towards the households with claims on the schemes. The payments of pension contributions into the schemes and the receipts of pensions by pensioners constitute the acquisition and disposal of financial assets. However, this may not accord with the perception of the households concerned, especially pensioners' households, who tend to regard the pensions they receive as income in the form of current transfers. Moreover, at least some pensions received under social security schemes and those received under social assistance are in fact treated as current transfers in the SNA.
- 10.22 In order to present income information that may be more useful for analysing the behaviour of the households concerned, the payments of pension contributions to all pension schemes and to social security and the receipts of pensions by pensioners' households under both pension schemes and social security are recorded in the secondary distribution of income transfers other than social transfers in kind account as social contributions and social insurance benefits, respectively, as well as being recorded in the financial account as changes in pension entitlements. As a consequence of the recording of the relevant contributions and benefits as current transfers, the level of disposable incomes of households is affected.
- 10.23 The rationale for treating pension contributions and benefits as current transfers is that, when looked at for the economy as a whole, the effect of pension provision can be seen as if it were a redistributive process among households. To the extent that contributions and benefits are not exactly equal, there is an impact on household saving. For example, if households as a whole pay more contributions than they receive as benefits, their saving is reduced by this difference. Similarly if household benefits exceed their contributions, saving

does not reflect the fact that the negative change in entitlements represents a reduction in net worth. However, as is clear in the financial account, the change in pension entitlements is part of household net worth. It is therefore necessary to adjust saving for the difference between contributions payable and benefits receivable shown in the secondary distribution of income transfers other than social transfers in kind account.

10.24 An item described as the adjustment for the change in pension entitlements therefore appears in both the use of disposable income account and the use of the adjusted disposable income adjusted for social transfers in kind\_account. It is equal to:

the total value of the actual and imputed social contributions payable into pension schemes,

*plus* the total value of contribution supplements payable out of the property income attributed to pension fund beneficiaries,

minus the value of the associated service charges,

minus the total value of the pensions paid out as social insurance benefits by pension schemes.

10.25 Opposite adjustments are needed in the use of income accounts of the units responsible for paying pensions. These adjustments can affect non-resident institutional units, both households and pension providers.

## 5. Saving

- 10.26 Saving is the balancing item in the two use of income accounts. Its value is the same whether it is derived as disposable income less final consumption expenditure or as adjusted disposable income adjusted for social transfers in kind less actual final consumption (in both cases, after making the adjustment for the change in pension entitlements just described).
- 10.27 As already noted, non-financial and financial corporations, with the exception of the central bank, have no final consumption expenditure or actual final consumption. Their net saving is equal to their net disposable income adjusted for social transfers in kinddisposable, income (apart from the adjustment item for pension entitlements).

Table 9.210.2: The use of adjusted disposable income adjusted for social transfers in kind account - uses expenditures

Table 9.210.2 (cont): The use of adjusted disposable income adjusted for social transfers in kind account - resources revenues

- 10.28 Saving represents that part of disposable income (adjusted for the change in pension entitlements) that is not spent on final consumption goods and services. For sectors with expenditures on final consumption, Hi trans be positive or negative depending on whether disposable income exceeds final consumption expenditure, or vice versa. For other sectors, saving is equal to disposable income (adjusted for the change in pension entitlements). Assuming that saving is positive (and in the absence of capital transfers), the unspent income must be used to acquire assets (possibly only an increase in cash) or reduce liabilities. If saving is negative, some financial or non-financial assets must have been liquidated, (including a rundown of cash), or some liabilities increased. Thus, saving provides the link between the current accounts of the SNA and the subsequent accumulation of economic assets accounts.
- 10.29 If saving is zero, final consumption expenditure equals disposable income plus the change in pension entitlements. In that case, the institutional unit is not obliged to dispose of any assets or increase any of its liabilities unless capital transfers are receivable or payable. As already indicated in chapter 89, disposable income can, therefore, be interpreted as the maximum amount that an institutional unit can afford to spend on final consumption goods and services in the accounting period without having to reduce its cash, liquidate other assets or increase its liabilities.

## 6. Calculating savings ratios

10.30 The savings ratio, especially for households, is a key economic variable. It is usually calculated by dividing saving by disposable income for the sector. However, the entry of the change in pension entitlements in both the use of disposable income account and the use of adjusted disposable income <u>adjusted for social transfers</u> in kind account complicates this calculation. It is necessary to use not the balancing item from the <u>secondary</u> <u>distribution of income transfers other than social transfers in kind</u> account (disposable income) or from the <u>redistribution of incomesocial transfers</u> in kind account (<u>adjusted disposable income\_adjusted for social transfers in kind</u>) but to add the adjustment for the change in pension entitlements to each of these figures to derive a figure for total disposable income or total <u>adjusted disposable income\_adjusted for social transfers in kind</u>. It is this total figure that should be the denominator in the savings ratio calculation.

## B. Expenditures, acquisitions and consumption of goods and services

10.31 The distinction between final consumption expenditure and actual final consumption depends on the general distinction between expenditures on, and acquisitions of, goods and services. The purpose of this section is to explain not only how expenditure differs from acquisition but also how both of them differ from the actual or physical use of goods and services.

## 1. Expenditures

10.32 Expenditures on goods and services are defined as the values of the amounts that buyers pay, or agree to pay, to sellers in exchange for goods or services that sellers provide to them or to other institutional units designated by the buyers. The buyer incurring the liability to pay need not be the same unit that takes possession of the good or service. As already noted, it is common for government units or NPISHs to pay for goods or services that the sellers provide to households. Moreover, as explained below, the liability incurred by the buyer does not necessarily have to be settled by a payment of cash.

## The timing of expenditures on goods and services

- 10.33 Expenditures on goods or services occur at the times when buyers incur liabilities to sellers. These are usually the times when:
  - a. The ownership of the good is transferred from the seller to the new owner; or
  - b. The delivery of a service by the producer is completed to the satisfaction of the consumer.
- 10.34 The times at which sellers are actually paid for the goods or services they deliver are not necessarily the times at which the expenditures occur. As explained in chapter <u>34</u>, payments may either precede, or lag behind, the actual deliveries of the goods or services sold. For this reason, the values of expenditures are measured by the values of the amounts receivable and payable at the times the expenditures are incurred. When payments take place before or after the expenditures are incurred, there must be consequential changes in the financial assets or liabilities (other than cash) of the two units concerned at the time the change of ownership takes place or the service is delivered.
- 10.35 The precise moment at which the ownership of a good is transferred, or delivery of a service is completed to the satisfaction of the consumer, may not be easy to determine in practice in some cases. It may be perceived differently, or even disputed, by the two parties concerned.

## 2. Acquisitions

10.36 Acquisitions of goods and services by institutional units occur when they become the new owners of the

goods or when the delivery of services to them is completed. Acquisitions are valued at the transaction prices paid by the units that incur the expenditures. In most cases, the transaction price is the market price. The value of the goods or services acquired by an institutional unit or sector consists of the value the goods or services acquired through its expenditure plus the value of goods or services received through social transfers in kind less the value of goods or services paid to other units as social transfers in kind.

- 10.37 The difference between final consumption expenditure and actual final consumption is exactly the difference between expenditure on consumption goods and services and acquisition of consumption goods and services. Since all consumption goods and services must be both the subject of expenditure and also be acquired, this difference between final consumption expenditure and actual final consumption, sector by sector, explains the redistribution of goods and services by means of social transfers in kind.
- 10.38 The distinction between consumption expenditure and actual consumption and thus between expenditure and acquisitions is made only in respect of final consumption. The difference is explained exactly by social transfers in kind.

#### **3.** Consumption of goods and services

- 10.39 Consumption of goods and services is the act of completely using up the goods and services in a process of production or for the direct satisfaction of human needs or wants. The activity of consumption consists of the use of goods and services for the satisfaction of individual or collective human needs or wants. The satisfaction of needs or wants is immediate and direct in the case of final consumption; it is indirect and delayed in the case of intermediate consumption where goods and services are used to produce other goods and services that ultimately lead to the satisfaction of human needs or wants.
- 10.40 In the case of goods, the distinction between acquisition and consumption is clear. Producers acquire goods that they may hold for varying periods of time before physically using them up in processes of production. Households may hold consumption goods before using them for the satisfaction of their needs or wants. Few goods are so perishable that they have to be used immediately. For example, most foodstuffs need not be eaten until some time after they have been acquired.
- 10.41 In the case of services, however, the distinction between acquisition and use may not be relevant in a practical sense. The situations of units to whom services are delivered are automatically affected by those services and no further action may be needed in order to benefit from them.

## Durable versus non-durable goods

10.42 In the case of goods, the distinction between acquisition and use is analytically important. It underlies the distinction between durable and non-durable goods that is used extensively in economic analysis. In fact, the distinction between durable and non-durable goods is not based on physical durability as such. Instead, the distinction is based on whether the goods can be used once only for purposes of production or consumption or whether they can be used repeatedly, or continuously. For example, coal is a highly durable good in a physical sense, but it can be burnt only once. A durable good is one that may be used repeatedly or continuously over a period of more than a year, assuming a normal or average rate of physical usage. A consumer durable is a good that may be used for purposes of consumption repeatedly or continuously over a period of a year or more.

## Consumption as the using up of goods and services

- 10.43 A consumption function that expresses utility as a function of the quantities of goods and services consumed describes the using up of those goods and services rather than expenditures or acquisitions. In order to measure consumption as an activity, it would be necessary to adopt accounting procedures similar to those used in a production account, where a clear distinction is drawn between purchases of goods to be used in production and their subsequent use as inputs.
- 10.44 In practice, the SNA measures household consumption by expenditures and acquisitions only. The repeated use of durables by households could be recognized only by extending the production boundary by postulating

that the durables are gradually used up in hypothetical production processes whose outputs consist of services. These services could then be recorded as being acquired by households over a succession of time periods. However, durables are not treated in this way in the SNA. A possible supplementary extension to the SNA to allow for such an extension of the production boundary could usefully take place in a<u>n extended</u> satellite account.

## C. Measuring the value of non-monetary transactions indirectly

- 10.45 By mutual agreement between the buyer and the seller, the liability incurred by the buyer may be discharged by providing a good, service or asset other than cash in exchange. For example, goods or services may be exchanged for each other in barter transactions, or employees may provide labour in exchange for goods or services received as remuneration in kind.
- 10.46 When the buyers do not pay cash, or expect to pay cash, values have to be imputed for the expenditures using the appropriate prices of similar goods or services sold for cash on the market.
- 10.47 The value of goods produced and consumed within the same household as well as for those household services falling within the production boundary must also be measured indirectly.
- 10.48 In the interests of brevity, a transaction for which a value has to be imputed may be described as an "imputed expenditure" and this terminology is used below. Strictly speaking, however, the imputation refers to the value of goods or services involved and not to the expenditure itself. In other words it is the valuation that is imputed, not the fact that the transaction takes place. It is therefore preferable to refer to measuring the flows indirectly rather than by imputation.

## **1. Barter transactions**

- 10.49 A barter transaction is one where one basket of goods and services is exchanged for another basket of different goods and services without any accompanying monetary payment. The values of the goods or services acquired in barter transactions constitute imputed expenditures. Values have to be estimated indirectly for goods or services exchanged in barter transactions equal to their market values. Thus, when the goods or services obtained through barter are used for household consumption their estimated values must be recorded as household final consumption expenditure. When a good offered for barter is an existing good and not newly produced output, negative imputed expenditure must be recorded for the unit offering the good, in the same way that sales of existing goods are recorded as negative expenditures.
- 10.4910.50 As crypto assets without a corresponding liability designed as a general medium of exchange, and those designed to act as a medium of exchange within a platform only (i.e., payment tokens without a corresponding liability) are classified as non-produced non-financial assets (see chapter 22), acquisitions of goods and services through payments using such assets are also a type of barter transactions. This does not hold for crypto assets with a corresponding liability, such as cryptocurrency issued or authorized by central banks (i.e., central bank digital currencies), which are classified as financial assets.
- 10.5010.51 In barter, both parties to a transaction must be recorded as making expenditures. The value of these expenditures should be based on the purchasers' prices of these bartered products. In practice, neither taxes on products or transportation costs may apply, in which case the purchasers' prices will not differ from the basic prices of the products. As the values of the goods or services bartered may not be the same, the values imputed for the barter transaction may on pragmatic grounds be taken as a simple average of the estimated values of the goods or services exchanged, so that equal expenditures are recorded for both parties. Goods that have been the subject of a barter transaction may be subsequently bartered with another party at a higher price, earning a margin for the unit conducting both barter transactions. However, each barter transaction involves two parties only and no wholesale or retail margin.

## 2. Expenditures on goods and services received as income in kind

<u>10.51</u><u>10.52</u> Income in kind received by employees is measured by the value of the goods and services provided

by employers to their employees in remuneration for work done. Workers receiving remuneration in kind are treated as making expenditures equal to the market value of the goods or services received (at producers' prices if produced by the employer or at purchasers' prices if bought by the employer), the costs of the expenditures being met out of the income they receive as remuneration in kind. Thus, the values of the goods and services must be recorded as final consumption expenditure incurred by households as well as income in kind.

10.5210.53 A distinction has to be made between goods or services provided to employees as remuneration in kind and goods or services provided because they are needed at work, the latter constituting intermediate consumption by the enterprise. In principle, the distinction is clear. Goods or services that employers are obliged to provide to their employees to enable them to carry out their work, such as tools, equipment, special clothing, etc., constitute intermediate consumption. On the other hand, goods or services that employees are able to use in their own time for the direct satisfaction of their needs or wants, or those of their families, constitute remuneration in kind. In practice, there are inevitably borderline cases, such as uniforms that must be worn at work but are also worn extensively by employees away from work. A detailed listing of the kinds of goods and services that are included in remuneration in kind is given in the section on compensationremuneration of employees in chapter 78.

#### 3. Expenditure on goods and services produced on own account

10.5310.54 When institutional units retain goods or services produced by themselves for their own final consumption or gross fixed capital formation, they clearly bear the costs themselves. They are, therefore, recorded as incurring expenditures whose values have to be estimated using the basic prices of similar goods or services sold on the market or their costs of production in the absence of suitable basic prices.

10.5410.55 Household final consumption expenditure includes estimates for the values of goods or services produced as outputs of unincorporated enterprises owned by households that are retained for consumption by members of the household. The production of services for own consumption within the same household falls outside the production boundary of the SNA, except for housing services produced by owner-occupiers and services produced by employing paid domestic staff. As the costs of producing goods or services for own consumption are borne by the households themselves, it is clear that the expenditures on them are also incurred by households, even though their values must be estimated indirectly. The main types of goods and services produced and consumed within the same household are as follows:

- a. Food or other agricultural goods produced for own final consumption by farmers, including subsistence farmers, or others for whom agricultural production is only a secondary, or even a leisure, activity;
- b. Other kinds of goods produced by unincorporated enterprises owned by households that are consumed by members of the same households;
- c. Housing services produced for own final consumption by owner-occupiers (discussed further below); and
- d. Domestic or other services produced for own final consumption by households that employ paid staff for this purpose (domestic staff, cooks, gardeners, chauffeurs, etc.).
- 10.5510.56 Values are estimated for these goods or services on the basis of the current basic prices of similar goods or services sold on the market, or by costs of production when suitable prices are not available, except for the services of paid staff; by convention, services of paid staff are valued simply by the compensationremuneration of employees paid, in cash and in kind.

# **D.** Household final consumption expenditure

## 1. Introduction
- 10.5610.57 Household final consumption expenditure consists of expenditure incurred by resident households on consumption goods or services. As well as purchases of consumer goods and services, final consumption expenditure includes the estimated value of barter transactions, goods and services received in kind, and goods and services produced and consumed by the same household, valued as explained in section C.
- 10.58 Final consumption expenditure excludes expenditure on fixed assets in the form of dwellings or on valuables. Dwellings are goods used by their owners to produce housing services. Expenditure on dwellings by households, therefore, constitutes gross fixed capital formation. When dwellings are rented by their owners, rentals are recorded as output of housing services by owners and final consumption expenditure by tenants. When dwellings are occupied by their owners, the imputed value of the housing services enters into both the output and final consumption expenditure of the owners. Valuables are expensive durable goods that do not deteriorate over time, are not used up in consumption or production, and are acquired primarily as stores of value. They consist mainly of works of art, precious stones and metals and jewellery fashioned out of such stones and metals. Valuables are held in the expectation that their prices, relative to those of other goods and services, will tend to increase over time, or at least not decline. Although the owners of valuables may derive satisfaction from possessing them, they are not used up in the way that consumption goods, including consumer durables, are used up over time.
- 10.5710.59 Non-fungible tokens are digital records hosted on a blockchain that are associated with a digital or physical asset or product but that are distinct from that asset or product. If such non-fungible tokens only grant personal use and display rights, the acquisition of these tokens should be recorded as final consumption expenditure. However, they may transform to a valuable at a later stage, similar to the purchases of, for example, objects of art, the purchases of which are initially recorded as final consumption expenditure. More information on the recording of transactions related to non-fungible tokens can be found in chapter 22.
- 10.5810.60 The treatment of expenditure in some specific situations or on certain specific types of goods and services is outlined in the following sections.

## 2. Expenditures by households owning unincorporated enterprises

- 10.5910.61 When a household includes one or more persons who own an unincorporated enterprise, all expenditure incurred for business purposes is excluded from household consumption expenditure. It is necessary to ensure that only expenditure for the direct satisfaction of human needs and wants is included in household final consumption expenditure. This may not be easy in practice when the same good or service (for example, electricity or other fuels) may be used equally well for business purposes or for final consumption. Business expenditures cannot therefore be identified purely on the basis of the type of good or service purchased. Particular care needs to be exercised in the case of farms, including subsistence farms, where goods that have been purchased, or produced on own account, may be used either for household final consumption or for intermediate consumption; for example, corn or potatoes may be consumed by members of the households, fed to animals or used as seeds for future crops.
- 10.6010.62 Care is also needed with purchases of consumer durables such as vehicles, furniture, or electrical equipment, which are to be classified as gross fixed capital formation by the household enterprise when purchased for business purposes but as final consumption expenditure when purchased for the personal use of household members. While the nature of the distinction may be clear in principle, it is often blurred in practice, especially when the owner of the business uses a durable good, such as a vehicle, partly for business purposes and partly for personal benefit. This has become even more relevant in view of, for example, the provision of taxi services to third parties being more accessible through the digitalisation of the economy. In such cases, the expenditure on the purchase of the durable should be split between gross fixed capital formation by the enterprise and household final consumption expenditure in proportion to its usage for business and personal purposes at the time of purchase. If the change in the use of a durable relates to a product that has been purchased in the past, the change in use should be recorded as negative consumption expenditure and positive fixed capital formation, in proportion to the change in the use of the asset. When durables are purchased wholly or partly for business purposes, the decline in their value attributable to their use within the business should be recorded under the costs of depreciationeonsumption of fixed capital of the unincorporated enterprise.

# 3. Expenditures on particular types of goods and services

## **Expenditures on financial services**

10.6110.63 When appropriate, values must be estimated for the expenditures that households incur on services provided by financial institutions for which no explicit charges are made. Expenditures on services for which financial institutions do make charges are recorded in the usual way.

#### Financial services, except insurance and pension fund services

- 10.6210.64 Financial institutions, except insurance corporations and pension funds, and money lenders charge interest rates higher than a reference rate and pay interest at a rate lower than the reference interest rate. As explained in chapters 67 and 78, SNA interest is recorded in the allocation of primarycarned income account at a reference rate and the difference between SNA interest and bank interest is recorded as final consumption expenditure of households. (If it is possible to identify interest payments and receipts relating exclusively to unincorporated household enterprises, the charges would appear as intermediate consumption of those enterprises, but this is often not possible.)
- 10.6310.65 When households acquire or dispose of foreign exchange and some other financial assets, the dealer in the financial asset will typically quote a buying price and a selling price for the asset. The difference between the price actually receivable or payable and the average of the buying and selling price at the time of the transaction is also treated as expenditure on the services of financial institutions.

## Insurance and pension fund services

10.6410.66 The way in which the value of the services produced by insurance enterprises and pension schemes is calculated in the SNA is explained in chapters 67 and 24. The values of the insurance services consumed by different sectors, subsectors or institutional units are estimated by allocating the value of the services produced by an insurance enterprise in proportion to the actual premiums. When the value of output is estimated by line of business, which is desirable if practicable, the service charge should be allocated across actual premiums by line of business also. The amounts paid by households are recorded as final consumption expenditure (except for the insurance services purchased by unincorporated enterprises owned by households, which are treated as intermediate consumption). The whole of the service charge on pension schemes is borne by households (some of which may be non-resident).

# Services of dwellings, repairs and improvements

Services of owner-occupied dwellings

10.6510.67 Persons who own the dwellings in which they live are treated as owning unincorporated enterprises that produce housing services that, disregarding possible rentals received from temporarily renting out the dwelling (see chapter 7), are consumed by the household to which the owner belongs. The housing services produced are deemed to be equal in value to the rentals that would be paid on the market for accommodation of the same size, quality and type. Care must be taken in respect of any taxes paid on housing. Taxes such as value added tax are rarely paid on housing services, but if they are payable, they should be excluded from the value of owner-occupied housing if the owner-occupier is exempt from payment. The imputed values of the housing services are recorded as final consumption expenditures of the owners.

#### Decoration, minor repairs and maintenance

10.6610.68 "Do-it-yourself" activities of decoration and undertaking minor repairs, often of a routine nature, of a kind that would normally be seen as the responsibility of a tenant are treated as falling outside the production boundary. Purchases of materials used for such decoration or repairs should therefore be treated as final

consumption expenditure, as should fees and service charges paid to builders, carpenters, plumbers, etc. Maintenance that is the responsibility of tenants is also treated as final consumption expenditure.

10.67 Expenditures that owners, including owner-occupiers, incur on the decoration, minor repairs and maintenance of the dwelling that would normally be seen as the responsibility of a landlord should not be treated as household final consumption expenditure but as intermediate expenditure incurred in the production of housing services. These expenditures may consist either of payments for services provided by professional builders or decorators or purchases of materials for "do-it-yourself" repairs and decoration. In the latter case, no cost of the labour involved in the activity is included. The only value added for the imputed rental of owner-occupied housing is operating surplus.

#### Major improvements

10.6810.70 Expenditures on major improvements (that is, reconstructions, renovations or enlargements) to dwellings are not classed in the same way as decoration, minor repairs and maintenance. They are excluded from household consumption expenditure and are treated as gross fixed capital formation on the part of the owners of those dwellings, including owner-occupiers.

#### The repair and maintenance of durables

10.6910.71 Expenditures on all repair and maintenance of consumer durables, including vehicles, are treated in the same way as minor repairs to dwellings of the type carried out by tenants. Repairs and maintenance constitute final consumption expenditure whether they are carried out by specialist producers or by members of the household as "do-it-yourself" activities. In the latter case, only the values of the materials purchased should be included in household consumption expenditure.

#### Licences and fees

10.70 10.72 Households make payments to government units to obtain various kinds of licences, permits, certificates, passports, etc., and in some cases it is not clear whether the government units actually provide services in return, such as testing or inspection, or whether the payments are de facto taxes. As explained in paragraph 8.649.66 (c), mandatory payments by persons or households in order to obtain licences to own or use certain goods or to engage in the pursuit of certain activities should generally be recorded as taxes. Examples of payments which would normally be treated as current taxes are licences to own or use vehicles, boats or aircraft, driving or pilot's licences, firearm licences, licences for recreational hunting, shooting or fishing, visa fees, airport fees and court fees, the treatment of certain borderline cases has been decided by the following convention, based on the practices followed in the majority of countries: payments by households for licences to own or use vehicles, boats or aircraft and also licences for recreational hunting, shooting or fishing are treated as taxes. Payments for licences to undertake a specific activity, for example a taxi licence, are treated as a tax on production. Payments for all other kinds of licences, permits, certificates, passports, etc., are treated as purchases of services and included in household consumption expenditure.

# 4. Classification of household final consumption expenditure

10.7110.73 Household final consumption expenditure is typically a large aggregate covering a wide range of goods and services. It is thus usually desirable to break down the figure. The CPC may be used for a breakdown by type of good or service. The Classification of Individual Consumption by Purpose (COICOP) may be used for a breakdown by purpose or function, such as food, health and education services.

# 5. Timing and valuation of household final consumption expenditure Timing

- 10.7210.74 In accordance with the general principles adopted in the SNA, expenditures should be recorded when the payables are created, that is, when the purchaser incurs a liability to the seller. This implies that expenditure on a good is to be recorded at the time its ownership changes while expenditure on a service is recorded when the delivery of the service is completed. Non-monetary transactions are recorded when the goods involved are made available to the household.
- 10.7310.75 When a good is acquired under a hire purchase agreement, financial lease or similar method of financing, the purchaser accepts the risks and rewards of ownership of the good from the time the good is delivered. A change of ownership is therefore imputed at the time of delivery. Even though there is no legal change of ownership at this point, it is assumed that there is a change of economic ownership. This change in economic ownershipe purchaser must also be shown in the financial accounts of the purchaser as incurring a liability to the hire purchase or finance corporation. The transfer of the leased asset at the end of the lease period should be recorded as the building up of a financial claim, which is extinguished at the time of the transfer of the leased product. However, this may be difficult to apply in practice in which case it is considered appropriate to record the transfer of the relevant product as a current or capital transfer.

#### Valuation

- 10.7410.76 Household expenditure is recorded at the purchasers' prices paid by households including any taxes on products that may be payable at the time of purchase. As defined in paragraphs 6.64 to 6.68, 7.64 to 7.68, the purchaser's price of a good is the amount payable to take delivery of a unit of the good at the time and place required by the purchaser. It includes any transport charges incurred by the purchaser not already included in the seller's invoice price.
- 10.75 10.77 The value of barter and goods received as income in kind is recorded at the prices paid by the units incurring the expenditure initially. Goods produced on own account are valued at basic prices, consistently with their valuation as production.
- 10.7610.78 Different households may pay different prices for identical products because of market imperfections. Price differences may persist because households may not be aware of them, or they may have imperfect information because the costs of searching for the retail outlets selling at the lowest prices may be too great. Even when households are aware of the price differences, it may be too inconvenient or costly to visit the outlets selling at the lowest prices. Another reason for the persistence of price differences is that many service producers deliberately practise price discrimination by charging different households different prices for identical services (for example, by charging lower prices or fees to pensioners or people with low incomes). As services cannot be re\_traded, price discrimination is extremely common, or even prevalent, among service producers. Household expenditures are nevertheless recorded at the prices actually paid, as this is the appropriate value of the transaction.
- 10.7710.79 Apparent price differences between the same goods or services are often not genuine price differences as they may be due to differences in quality, including differences in the terms or conditions of sale. For example, lower prices are often charged for bulk purchases of goods or off-peak purchases of services. Such expenditures are recorded at the prices actually paid; that is, after deducting from the standard or list prices or charges any discounts for bulk or off-peak purchases.

#### Valuation of purchases on credit

<u>10.7810.80</u> The purchaser's price does not include any interest or service charges that may be added when the seller arranges for credit to be provided to the purchaser. Similarly, the purchaser's price does not include any extra charges that may be incurred as a result of failing to pay within the period stated at the time the purchases were made, such charges being effectively interest payments on the credit extended by the seller. If the credit is arranged by a financial institution, the total charge may need to be allocated between a financial service charge and interest, as explained in paragraph 9.62.-10.64. If the credit is provided by a non-financial institution, no financial service charge is provided. Note, however, that many large retailers have subsidiaries handling credit facilities, which are classed as financial institutions in their own right.

# 6. Expenditures by resident and non-resident households

- 10.7910.81 Resident households make expenditures while travelling abroad, and non-resident households may make expenditures inside the economic territory of a country. Household final consumption expenditure in the SNA refers to the expenditure incurred by resident households, whether that expenditure is incurred within the economic territory or abroad.
- 10.8010.82 In order to calculate total household final consumption expenditure it may be convenient to calculate the total expenditure made by all households, whether resident or not, within the economic territory and to adjust this figure by adding expenditures by residents abroad and subtracting expenditures by non-residents within the economy territory. Expenditures by residents abroad constitute imports, while expenditures by non-residents are exports. However, while the total expenditures by all households within the economic territory may be used for calculation in this way, it is not an aggregate recognized within the SNA.

# E. Household actual final consumption

10.8110.83 Household actual final consumption consists of the consumption goods and services acquired by individual households. The value of household actual final consumption is given by the sum of three components:

- a. The value of households' expenditures on consumption goods or services including expenditures on non-market goods or services sold at prices that are not economically significant;
- b. The value of the expenditures incurred by government units on individual consumption goods or services provided to households as social transfers in kind; and
- c. The value of the expenditures incurred by NPISHs on individual consumption goods or services provided to households as social transfers in kind.
- 10.8210.84 The values of social transfers in kind provided by government units or NPISHs are equal to the values of the goods or services supplied to households less the amounts of any expenditures incurred by households when the prices charged are not economically significant.
- 10.8310.85 As described in sections F and H, the consumption expenditure on individual goods and services by both general government and NPISHs is broken down between those that are produced by the units themselves as non- market producers and those that are purchased from market producers for onward transmission to households free or at prices that are not economically significant. This means that total household actual final consumption can also be split into these two components.

# F. Consumption expenditures incurred by general government

10.8410.86 Expenditures on a wide range of consumption goods and services are incurred by general government, either on collective services or on selected individual goods or services.

- 10.8510.87 The final consumption expenditures of general government can be classified in several ways. In particular, they may be classified:
  - a. According to whether the goods or services have been produced by market or non-market producers;
  - b. According to whether the expenditures are on collective services or individual goods or services;
  - c. By function or purpose according to the classification of the functions of government (COFOG); or
  - d. By type of good or service according to the CPC.

# **1.** Expenditures on the outputs of market and non-market producers

10.8610.88 Expenditures on the outputs of non-market producers that are provided free, or at prices that are not economically significant, to individual households or the community account for most of the final consumption expenditure by general government. It is therefore appropriate to take them first.

## Expenditures on the outputs of non-market producers

10.8710.89 Government may produce output for own final use and some market output but most production by units of general government is non-market in nature. As explained in chapter 67 the value of the non-market output is estimated by the sum of the costs involved in production. Although government delivers goods and services to the population individually and collectively, the costs of so doing are shown as final consumption expenditure by government.

10.8810.90 The value of government final consumption expenditure on non-market goods and services is not necessarily exactly equal to the value of government output of these goods and services. The values of these expenditures are equal to the estimated values of all types of output less the value of production for own capital formation and less the values of any receipts from sales. These receipts may be derived from sales of some goods or services at prices that are not economically significant or from sales of a few goods or services at prices that are conomically significant (sales of secondary market output).

## Expenditures on consumption goods and services produced by market producers

10.8910.91 Government units also purchase consumption goods and services produced by market producers that are supplied directly to households. The role of the government unit is confined to paying for the goods or services and ensuring that they are distributed to households as social transfers in kind. The government unit does not engage in any further processing of such goods or services and the expenditures are treated as final consumption expenditure and not intermediate consumption of the government unit. The values of the goods or services distributed in this way form part of social transfers in kind. In this way, expenditure by government on market goods and services on behalf of households is recorded as both final consumption expenditure of government and actual final consumption of households.

#### Government output and final consumption expenditure

10.9010.92 Final consumption expenditure of government can be derived as follows:

The value of all types of output of general government,

less the value of output for own account capital formation,

*less* the value of sales of goods and services at both economically insignificant prices and at economically significant prices,

*plus* the value of goods and services purchased from market producers for delivery to households free or at economically insignificant prices.

#### 2. Expenditures on individual and collective goods and services

10.9110.93 The consumption expenditures incurred by government units have to be divided into those incurred for the benefit of individual households and those incurred for the benefit of the community as a whole, or large sections of the community.

# Individual goods and services

10.9210.94 Individual goods and services are essentially "private", as distinct from "public", goods and services. They have the following characteristics:

- a. It must be possible to observe and record the acquisition of the good or service by an individual household or member thereof and also the time at which it took place;
- b. The household must have agreed to accept the provision of the good or service and to take whatever action is necessary to make it possible, for example, by attending a school or clinic; and
- c. The good or service must be such that its acquisition by one household or person, or possibly by a small, restricted group of persons, precludes its acquisition by other households or persons.
- 10.9310.95 The reference to a small, restricted group of persons is needed because certain services are provided to small groups of people simultaneously; for example, several persons may travel in the same bus, train, ship or plane or attend the same class, lecture, concert or live theatre performance. However, these are still essentially individual services if there is a restriction on the number of individuals who can consume them. Other members of the community are excluded and derive no benefit from them.
- 10.9410.96 From a welfarematerial well-being point of view, the important characteristic of an individual good or service is that its acquisition by one household, person or group of persons brings no (or very little) benefit to the rest of the community. While the provision of certain individual health or education services (for example, vaccination or immunization) may bring some external benefits to the rest of the community, in general the individual goods or services, it must decide not only how much to spend in total but also how to allocate, or distribute, the goods or services among individual members of the community. From the point of view of economic and social policy, the way in which they are distributed may be as important as the total amount spent.

# Individual consumption by type of producer

10.9510.97 The whole of individual consumption of general government is treated as social transfers in kind in the redistribution of incomesocial transfers in kind account and in the use of adjusted disposable income adjusted for social transfers in kind account. It is analytically interesting to split individual consumption into those goods and services produced by general government as a non-market producer and those that are purchased by general government from market producers for onward transmission to households either free or at prices that are not economically significant.

## **Collective services**

- 10.9610.98 Most goods can be privately owned and are individual in the sense used here. On the other hand, certain kinds of services can be provided collectively to the community as a whole. The characteristics of these collective services may be summarized as follows:
  - a. Collective services are delivered simultaneously to every member of the community or to particular sections of the community, such as those in a particular region of a locality;
  - b. The use of such services is usually passive and does not require the explicit agreement or active participation of all the individuals concerned; and
  - c. The provision of a collective service to one individual does not reduce the amount available to others in the same community or section of the community. There is no rivalry in acquisition.
- 10.9710.99 The collective services provided by government consist mostly of the provision of <u>services such as</u> security and defence, the maintenance of law and order, legislation and regulation, the maintenance of public <u>healththe provision of public infrastructure for transport</u>, the protection of the environment, etc. All members of the community can benefit from such services. As the individual usage of collective services cannot be recorded, individuals cannot be charged according to their usage.

# The borderline between individual and collective services

10.9810.100 Expenditures incurred by governments in connection with individual services such as health and education are to be treated as collective when they are concerned with the formulation and administration of government policy, the setting and enforcement of public standards, the regulation, licensing or supervision of producers, etc. For example, the expenditures incurred by Ministries of Health or Education at a national level are to be included in collective consumption expenditures as they are concerned with general matters of policy, standards and regulation. On the other hand, any overhead expenses connected with the administration or functioning of a group of hospitals, schools, colleges or similar institutions are to be included in individual expenditures. For example, if a group of private hospitals has a central unit that provides certain common services such as purchasing, laboratories, ambulances, or other facilities, the costs of these common services would be taken into account in the prices charged to patients. The same principle must be followed when the hospitals are non-market producers: all the costs that are associated with the provision of services to particular individuals, including those of any central units providing common services, should be included in the value of expenditures on individual services.

# The classification of individual and collective government expenditures

10.9910.101 The classification of the functions of government (COFOG) is a classification of transactions designed to apply to general government and its subsectors. There are ten classes in the classification as follows:

- 01 General public services;
- 02 Defence;
- 03 Public order and safety;
- 04 Economic affairs;
- 05 Environmental protection;
- 06 Housing and community amenities;
- 07 Health;
- 08 Recreation, culture and religion;
- 09 Education;
- 10 Social protection.
- 10.10010.102 Following the conceptual principles, Aall of classes 01 to 06 are collective services, as are section 07.5 and 07.6 of health, sections 08.3 to 08.6 of recreation, culture and religion, sections 09.7 and 09.8 of education, and sections 10.8 and 10.9 of social protection. These sections cover expenditures on general administration, regulation, research that is not recorded as capital formation and so on. The remaining sections of health, recreation, culture and religion, education and social protection (which dominate each of the classes) are individual services. However, the COFOG classification is periodically reviewed and the precise mapping of the COFOG classification to collective and individual services may also be updated during these revisions.

## Non-market services to enterprises

10.10110.103 Many government expenditures benefit enterprises as much as households; expenditures on the cleaning, maintenance and repair of public roads, bridges, tunnels, etc. including the provision of street lighting, are examples. These are services whose consumption can be monitored and for this reason they are frequently provided on a market basis by charging tolls on road usage. When they are provided free, however,

it would be difficult to separate the services provided free to enterprises from those provided free to households and, by convention, all these expenditures are treated as collective final expenditure.

10.10210.104 Collective services such as the provision of security by the police, fire services, etc. that are provided free to the community at large also benefit individual enterprises as well as households.

# G. Actual final consumption of general government

- 10.10310.105 The value of the actual final consumption of general government is equal to the value of its total final consumption expenditure less its expenditure on individual goods or services provided as social transfers in kind to households. The value of the actual final consumption of government units is thus equal to the value of the expenditures they incur on collective services. Although collective services benefit the community, or certain sections of the community, rather than the government, the actual consumption of these services cannot be distributed among individual households, or even among groups of households such as subsectors of the household sector, or to enterprises, as just noted. It is therefore attributed to the government units that incur the corresponding expenditures.
- <u>10.10410.106</u> The identification and measurement of government actual final consumption serves two main analytical or policy purposes:
  - a. Collective services can be identified with "public goods" as defined in public finance and economic theory. While it may be technically possible to charge individual consumers of certain collective services according to their usage, the transactions costs of so doing would be prohibitively high. This provides an economic, rather than political, rationale for government involvement;
  - b. Collective services do not provide a mechanism for redistributing resources among individual households. As redistribution may be one of the main economic objectives of government policy, it is useful to separate the collective services that do not serve this purpose from the individual goods and services that are ultimately channelled to individual households, even though paid for by government.

# H. Consumption expenditure and actual consumption of the central bank

- 10.107 The central bank is the financial institution (or institutions) that exercises control over key aspects of the financial system. Their principal functions generally include conducting monetary policy, including by issuing currency and regulating money supply and credit; managing international reserves and the payments system; promoting financial stability, including regulation and macroprudential supervision; and acting as banker to government.
- 10.108
   The central bank may produce output for own final use and, as a secondary activity, some market output, but most production by the central bank is non-market in nature. As explained in chapter 7, the value of the non-market output is estimated by the sum of the costs involved in production. Although the central bank delivers their services to the population collectively, the costs of doing so are shown as final consumption expenditure by the central bank.
- 10.109 The value of central bank final consumption expenditure on non-market services is not necessarily equal to the value of central bank output of these services. The values of these final consumption expenditures are equal to the estimated values of all types of output less the value of production for own capital formation and less the values of any receipts from sales. These receipts may be derived from sales of some goods or services at prices that are not economically significant or from sales of a few goods or services at prices that are economically significant (sales of secondary market output). In some cases, the central bank may charge fees to financial corporations related to, for example, supervisory services, If such fees are compulsory in nature, they are not treated as payments for services, but as current transfers.
- 10.110 All consumption expenditures incurred by the central bank are treated as collective services. Actual consumption of the central bank is therefore equal to the consumption expenditure incurred by the central bank. No individual services, and thus no social transfers in kind, are provided to households.

# **H.I.** Consumption expenditures incurred by NPISHs

- 10.10510.111 The treatment of consumption expenditures incurred by NPISHs is very similar to that for general government. This section itemizes only those aspects that differ. Whereas government expenditures are financed in large part out of taxation, those of NPISHs are financed principally out of subscriptions, contributions or donations or property income.
- 10.10610.112 The services provided by NPISHs are often confined to the members of the associations that own them, although they may also provide individual goods or services to third parties. Many NPISHs are only concerned with protecting the interests or welfare(material) well-being of their members or providing recreational, sporting or cultural facilities that households or persons cannot otherwise easily obtain for themselves acting individually. Although NPISHs may provide services to their members in groups, the services are essentially individual rather than collective. In general, persons other than their members are excluded and derive no benefit from the services provided.
- 10.10710.113 It is possible for NPISHs to produce collective services. For example a privately funded non-profit institution may undertake medical research and make its results freely available. However, unless such activities are evident and quantifiable, the assumption can be made that the expenditure of NPISHs is on individual goods and services only.
- 10.10810.114 The final consumption expenditures of NPISHs can be classified in several ways. In particular, they may be classified:
  - a. According to whether the goods or services have been produced by market or non-market producers;
  - b. According to whether the expenditures are on collective services or individual goods and services;
  - c. By function or purpose according to the classification of the purposes of non-profit institutions serving households (COPNI); and
  - d. By type of good or service according to the CPC.
- 10.10910.115 For NPISHs as for government, it is possible that they purchase goods from market producers for distribution to households. It is also possible that they may have some receipts from sales either of non-market output at prices that are not economically significant or from sales of secondary market production at economically significant prices. However for many NPISHs, the value of their consumption expenditure will exactly match the value of their non-market output.

# Individual consumption by type of producer

10.11010.116 The whole of individual consumption of NPISHs is treated as social transfers in kind in the redistribution of incomesocial transfers in kind account and in the use of adjusted disposable income adjusted for social transfers in kind account. It is analytically interesting to split individual consumption into those goods and services produced by NPISHs as non-market producers and those that are purchased by NPISHs from market producers for onward transmission to households either free or at prices that are not economically significant.

# **LJ.** Actual final consumption of NPISHs

10.11110.1117 The value of the actual final consumption of NPISHs is equal to the value of its total final consumption expenditure less its expenditure on individual goods or services provided as social transfers in kind to households. The value of the actual final consumption of NPISHs is thus equal to the value of the expenditures they incur on collective services. If it is not possible to identify and measure collective services provided by NPISHs, there may be no actual final consumption of NPISHs shown in the accounts.

# **J.K.** Final consumption expenditure and actual final consumption: summary

10.11210.118 The purpose of this section is to summarize the conceptual interrelationship between the main consumption aggregates for the threefour sectors in which final consumption takes place, namely, the household sector, the NPISH sector, and the general government sector, and the financial corporations sector (i.e., the central bank).

# **1.** Final consumption expenditure

- 10.11310.119 Household final consumption expenditure consists of the expenditure, including expenditure whose value must be estimated indirectly, incurred by resident households on individual consumption goods and services, including those sold at prices that are not economically significant and including consumption goods and services acquired abroad.
- 10.11410.120 General government final consumption expenditure consists of expenditure, including expenditure whose value must be estimated indirectly, incurred by general government on both individual consumption goods and services and collective consumption services.
- <u>10.121</u> Final consumption expenditure of NPISHs consists of the expenditure, including expenditure whose value must be estimated indirectly, incurred by resident NPISHs on individual consumption goods and services and possibly on collective consumption services.

10.11510.122 Final consumption expenditure of the central bank consists of expenditure, including expenditure whose value must be estimated indirectly, incurred by the central bank on collective consumption services.

# 2. Actual final consumption

10.11610.123 Actual final consumption of households is measured by the value of all the individual consumption goods and services acquired by resident households. There are three sets of goods and services entering into household actual final consumption:

- a. Those acquired through expenditure by households themselves;
- b. Those acquired as social transfers in kind from general government and NPISHs that are the output of these institutions as non-market producers;
- c. Those acquired as social transfers in kind from general government and NPISHs that have been purchased by these institutions from market producers for onward transmission to households free or at prices that are not economically significant.
- <u>10.11710.124</u> Actual final consumption of general government is measured by the value of the collective consumption services provided to the community, or large sections of the community, by general government.
- <u>10.125</u> Actual final consumption of NPISHs is measured by the value of the collective consumption services provided to the community, or large sections of the community, by NPISHs.

10.11810.126 Actual final consumption of the central bank is measured by the value of the collective consumption services provided to the community, or large sections of the community, by the central bank.

# **3.** Total final consumption in the economy

10.11910.127 Total final consumption in the economy may be viewed from two angles. It may be defined from the expenditure side as the total value of all expenditures on individual and collective consumption goods

and services incurred by resident households, resident NPISHs<u>and</u> general government units<u>and the central</u> <u>bank</u>. Or, it may be defined in terms of actual final consumption as the value of all the individual goods and services acquired by resident households plus the value of the collective services provided by general government<u>the central bank</u> and NPISHs to the community or large sections of the community.

- 10.12010.128 As noted in paragraph 8.145, 9.151, social transfers in kind may be paid to non-residents. One simple example is emergency medical care provided to a foreign tourist by a hospital within general government. However, just as non-resident households may benefit from social transfers in kind from the national government, so resident households may benefit from social transfers in kind paid by the government of another economy. In general these flows to non-residents will be small relative to the total level of social transfers in kind and, unless there is strong evidence to the contrary, by convention it may be assumed that the flows to non-residents are balanced by flows from governments (and NPISHs) of other economy is exactly equal to total actual consumption.
- 10.12110.129 In order to ensure that the values of the two aggregates are the same, the goods and services acquired by resident households through social transfers in kind must always be valued at the same prices at which they are valued in the expenditure aggregates and the time of recording the goods and services acquired by social transfers in kind must be the same as the time of recording in the expenditure aggregates.

# Chapter 11: Capital account (OLD Chapter 10: The capital account)

Please note that the order of this chapter in the 2008 SNA has been changed, mainly because of the revised classification of non-financial assets, from distinguishing between produced and non-produced non-financial assets to having a breakdown into (i) produced non-financial assets (excluding natural capital); (ii) non-produced non-financial assets (excluding natural capital); and (iii) natural capital. In addition, the discussion of depreciation (in the 2008 SNA referred to as consumption of fixed capital) has been re-allocated after the discussion of all asset categories, because of the addition of a discussion on depletion. All these re-allocations have not been shown in the form of track changes.

# A. Introduction

- 11.1 The capital account is the first of four accounts dealing with changes in the values of assets held by institutional units. It records transactions in non-financial assets. The financial account records transactions in financial assets and liabilities. The other changes in the volume of assets account records changes in the value of both non-financial and financial assets that result from neither transactions nor price changes. The effects of price changes are recorded in the revaluation account. These four accounts enable the change in the net worth of an institutional unit or sector between the beginning and end of the accounting period to be decomposed into its constituent elements by recording all changes in the prices and volumes of assets, whether resulting from transactions or not. The impact of all four accounts is brought together in the balance sheets. The immediately following chapters describe the other accounts just mentioned.
- 11.2 The purpose of the capital account, shown in table <u>1011</u>.1, is to record the values of the non-financial assets that are acquired, or disposed of, by resident institutional units by engaging in transactions and to show the change in net worth due to saving and capital transfers. The transactions may be either with other institutional units, both resident and non-resident, or internal transactions in which units retain products that they have produced themselves for use as capital formation.
- 11.3 When compiling balance sheets, it is customary to record assets on the left-hand side and liabilities and net worth on the right-hand side. The same convention is followed in the accumulation accounts, where changes in assets are recorded on the left-hand side and other items on the right-hand side. As in the current accounts, the balancing item of the capital account, net lending or net borrowing, is recorded on the left-hand side. Consumption of fixed capital is Depreciation and depletion are also recorded on the left-hand side of the capital account.
- 11.4 The right-hand side of the capital account records the resources revenues available for the accumulation of assets. These consist of net saving, the balancing item carried forward from the use of income account, and capital transfers. Capital transfers payable are recorded with a negative sign.

# **1.** The definitions of ownership and assets

- 11.5 Ownership and assets are defined in chapter <u>34</u> but it is helpful to recall some of the key features of the definitions here. It is important to distinguish between legal ownership and economic ownership. The legal owner of <u>entitiesitems</u> such as goods and services, natural resources, financial assets and liabilities is the institutional unit entitled in law and sustainable under the law to claim the benefits associated with the <u>entitiesitems</u>. By contrast, the economic owner of <u>entitiesitems</u> such as goods and services, natural resources, financial assets and liabilities is the institutional unit entitled to claim the benefits associated with the use of the entity in question in the course of an economic activity by virtue of accepting the associated risks.
- 11.6 Every entity has both a legal owner and an economic owner, though in many cases the economic owner and the legal owner of an entity are the same. Where they are not, the legal owner has handed responsibility for the risk involved in using the entity in an economic activity to the economic owner along with associated benefits. In return the legal owner accepts another package of risks and benefits from the economic owner.

- <u>11.7</u> When government claims legal ownership of an entity on behalf of the community at large, the benefits also accrue to the government on behalf of the community at large. Thus government is regarded as both the legal and economic owner of these <u>entitiesitems</u>.
- 11.8 Especially in relation to natural resources, a government is typically the legal owner and grants rights or permissions to exploit the resources to another institutional unit. In such cases, the benefits may be shared between the government and the exploiter of the resources, and the economic ownership of the resources is split between the two entities involved, in line with the shares of resource rent each entity appropriates. (See chapter 27 for more details.)
- 11.7
   11.9 In the case of multinational enterprise groups, the economic ownership of intellectual property products may be difficult to determine. Various arrangements, including the routing via special purpose entities, exist. The use of a decision tree is recommended for the appropriate allocation and recording of these assets across the MNE group. See chapter 23 for more information.
- 11.8<u>11.10</u> An asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time. It is a means of carrying forward value from one accounting period to another. All assets in the integrated framework of national accountsSNA are economic assets.

# 2. Non-financial assets

- 11.9
   TwoThree
   different categories of non-financial assets are distinguished from each other: produced assets (excluding natural capital), and natural capital).

   Natural capital encompasses both natural resources and ecosystem assets. The latter assets are not recognised in the integrated framework of national accounts. For more details on ecosystem assets, see chapter 35 as well as the System of Environmental-Economic Accounting (SEEA) Ecosystem Accounting.
  - a. Produced assets (<u>excluding natural capital</u>) are non-financial assets that have come into existence as outputs from production processes that fall within the production boundary of the <u>integrated</u> framework of national accounts
  - b. Non-produced assets (excluding natural capital) are non-financial assets that have come into existence in ways other than through processes of production.
  - b.c. Natural capital, or more precisely in the context of the SNA, natural resources consist of assets that naturally occur, such as land, water resources, timber and fish stocks, and mineral and energy resources that have an economic value and over which ownership may be enforced and transferred. A significant part of natural resources is non-produced, although biological resources may be the result of human involvement, and have thus come into existence as outputs from production processes.

# Produced assets (excluding produced natural capital)

- **11.10** There are three main types of produced assets: fixed assets, inventories and valuables. Both fixed assets and inventories are assets that are held only by producers for purposes of production. Valuables may be held by any institutional unit and are primarily held as stores of value.
- **Fixed assets are produced assets that are used repeatedly or continuously in production processes for more than one year.** The distinguishing feature of a fixed asset is not that it is durable in some physical sense, but that it may be used repeatedly or continuously in production over a long period of time, which is taken to be more than one year. Some goods, such as coal, may be highly durable physically but cannot be fixed assets because they can be used once only. Fixed assets include not only structures, machinery and equipment but also various intellectual property products used in production, such as software, data and databases or artistic originals. eCultivated assets such as trees or animals that are used repeatedly or continuously to produce other products such as fruit or dairy products <u>are excluded, and instead included in (produced) natural capital</u>. They also include intellectual property products such as software or artistic originals used in production.

- 11.12 Inventories are produced assets that consist of goods and services, which came into existence in the current period or in an earlier period, and that are held for sale, use in production or other use at a later date. Inventories consist of stocks of outputs that are still held by the units that produced them prior to their being further processed, sold, delivered to other units or used in other ways and stocks of products acquired from other units that are intended to be used for intermediate consumption or for resale without further processing. Inventories of services consist of work-in-progress or finished products, for example architectural drawings, which are in the process of completion or are completed and waiting for the building to which they relate to be started. Inventories held by government include, but are not limited to, inventories of strategic materials, and grain and other commodities of special importance to the nation. Work-in-progress related to cultivated biological resources, such as the growth of single-use plants, trees and livestock that produce an output once only, is excluded, and instead included in (produced) natural capital. The same holds for biological resources yielding repeat products which have not yet matured.
- 11.1311.15 Valuables are produced goodsassets of considerable value that are not used primarily for purposes of production or consumption but are held as stores of value over time. Valuables are expected to appreciate or at least not to decline in real value, nor to deteriorate over time under normal conditions. They consist of precious metals and stones, jewellery, works of art, etc. Valuables may be held by all sectors of the economy.

# Non-produced assets (excluding non-produced natural capital)

- <u>11.14</u><u>11.16</u> Non-produced assets consist of three categories: natural resources; contracts, leases and licences; crypto assets without a corresponding liability designed to act as a medium of exchange; and purchased goodwill and marketing assets.
- 11.15
- 11.16 Natural resources consist of naturally occurring resources such as land, water resources, uncultivated forests and deposits of minerals that have an economic value.
- 11.17 Contracts, leases and licences are treated as assets only when two conditions are both satisfied.
  - a. The terms of the contract, lease or licence specify a price for the use of an asset or provision of a service that differs from the price that would prevail in the absence of the contract, lease or licence.
  - b. One party to the contract must be able legally and practically to realize this price difference.

The second condition presupposes that a market for the contract exists. It is recommended that in practice contracts, leases and licences should only be recorded in the accounts when the holder does actually exercise his right to realize the price difference.

- 11.18 Contracts, leases and licenses may also include non-fungible tokens that grant limited commercial rights to another asset or product from which the owner of the NFT can derive economic benefits (e.g., some form of royalties).
- <u>11.19</u> Crypto assets without a corresponding liability designed to act as a medium of exchange relate to crypto assets for which there is no issuer. They may be designed to act as a general medium of exchange, or designed to act as medium of exchange within a platform only.
- <u>11.20</u> Purchased goodwill and marketing assets represent the whole or part of the net worth of an institutional *unit*. They are recorded only when a unit is purchased in its entirety or an identifiable marketing asset is sold to another unit.

# Natural capital

11.21 As noted above, in the context of the SNA, natural capital is restricted to natural resources. These resources can be broken down into the following categories: land; mineral and energy resources, both non-renewable and renewable resources; biological resources; water resources; and a residual category containing, for

example, radio spectra. As noted before, natural capital includes both produced and non-produced assets.

11.18Environmental assets refer to a broader concept and are defined as "naturally occurring living and<br/>non-living components of the Earth, together constituting the biophysical environment, which may provide<br/>benefits to humanity" (SEEA 2012 Central Framework). In macroeconomic statistics, environmental assets<br/>are only recognised in as far they meet the asset boundary, by providing monetary benefits to their owners,<br/>either individually or collectively. Assets over which ownership rights have not, or cannot, be enforced, such<br/>as open seas or air, are excluded, unless exclusive right on the resources are established, for example in the<br/>form of quota regimes for capturing fish.

# Table 10.111.1: The capital account - concise form - changes in assets

Table **10.1**<u>11.1</u> (cont): The capital account - concise form - changes in liabilities and net worth

# 3. The structure of the capital account

# Saving

11.1911.23 The right-hand side of the capital account represents changes in liabilities and net worth. The first item recorded on the right-hand side is the balancing item carried down from the use of disposable income account, net saving. When positive, net saving represents that part of disposable income that is not spent on consumption goods and services and must, therefore, be used to acquire non-financial or financial assets of one kind or another, including cash, or to repay liabilities. When negative, net saving measures the amount by which final consumption expenditure exceeds disposable income: the excess must be financed by disposing of assets or incurring new liabilities.

# **Capital transfers**

- Capital transfers are unrequited transfers, either in cash or in kind, in which the ownership -where either the party making the transfer realizes the funds involved by disposing of an asset (other than cash or inventories) changes from one party to another; or that oblige one or both parties to acquire or dispose of an asset (other than cash or inventories); or where a liability is forgiven by the creditor, relinquishing a financial claim (other than accounts receivable) or the party receiving the transfer is obliged to acquire an asset (other than cash) or both conditions are met. Capital transfers are often large and irregular but neither of these are necessary conditions for a transfer to be considered a capital rather than a current transfer. If there is doubt about whether a transfer should be treated as current or capital, it should be treated as current.
- 11.21 Capital transfers receivable represent an increase in net worth and so are shown on the right-hand side of the account for the recipient. By convention, the matching amounts payable are also shown on the right-hand side of the account but as a negative entry (that is, a decrease in net worth) for the payer.

# Changes in net worth due to saving and capital transfers

11.2211.26 The total of the entries on the right-hand side of the account is explicitly shown and described as changes in net worth due to saving and capital transfers. It is not a balancing item. Changes in net worth due to saving and capital transfers represent the positive or negative amount available to the unit or sector for the acquisition of non-financial and financial assets.

# Acquisitions less disposals of non-financial assets

11.2311.27 The left-hand side of the capital account records how much of the change in net worth due to saving and capital transfers is used to acquire non-financial assets and how much is left to be explained by the

acquisition of financial assets or liabilities in the financial account. <u>ResourcesRevenues</u> coming from the disposal of existing assets appear as negative entries on the left-hand side of the account also. As well as purchases and sales of assets, non-financial assets acquired (or disposed of) via barter or by means of production for own use are included.

- <u>11.24</u><u>11.28</u><u>ThreeThe following</u> headings for the net change in the value of non-financial assets are shown in the capital account:
  - a. Gross capital formation; Acquisitions less disposals of produced non-financial assets (excluding natural capital), broken down by:
  - Gross fixed capital formation
  - Depreciation
  - Changes in inventories
  - <u>Acquisitions less disposals of valuables</u>

11.25

#### Consumption of fixed capital;

- b. Acquisitions less disposals of non-produced non-financial assets (excluding natural capital)-
- c. Acquisitions less disposals of natural capital, broken down by:
- Gross fixed capital formation
- Depreciation
- Changes in inventories
- Acquisitions less disposals of non-produced non-financial assets
- <u>Depletion</u>

The treatment given to each of these categories of changes in assets is described in later sections of this chapter.

- 11.26<u>11.29</u> Gross capital formation shows the <u>The sum of</u> acquisitions less disposals of produced assets, including produced natural capital, for purposes of fixed capital formation, inventories or valuables is referred to as gross capital formation. It is possible (if uncommon) for the gross capital formation of an individual institutional unit or sector to be negative if it sells off enough of its existing assets to other units or sectors.
- <u>11.30</u> <u>Consumption of fixed capital Depreciation</u> is the decline, during the course of the accounting period, in the current value of the stock of fixed assets, <u>including cultivated biological resources</u>, owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage. <u>Section E provides more details on depreciation</u>.
- 11.31 Depletion, in physical terms, represents the decrease in the quantity or value of the stock of a non-produced natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of regeneration; in monetary terms, it corresponds with the decline in future income, due to extraction, that can be earned from a resource, the value of which is based on the physical flows of depletion using the price of the natural resource in situ. Section E provides more details on depletion.
- 11.27<u>11.32</u> When, as recommended in the SNA, the balancing item carried down from the use of income account is net saving, it already reflects the fact that net worth has been reduced by the amount of consumption of fixed capitaldepreciation and depletion, the amount by which the relevantfixed assets are reduced in the period. Since the capital account is designed to show the way in which net worth is augmented by the acquisition of non-financial assets, depreciationthis amount has to be offset from the value of new acquisitions of fixed assets so the addition to the capital stock of fixed assets is a net amount. For this reason, consumption of fixed capitaldepreciation is recorded as a negative change in assets on the left-hand side of

the capital account. In the case of depletion, the relevant (non-produced) assets typically come into existence via newly exploited resources, which are recorded as other changes in the volume of assets.

11.28 If it is not feasible to measure consumption of fixed capital because of lack of data, the saving figure carried forward from the use of income account has to be gross. In this case, there is no entry for consumption of fixed capital in the capital account. If consumption of fixed capital has to be omitted from both sides of the account, the balancing item of the account is not affected; net lending or borrowing can be derived residually whether or not consumption of fixed capital can be estimated. However, if consumption of fixed capital is not estimated, the account do not record all changes between two successive balance sheets.

11.29

- <u>11.33</u> The remaining<u>One of the</u> items on the left-hand side of the capital account refers to the acquisitions less <u>disposals of non-produced non-financial assets (excluding natural capital)</u>. The total value of the acquisitions less disposals of non-produced non-financial<u>these</u> assets may <u>also</u> be positive or negative. Since natural resources are owned by units that are either actually or notionally resident, this part will generally be zero for the economy as a whole. (An exception exists for land purchased by a foreign government for an embassy or military base.) However, <u>as</u> there may be transactions in contracts, leases and licences, <u>crypto assets without</u> <u>a corresponding liability designed to act as a medium of exchange</u>, or marketing assets with non-resident units.
- 11.30
   The last item on the left-hand side of the capital account refers to acquisitions less disposals of natural capital. This item combines the acquisitions less disposals of both produced and non-produced natural resources. Since non-produced natural resources are owned by units that are either actually or notionally resident, this part will generally be zero for the economy as a whole. (An exception exists for land purchased by a foreign government for an embassy or military base.)

# Net lending

- 11.31<u>11.35</u> The balancing item of the capital account, net lending, is defined as the difference between changes in net worth due to saving and capital transfers and net acquisitions of non-financial assets (acquisitions less disposals of non-financial assets, less consumption of fixed capitaldepreciation and depletion). If the amount is negative it represents net borrowing. It shows the amount of the resourcesrevenues remaining for purposes of lending or that need to be borrowed. Even if funds are not actively lent but are retained in cash, or in a bank deposit, the holder of the counterpart obligations represented by these financial assets has in effect borrowed from the unit holding the cash or bank deposit.
- 11.32<u>11.36</u> The identity between the balancing items of the capital account and the financial account is an important feature of the set of the accounts as a whole. What is borrowed by one unit must be lent by another and vice versa. The conceptual identity between the balancing items provides a check on the numerical consistency of the set of accounts as a whole, although the two balancing items are likely to diverge in practice because of errors of measurement.
- 11.3311.37 In general in the SNA, and especially in balancing items, the prefix net means excluding the consumption of fixed capitaldepreciation and depletion. For net lending this is not the case; it represents the difference between those assets giving rise to making funds available to other units and those drawing funds from other units.

# **B.** <u>Gross capital formationAcquisitions less disposals of produced non-</u> <u>financial assets (excluding natural capital)</u>

 11.34
 Gross capital formation is Acquisitions less disposals of produced non-financial assets (excluding natural capital) are measured by the total value of the gross fixed capital formation (excluding natural capital), changes in inventories (excluding natural capital) and acquisitions less disposals of valuables. Before discussing in detail the entries to be recorded under each of these items, it is necessary to clarify the coverage of the item and the application of accounting rules such as valuation, time of recording and the identification of ownership. This section focuses on gross capital formation excluding capital formation related to natural

#### capital. The latter is discussed in section D.

# 1. Gross fixed capital formation (excluding natural capital)

**11.35**<u>11.39</u> Gross fixed capital formation (excluding natural capital) is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditure on services that adds to the value of non-produced assets. In order to ensure that the coverage of gross fixed capital formation is precisely defined, it is necessary first to define what does and what does not constitute a fixed asset and what activities are treated as adding to the value of non-produced assets.

## The asset boundary

- All goods and services supplied to the economy by means of production, imports or the disposal of produced assets must be used for exports, consumption (intermediate or final) or as part of capital formation. The boundary line between those products that are retained in the economy and are used for consumption and those products that are used for capital formation is known as the asset boundary. The asset boundary for fixed assets consists of goods and services that are used in production for more than one year.
- 11.41 Two exclusions from the asset boundary should be noted at the outset. The first is that consumer durables are not treated as fixed assets. The services these durables produce are household services outside the production boundary of the integrated framework of national accountsSNA. If, for example, a washing machine were to be treated as a fixed asset, the production boundary would have to be extended to include all laundry services, whether undertaken by machine or by hand. As it stands, the production boundary restricts laundry services to those services provided to other units but includes services provided by both machine and by hand. However, owner-occupied dwellings are not treated as consumer durables but are included within the asset boundary. The owner-occupiers are treated as owners of unincorporated enterprises producing housing services for their own consumption. For more information on an extended set of accounts which includes all unpaid household services produced for own final use, see chapter 34.
- 11.37<u>11.42</u> It is possible though that an asset is used for consumption purposes as well as for the purpose of producing goods and services. An example relates to the dual use of a car owned by a household for own travel and for providing taxi services to third parties. Such instances have become more frequent with the digitalisation of the economy, which has enhanced the possibilities to provide such market services. In these cases, the asset in question needs to be partitioned, with one part recorded as final consumption expenditure and the other part recorded as gross fixed capital formation.
- **11.38**<u>11.43</u> The second exclusion is pragmatic rather than conceptual and concerns small tools. Some goods may be used repeatedly, or continuously, in production over many years but may nevertheless be small, inexpensive and used to perform relatively simple operations. Hand tools such as saws, spades, knives, axes, hammers, screwdrivers and spanners or wrenches are examples. If expenditures on such tools take place at a fairly steady rate and if their value is small compared with expenditures on more complex machinery and equipment, it may be appropriate to treat the tools as materials or supplies used for intermediate consumption. Some flexibility is needed, however, depending on the relative importance of such tools. In countries in which they account for a significant part of the value of the total stock of an industry's durable producers' goods, they may be treated as fixed assets and their acquisition and disposal by producers recorded under gross fixed capital formation.
- 11.3911.44 Not all goods included within the asset boundary must be newly produced. Since assets have a long life, they may change hands but continue to function as fixed assets for their new owners. Thus it is important to define what existing fixed assets are and how they are treated in measuring gross fixed capital formation.
- 11.4011.45 Nor are all services included within the asset boundary immediately recognizable. Important classes of services are included in the asset boundary because of the impact they have on the value of new or existing assets. These are improvements to existing assets and the cost of ownership transfer of assets. These are described below after defining existing fixed assets.

# Existing fixed assets

- 11.41<u>11.46</u> Because assets have service lives that may range up to 50 years or more for dwellings or other structures, their ownership may change several times before they are eventually scrapped, demolished or abandoned. An existing fixed asset is one whose value was included in the stock of fixed capital of at least one producer unit in the domestic economy at some earlier point in time either in the current period or in the immediately previous accounting period. In many countries, well-organized markets exist to facilitate the buying and selling of many kinds of existing fixed assets, notably automobiles, ships, aircraft, dwellings and other structures. Indeed, the number of existing dwellings bought and sold within a given time period may considerably exceed the number of new dwellings. In practice, most existing fixed assets will have been used in production by their current owners, but an existing capital good might be sold by its owner before it has actually been used.
- 11.4211.47 In general, sales or other disposals of existing goods, whether fixed assets or not, are recorded as negative expenditures or negative acquisitions. Thus, when the ownership of an existing fixed asset is transferred from one resident producer to another, the value of the asset sold, bartered or transferred is recorded as negative gross fixed capital formation by the former and as positive gross fixed capital formation by the latter. The value of the positive gross fixed capital formation recorded for the purchaser exceeds the value of the negative gross fixed capital formation recorded for the seller by the value of the costs of ownership transfer incurred by the purchaser. The treatment of these costs is explained in more detail in a later section.
- 11.43<u>11.48</u> When the sale takes place between two resident producers, the positive and negative values recorded for gross fixed capital formation cancel out for the economy as a whole except for the costs of ownership transfer. Similarly, if an existing immovable fixed asset, such as a building, is sold to a non-resident, by convention the latter is treated as purchasing a financial asset that is the equity of a notional resident unit while the notional resident unit is deemed to purchase the asset, so that the sale and purchase of the asset takes place between resident units. However, if an existing movable fixed asset, such as a ship or aircraft, is exported, no positive gross fixed capital formation is recorded elsewhere in the economy to offset the seller's negative gross fixed capital formation.
- 11.44<u>11.49</u> Some durable goods, such as vehicles, may be classified as fixed assets or as consumer durables depending upon the owner and the purpose for which they are used. If, therefore, the ownership of such a good were transferred from an enterprise to a household to be used for final consumption, negative gross fixed capital formation is recorded for the enterprise and positive consumption expenditure by the household. If a vehicle owned by a household were to be acquired by an enterprise, it would be recorded as an acquisition of a "new" fixed asset by the enterprise, even though it is an existing good, and as negative consumption expenditure by the household. A similar treatment is applied to imports of used products acquired by resident producers as assets.
- 11.45<u>11.50</u> Thus, it is perfectly possible for gross fixed capital formation to be negative as a result of the sale or disposal of existing fixed assets, although aggregate gross fixed capital formation is unlikely to be negative for large groups of units such as subsectors, sectors or the economy as a whole.

#### Improvements to existing assets

11.4611.51 Gross fixed capital formation may take the form of improvements to existing fixed assets, such as buildings or computer software, that increase their productive capacity, extend their service lives, or both. By definition, such gross fixed capital formation does not lead to the creation of new assets that can be separately identified and valued, but to an increase in the value of the asset that has been improved.

Accordingly, it is the improved asset that is henceforth relevant to the <u>integrated framework of national</u> <u>accountsSNA</u> and on which <u>consumption of fixed capitaldepreciation</u> must be calculated subsequently.

11.47<u>11.52</u> A different treatment is applied to improvements to land in its natural state. In this case the improvements are treated as the creation of a new fixed asset and are not regarded as giving rise to an increase in the value of the natural resource. If land, once improved, is further improved, then the normal treatment of improvements to existing fixed assets applies.

- 11.48
   11.53
   The distinction between ordinary maintenance and repairs that constitute intermediate consumption and those that are treated as capital formation is not clear cut. As explained in paragraphs 6.2267.226 to 6.229.7.229, ordinary maintenance and repairs are distinguished by two features:
  - They are activities that must be undertaken regularly in order to maintain a fixed asset in working order over its expected service life. The owner or user of the asset has no choice about whether or not to undertake ordinary maintenance and repairs if the asset in question is to continue to be used in production;
  - Ordinary maintenance and repairs do not change the fixed asset's performance, productive capacity or expected service life. They simply maintain it in good working order, if necessary by replacing defective parts by new parts of the same kind.
- 11.49<u>11.54</u> On the other hand, improvements to existing fixed assets that constitute gross fixed formation must go well beyond the requirements of ordinary maintenance and repairs. They must bring about significant changes in some of the characteristics of existing fixed assets. They may be distinguished by the following features:
  - The decision to renovate, reconstruct or enlarge a fixed asset is a deliberate investment decision that may be taken any time, even when the good in question is in good working order and not in need of repair. Major renovations of ships, buildings or other structures are frequently undertaken well before the end of their normal service lives;
  - Major renovations, reconstructions or enlargements increase the performance or productive capacity of existing fixed assets or significantly extend their previously expected service lives, or both. Enlarging or extending an existing building or structure constitutes a major change in this sense, as does the refitting or restructuring of the interior of a building or ship or a major extension to or enhancement of an existing software system.
- **11.50** It is difficult to provide simple objective criteria that enable improvements to be distinguished from repairs because any repair may be said to improve the performance or extend the working life of the unrepaired asset. For example, machines may cease to function at all because of the failure of one small part. The replacement of such a part does not, however, constitute gross fixed capital formation. Thus, improvements have to be identified either by the magnitude of the changes in the characteristics of the fixed assets such as size, shape, performance, capacity, or expected service lives, or by the fact that improvements are not the kinds of changes that are observed to take place routinely in other fixed assets of the same kind, as part of ordinary maintenance and repair programmes.

#### Costs incurred on acquisition and disposal of assets

- 11.5111.56 Purchasing a fixed asset is often a complicated procedure that may involve using lawyers to establish legal title to the asset, engineers to certify that it is in satisfactory working order and so on. There may also be taxes to be paid occasioned by the change of ownership of the item. Further, in the case of highly complex machinery there may be significant costs associated with delivery and installation that were not included in the purchase price.
- 11.5211.57 The benefits to be derived from the use of the asset in production have to cover these costs as well as the initial price of the asset. Costs incurred on acquisition of an asset are treated as an integral part of the value of that unit's gross fixed capital formation. The value at which the asset enters the balance sheet of its new owner therefore includes these costs. This applies to both new and existing assets.
- 11.5311.58 Just as there may be costs incurred on the acquisition of an asset, there may also be costs incurred on the disposal of an asset. Some of these may be parallel to those costs incurred on acquisition, for example legal fees and disinstallation costs. However, in the case of some significantly large and important assets, such as oil rigs and nuclear power stations, there may also be major costs associated with the decommissioning of the asset at the end of its productive life. For some land sites, such as those used for landfill, there may be large costs associated with rehabilitation of the site. These are referred to collectively as terminal costs.

- 11.54<u>11.59</u> All these costs associated with acquiring and disposing of assets may be described as costs of ownership transfer. *The costs of ownership transfer consist of the following kinds of items:* 
  - a. All professional charges or commissions incurred by both units acquiring or disposing of an asset such as fees paid to lawyers, architects, surveyors, engineers and valuers, and commissions paid to estate agents and auctioneers;
  - b. Any trade and transport costs separately invoiced to the purchaser;
  - c. All taxes payable by the unit acquiring the asset on the transfer of ownership of the asset;
  - d. Any tax payable on the disposal of an asset;
  - e. Any delivery and installation or disinstallation costs not included in the price of the asset being acquired or disposed of; and
  - f. Any terminal costs incurred at the end of an asset's life such as those required to render the structure safe or to restore the environment in which it is situated. <u>Although incurred at the end</u> of the asset's life, such terminal costs are added to the acquisition value of the assets (see paragraphs 11.228 to 11.230).
- All these costs of ownership transfer are treated as gross fixed capital formation. They are attributed to the purchaser or seller of the asset according to which unit bears the responsibility of meeting the costs. The time of recording of these costs is discussed below. The costs are written off via consumption of fixed capital depreciation over the period the new owner expects to hold the asset, as discussed in the section on consumption of fixed capital depreciation except for the terminal costs that should be written off over the whole life of the asset.

# Time of recording

- 11.5611.61 The general principle for the time of recording of acquisitions less disposals of fixed assets is when the ownership of the fixed assets is transferred to the institutional unit that intends to use them in production. Except in two special cases, this time is not generally the same as the time at which the fixed assets are produced. Nor is it necessarily the time at which they are put to use in the production of other goods or services.
- 11.57<u>11.62</u> The two exceptions cover assets that take some time to produce such as construction projects. intellectual property products and the like and some cultivated biological resources. In general, incomplete construction projects and immature animals and plantations are treated as work-in-progress. They are reclassified from inventories to fixed capital when complete and delivered to the unit intending to use them as fixed assets. The same principles apply forHowever, when the assets are being produced on own account, i.e., the partially completed products are recorded as work-in-progress until completion. As this may be more difficult to apply in practice, particularly in the case of fixed assets such as intellectual property products, the partially completed products produced on own account may need to be recorded directly as fixed capital formation as work takes place. The same principles as the ones for construction projects apply to some cultivated biological resources yielding repeat products (see section D).
- 11.5811.63 When assets are developed under a contract of sale, the producer records work-in-progress as normal. However, in the case of an effective transfer of ownership, a transfer of the partially completed product to the final owner should be recorded. Such acquisitions of partially completed products are recorded as work-in-progress in the accounts of the final owner until the completion of the fixed asset. In the case of stage payments, any differences between the value of the stage payments and the value of the effective transfer of ownership cannot be determined in practice, stage payments could be used as a proxy for the transfer of ownership. but when stage payments are made, these are regarded as purchase of [part of] a fixed asset or as a trade advance if the value of the stage payment exceeds the value of the work put in place. In the latter case, work is recorded as fixed capital delivered to the final owner as work proceeds until the trade credit is exhausted. When there is no contract of sale agreed in advance, the output produced by the enterprise must be recorded as work-in-progress or as additions to the producers' inventories of finished goods, depending

on whether the product is completed. For example, finished dwellings built speculatively remain as additions to the producers' inventories of finished goods until they are sold or otherwise acquired by users.

#### **Ownership of assets**

- 11.5911.64 In most cases, the ownership of fixed assets is straightforward; it is the unit that acquires the asset for use in production. There are however, three exceptions to be noted. One concerns assets subject to a financial lease; the second concerns assets produced by communal effort; the third concerns immovable assets owned by non-residents.
- **11.60**<u>11.65</u> A financial lease is a contract between a lessor and a lessee whereby the lessor legally owns the good but the terms of the lease are such that the lessee takes over both the economic risks and rewards of using the asset in production. In effect, therefore, the lessee becomes the economic owner of the asset even if the lessor remains the legal owner. In these cases, the asset is recorded as being acquired by the lessee in return for a loan extended by the lessor to the lessee. The asset is then recorded on the balance sheet of the lessee and not the lessor. The payments due under the lease arrangement are treated as forming a repayment of the principal of the loan and a payment of interest and possibly a service charge. More details of these arrangements are given in chapter  $\frac{1727}{2}$ .
- 11.6111.66 Certain structures may be produced for own communal use by groups of households: for example, buildings, roads, bridges, etc. After they are finished, the ownership of such structures may then be transferred to some government unit that assumes responsibility for their maintenance. When the transfer occurs, the gross fixed capital formation on own account originally attributed to the group of households is cancelled by their negative gross fixed capital formation resulting from the capital transfer in kind made to the government unit. The final gross fixed capital formation remaining is that of the government unit resulting from its acquisition of the asset through the capital transfer in kind. If no such transfer exists and the structure remains the communal property of the group of households responsible for its construction, an NPISH providing collective services should be created.
- All buildings and other structures within the economic territory are deemed, by convention, to be owned by resident units. If the economic owner (or lessee under a financial lease) would not otherwise qualify as a resident unit, a notional resident unit is created for this purpose. The notional resident unit is assumed to purchase (or lease) the building or structure. The legal owner (or lessor) is deemed to hold equivalent equity in the notional resident unit. If a building or structure is owned in part by a resident unit and in part by one or several non-residents, there is one notional resident unit established with each of the owners having a proportionate share of the equity of the notional resident unit.
- 11.6311.68 A further consideration to be taken into account in determining ownership concerns assets built under a <u>public-private partnership (PPP)</u>, such as a private finance initiative (PFI), sometimes also described as a public private partnership (PPP) or a build, own, operate, transfer (BOOT) scheme or some other similar shorthand. Such schemes are under accounting scrutiny at the time of writing. Provisional<u>More</u> guidance on how to ascribe the ownership of such schemes is given in chapter 22<u>30</u>.

# Valuation

**11.64**<u>11.69</u> The various components of acquisitions and disposals of fixed assets are listed below:

- a. Value of fixed assets purchased;
- b. Value of fixed assets acquired through barter;
- c. Value of fixed assets received as capital transfers in kind;
- d. Value of fixed assets retained by their producers for their own use, including the value of any fixed assets being produced on own account <u>for which it cannot be determined whether or not they are fullythat are not yet</u> completed or <del>fully</del>-mature;

less

- e. Value of existing fixed assets sold;
- f. Value of existing fixed assets surrendered in barter;
- g. Value of existing fixed assets surrendered as capital transfers in kind.

Acquisitions of partially completed fixed assets are recorded as work-in-progress until the asset has been completed; see also paragraphs 11.62 and 11.63. Items (a) to (d) include new assets, existing assets, the value of improvements to assets and the cost of ownership transfers in respect of these assets. Items (e), (f) and (g) include disposals of assets that may cease to be used as fixed assets by their new owners: for example, vehicles sold by enterprises to households for their personal use, assets that are scrapped or demolished by their new owners and assets that are exported.

- H.6511.70 Fixed assets acquired through barter are valued at their estimated purchasers' prices plus any costs of ownership transfer. In practice, neither taxes on products nor transportation costs may apply, in which case the purchasers' prices will not differ from the basic prices of the product. Fixed assets produced for own gross fixed capital or assets transferred in kind are valued at their estimated basic prices, or by their costs of production when satisfactory estimates of their basic prices cannot be made.
- 11.6611.71 Special considerations apply to fixed assets produced by communal construction by households. If the value of the asset must be estimated on the basis of costs, and some or all of the labour is provided free, as may happen, an estimate of what the cost of paid labour would be must be included in the estimated total production costs using wage rates for similar kinds of labour in the vicinity or region. Otherwise, the value of the finished structure will be seriously underestimated. However, this estimate is not treated as compensationremuneration of employees but as gross mixed income. This income accrues to the households concerned who are then assumed to use it to "purchase" the final construction. If the construction is then handed over to government, there is negative gross fixed capital formation recorded by the community offsetting their previously recorded acquisition of the asset and positive gross fixed capital formation from the community to government, along with a capital transfer of the value of the construction from the community to government.

# **Transactions in fixed assets**

- H.67<u>11.72</u> Gross fixed capital formation in a particular category of fixed asset consists of the value of producers' acquisitions of new and existing products of this type less the value of their disposals of fixed assets of the same type. Gross fixed capital formation is not recorded until the ownership of the fixed assets is transferred to the unit that intends to use them in production. In the case of transfers of partially completed fixed assets, the asset is to be recorded as work-in-progress until the completed asset has been transferred.unless it is being constructed to order under a contract agreed in advance. Thus, nNew assets that have not yet been transferredsold form part of additions to inventories of finished goods held by the producers of the assets. Similarly, an imported product is not recorded as gross fixed capital formation until it is acquired by the unit that intends to use it.
- 11.6811.73 Table 110.2 shows the changes in assets side of table 110.1 expanded to show the entries for transactions in fixed assets, excluding those related to natural capital. It will be noted that the integrated framework of national accountsSNA recommends showing acquisitions of certain categories of these assets separately from disposals of those assets when this provides analytically useful data.
- 11.6911.74 In presentations of the capital account, gross fixed capital formation is usually shown by type of asset, where the accounting principles of the last-paragraph 11.72 are applied to each category of fixed asset in turn. Table 110.2 also incorporates the classification of fixed assets (excluding natural capital) used in the integrated framework of national accountsSNA. Each of the main categories of fixed assets is defined and described in turn below.
- <u>11.70</u> The integrated framework of national accountsSNA does not formally include a division between tangible and intangible assets in the classification. However, the categories of dwellings, other buildings and structures, machinery and equipment, and weapons systems (and cultivated biological resources; see section <u>D</u>) can be taken to correspond to tangible assets and the other categories to intangible assets.

#### **Dwellings**

- 11.711.76 Dwellings are buildings, or designated parts of buildings, that are used entirely or primarily as residences, including any associated structures, such as garages, and all permanent fixtures customarily installed in residences. Houseboats, barges, mobile homes and caravans used as principal residences of households are also included, as are public monuments identified primarily as dwellings.
- 11.72
   11.77 Examples include products included in CPC 2 class 5311, residential buildings and part of CPC 2.group 387. The former class includes single and multiple dwelling buildings as well as residential buildings for communities, retirement homes, hostels, orphans etc. The latter class includes prefabricated buildings, including those intended for housing or for buildings associated with housing such as garages.
- **11.73** The costs of clearing and preparing the site for construction are part of the costs of new dwellings (and other buildings and structures) and are therefore included in the value of the buildings.
- 11.7411.79 Incomplete dwellings are recorded as work-in-progress until completion, even if are included to the extent that the ultimate user is deemed to have taken ownership, either because the construction is on own-account or as evidenced by the existence of a contract of sale or purchase. In the latter case, the work-in-progress is recorded in the accounts of the purchaser.
- 11.7511.80 Dwellings acquired for military personnel are included because they are used for the production of housing services, in the same way as dwellings acquired by civilian units.

#### Other buildings and structures

<u>11.7611.81</u> Other buildings and structures comprise non-residential buildings, other structures and land improvements. These are described in turn below.

#### Buildings other than dwellings

- 11.77<u>11.82</u> Buildings other than dwellings include whole buildings or parts of buildings not designated as dwellings. Fixtures, facilities and equipment that are integral parts of the structures are included. For new buildings, costs of site clearance and preparation are included. Public monuments identified primarily as non-residential buildings are also included.
- 11.7811.83 Examples include products included in CPC 2.0 class 5312, non-residential buildings, such as warehouses and industrial buildings, commercial buildings, buildings for public entertainment, hotels, restaurants, schools, hospitals, prisons etc. Prisons, schools and hospitals are regarded as buildings other than dwellings despite the fact that they may shelter institutional households.

#### Other structures

- 11.79Other structures include structures other than buildings, including the cost of the streets, sewer,etc. The costs of site clearance and preparation are also included. Public monuments for which identificationas dwellings or non-residential buildings is not possible are included as are shafts, tunnels and other structuresassociated with mining mineral and energy resources, and the construction of sea walls, dykes, flood barriersetc. intended to improve the quality and quantity of land adjacent to them. The infrastructure necessary foraquaculture such as fish farms and shellfish beds is also included.
- 11.8011.85 Examples include products included in CPC 2.0 group 532, civil engineering works, such as highways, streets, roads, railways and airfield runways; bridges, elevated highways, tunnels and subways; waterways, harbours, dams and other waterworks; long-distance pipelines, communication and power lines; local pipelines and cables, ancillary works; constructions for mining and manufacture; and constructions for sport and recreation.

#### Table <u>10.211.2</u>: The capital account - the classification of fixed assets

11.8111.86 The construction of new public monuments constitutes gross fixed capital formation and similarly, major improvements to existing public monuments are also included in gross fixed capital formation. Public monuments are identifiable because of particular historical, national, regional, local, religious or symbolic significance. They are accessible to the general public, and visitors are often charged for admission to the monuments or their vicinity. Their owners, who may be government units, non-profit institutions serving households (NPISHs), corporations or households, typically use public monuments to produce cultural or entertainment-type services. In principle, the gross fixed capital formation in public monuments should be included in dwellings, non-residential buildings, and other structures as appropriate; in practice, it may be desirable to classify them with other structures. Consumption of fixed capitalDepreciation on new monuments, or on major improvements to existing monuments, should be calculated on the assumption of appropriately long service lives.

#### Land improvements

- 11.82 Land improvements are the result of actions that lead to major improvements in the quantity, quality or productivity of land, or prevent its deterioration. Activities such as land clearance, land contouring, creation of wells and watering holes that are integral to the land in question are to be treated as resulting in land improvements. Activities such as the creation of seawalls, dykes, dams and major irrigation systems which are in the vicinity of the land but not integral to it, which often affect land belonging to several owners and which are often carried out by government, result in assets that are to be classified as structures.
- **11.83** Land improvements represent a category of fixed assets distinct from the non-produced land asset as it existed before improvement. Land before improvements are effected remains a non-produced asset and as such is subject to holding gains and losses separately from price changes affecting the improvements. In cases where it is not possible to separate the value of the land before improvement and the value of those improvements, the land should be allocated to the category that represents the greater part of the value.
- **11.84**<u>11.89</u> The costs of ownership transfer on all land are to be included with land improvements.

## Machinery and equipment

- **11.85**<u>11.90</u> *Machinery and equipment cover transport equipment, machinery for information, communication and telecommunications (ICT) equipment, and other machinery and equipment.* As explained above, machinery and equipment under a financial lease are treated as acquired by the user (lessee) rather than as acquired by the lessor. Tools that are relatively inexpensive and purchased at a relatively steady rate, such as hand tools, may be excluded. Also excluded are machinery and equipment integral to buildings that are included in dwellings and non-residential buildings. Machinery and equipment other than weapons systems acquired for military purposes are included; weapons systems form another category.
- 11.8611.91 Machinery and equipment such as vehicles, furniture, kitchen equipment, computers, communications equipment, etc. that are acquired by households for purposes of final consumption are not fixed assets and their acquisition is not treated as gross fixed capital formation. However, houseboats, barges, mobile homes and caravans that are used as the principal residences of households are treated as dwellings, so that their acquisition by households is included in gross fixed capital formation.

#### Transport equipment

11.8711.92 **Transport equipment consists of equipment for moving people and objects.** Examples include products other than parts included in CPC 2.0 division 49, transport equipment, such as motor vehicles, trailers and semi-trailers; ships; railway and tramway locomotives and rolling stock; aircraft and spacecraft; and motorcycles, bicycles, etc.

#### ICT equipment

11.8811.93 Information, computer and telecommunications (ICT) equipment consists of devices using electronic controls and also the electronic components forming part of these devices. Examples are products within CPC 2.0 categories 452 and 472. In practice, this narrows the coverage of ICT equipment mostly to computer hardware and telecommunications equipment.

Other machinery and equipment

**Other machinery and equipment consists of machinery and equipment not elsewhere classified.** Examples include products other than parts and items identified in other categories of fixed capital formation included in CPC 2.0 divisions 43, general purpose machinery; 44, special purpose machinery; 45, office, accounting and computing equipment; 46, electrical machinery and apparatus; 47, radio, television and communication equipment and apparatus; and 48, medical appliances, precision and optical instruments, watches and clocks. Other examples are products other than parts included in CPC 2.0 groups 337, fuel elements (cartridges) for nuclear reactors; 381, furniture; 383, musical instruments; 384, sports goods; and 423, steam generators except central heating boilers.

# Weapons systems

11.9011.95 Weapons systems include vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc. Most single-use weapons they deliver, such as ammunition, missiles, rockets, bombs, etc., are treated as military inventories. However, some single-use items, such as certain types of ballistic missile with a highly destructive capability, may provide an ongoing service of deterrence against aggressors and therefore meet the general criteria for classification as fixed assets.

#### Costs of ownership transfer on non-produced assets

The costs of ownership transfer on non-produced assets represent produced assets but their value cannot be integrated with the value of another produced asset. They must therefore be shown as a separate category of gross fixed capital formation. An exception is made in the case of land where costs of ownership transfer are treated by convention as land improvements. Costs of ownership transfer are defined in paragraphs 11.560.48 to 11.600.52.

#### Intellectual property products

- **11.92**<u>11.97</u> Examples of intellectual property products are the results of research and development, mineral exploration and evaluation, computer software (including artificial intelligence), data and databases, and entertainment, literary or artistic originals. They are characterized by the fact that most of their value is attributable to intellectual endeavour. They can be described in general terms in the following way. Intellectual property products are the result of research, development, investigation or innovation leading to knowledge or the creation of artificial intelligence systems that the developers can market or use to their own benefit in production because use of the knowledge is restricted by means of legal or other protection. The knowledge may be embodied in a free-standing product or may be embodied in another. When the latter is the case, the product embodying the knowledge has an increased price relative to a similar product without this embodied knowledge. The knowledge remains an asset as long as its use can create some form of monopoly profits for its owner. When it is no longer protected or becomes outdated by later developments, it ceases to be an asset.
- 11.93 Some intellectual property products are used solely by the unit responsible for their development or by a single unit to whom the product is transferred. Mineral exploration and evaluation is an example. Other products, such as computer software <u>(including data and databases)</u> and artistic originals, are used in two forms. The first is the original or "master copy". This is frequently controlled by a single unit but exceptions

exist as explained below. The original is used to make copies that are in turn supplied to other units. The copies may be sold outright or made available under a licence.

- 11.99 A copy sold outright may be treated as a fixed asset if it satisfies the necessary conditions, that is, it will be used in production for a period in excess of one year. A copy made available under a licence to use may also be treated as a fixed asset if it meets the necessary conditions, that is, it is expected to be used in production for more than one year and the licensee assumes all the risks and rewards of ownership. A good, but not necessary, indication is if the licence to use is purchased with a single payment for use over a multiyear period. If the acquisition of a copy with a licence to use is purchased with regular payments over a multiyear contract and the licensee is judged to have acquired economic ownership of the copy, then it should be regarded as the acquisition of an asset. If regular payments are made for a licence to use without a long-term contract, then the payments in succeeding years, the initial payment is recorded as gross fixed capital formation and the succeeding payments are treated as payments for a service. If the licence allows the licensee to reproduce the original and subsequently assume responsibility for the distribution, support and maintenance of these copies, then this is described as a licence to reproduce.
- 11.100 Intellectual property products such as software may be hosted in a cloud computing datacentre. This does not change the ownership of the license as a software asset. A user of remotely accessed software may purchase a license from a software publisher as a software asset and separately purchase the cloud computing infrastructure services of the processing time and storage needed to utilise the hosted software. Cloud computing users who do not have their own software license incur pay-per-use software license charges when they run software in the cloud. The entire fee for accessing the software is retained by the cloud computing enterprise if it owns the software (either because it is the software developer or because it has acquired all rights to the software rentals. In these cases, the software original or software copy is a fixed asset of the cloud computing enterprise. In other cases, the cloud computing provider passes on a portion of the pay-per-use software license fees to the software publisher and receives margin income from reselling software services supplied by the software publisher. However, it may be more practical to treat the cloud computing enterprise as purchasing intermediate inputs of services from the software services on margin.
- 11.101 Subscriptions from software publishers are not cloud computing or hosting services even if the publisher delivers the software via remote access over a network. Software publishers often take advantage of remote access to distribute regular updates, making the product seem like software-as-a-service. Software-as-a-service would be normally recorded as intermediate consumption, but if the user has purchased a long-term software license, the subscription should be recorded as a software asset of the license holder (i.e., the user of the software), and the periodic software over a period lasting more than a year would be recorded as the acquisition of a fixed asset even if the software is frequently updated during the term of the license. For more information on the impact of digitalization on the measurement of the economy, see chapter 22.
- <u>11.102</u> When copies are distributed by the owner free of charge, then no flows between the owner and recipients are recorded in the SNA. If, despite making copies freely available, the owner still expects to obtain benefits, then the present value of those benefits should be recorded in its balance sheet. It may be that when the information was distributed freely it was incomplete and the owner intends to make more detailed information available at a price later. Software distributed freely at the beta test stage is one example. Alternatively, the owner justifies the expenditure on the basis of the benefits to its own production and may make copies available for marketing purposes, generating goodwill or in cases it considers deserving.
- 11.9411.103 A more prominent example in the age of digitalisation concerns open-source software which is developed, maintained, and supplied through the contributions of developers from universities, government research institutions, non-profit institutions, private corporations and individuals. The contributions by developers provided for free may be motivated by the future use of the resulting software. The value of such open-source software produced by programmers employed by corporations, government, or NPISHs is usually already included in measures of own-account software investment as estimated by the sum-of-costs method, unless the developer is an individual not being employed and remunerated. Again, for more

#### information, see chapter 22.

11.9511.104 It is often the case for some intellectual property products that some of the benefits accrue to units other than the owner to the extent they stimulate the production of other intellectual property products by other units. Examples of such spillovers include a breakthrough in the development of a new class of drug leading other enterprises to develop competing drugs of the same type, and the success or failure of mineral exploration in a particular zone informing other units with exploration rights in a neighbouring zone. These are treated in the same way as other externalities in the SNA. Unless there is a quantifiable monetary impact for one or both parties, nothing is recorded in the integrated framework of national accountsSNA. More detailed guidance can be found in theA Handbook on Deriving Capital Measures of Intellectual Property Products (Organisation for Economic Co- operation and Development, 2009forthcoming) is under preparation.

#### Research and development

- 11.9611.105 Intellectual property products include the results of research and development (R&D). Research and [experimental] development consists of the value of expenditures on creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and use of this stock of knowledge to devise new applications. This does not extend to including human capital as assets within the SNA. The value of research and development (R&D) should be determined in terms of the economic benefits it is expected to provide in the future. This includes the provision of public services in the case of R&D acquired by government. In principle, R&D that does not provide an economic benefit to its owner does not constitute a fixed asset and should be treated as intermediate consumption. Unless the market value of the R&D is observed directly, it may, by convention, be valued at the sum of costs, including the cost of unsuccessful R&D, as described in chapter <u>76</u>.
- 11.97<u>11.106</u> R&D should be recognized as part of capital formation. In order to achieve this, several issues have to be addressed. These include deriving measures of research and development, price indices and service lives. Specific guidelines, together with handbooks on methodology and practice, will-provide a useful way of working towards solutions that give the appropriate level of confidence in the resulting measures.
- 11.9811.107 With the inclusion of R&D expenditure as capital formation, patented entitiesitems no longer feature as assets in the SNA. The patent agreement is to be seen instead as the legal agreement concerning the terms on which access to the R&D is granted. The patent agreement is a form of licence to use which is treated as giving rise to payments for services or the acquisition of an asset.

Mineral exploration and evaluation

- 11.9911.108 Mineral exploration and evaluation consists of the value of expenditures on exploration for petroleum and natural gas and for non-petroleum deposits and subsequent evaluation of the discoveries made. These expenditures include prelicence costs, licence and acquisition costs, appraisal costs and the costs of actual test drilling and boring, as well as the costs of aerial and other surveys, transportation costs, etc., incurred to make it possible to carry out the tests. Re-evaluations may take place after commercial exploitation of the reserve has started and the cost of these re-evaluations is also included in gross fixed capital formation.
- 11.10011.109 Mineral exploration is undertaken in order to discover new deposits of minerals or fuels that may be exploited commercially. Such exploration may be undertaken on own account by enterprises engaged in mining or the extraction of fuels. Alternatively, specialized enterprises may carry out exploration either for their own purposes or for fees. The information obtained from exploration influences the production activities of those who obtain it over a number of years. The expenditures incurred on exploration within a given accounting period, whether undertaken on own account or not, are therefore treated as expenditures on the acquisition of an intellectual property product and included in the enterprise's gross fixed capital formation.
- 11.101<u>11.110</u> The expenditures included in gross fixed capital formation include not only the costs of actual test drillings and borings, but also the costs incurred to make it possible to carry out tests, for example, the costs of aerial or other surveys, transportation costs, etc. The value of the resulting asset is not measured by the

value of new deposits discovered by the exploration but by the value of the resources allocated to exploration during the accounting period. When the activities are carried out by contractors, the prices charged by these contractors, including their operating surplus, become part of the value of the expenditures incurred. Consumption of fixed capital Depreciation may be calculated for such assets by using average service lives similar to those used by mining or oil corporations in their own accounts.

#### Computer software, data and databases

11.10211.111 Computer software, data and databases are grouped together because a computerized database, including the relevant data, cannot be developed independently of a database management system (DBMS), which is itself computer software.

#### Computer software, including artificial intelligence

- 11.10311.112 Computer software consists of computer programs, program descriptions and supporting materials for both systems and applications software. <u>It also includes artificial intelligence systems</u>. Gross fixed capital formation in computer software includes both the initial development and subsequent extensions of software as well as acquisition of copies that are classified as assets.
- 11.104<u>11.113</u> The development of computer software represents the development of an intellectual property product. It is treated as an asset if it is to be used in production by its owner for more than one year. The software may be intended only for own use or may be intended for sale by means of copies. If copies of the software are sold on the market, their treatment follows the principles described in paragraph <u>11.99 to</u> <u>11.101.40.100</u>. Software purchased on the market is valued at purchasers' prices, while software developed in-house is valued at its estimated basic price, or at its costs of production if it is not possible to estimate the basic price.

# Data and databases

- 11.114 Data and databases consist of electronic files of data, including the information content, organized in such a way as to permit resource-effective access and use of the data, either, Databases may be developed exclusively for own use in production for more than one year, or for sale as an entity or for sale by means of a licence to access the information contained. The standard conditions apply for when an own-use database, a purchased database or the licence to access a database constitutes an asset.
- 11.10511.115 Data and databases are conceptually distinct types of intellectual property products, but they are produced using similar inputs and measuring them separately is often difficult. Moreover, transactions in databases generally include the value of the data stored in the database. Data and databases are therefore combined into a single detailed class of intellectual property product. The creation of data and databases will generally have to be estimated by a sum-of-costs method.
- 11.116 The creation of a database will generally have to be estimated by a sum of costs approach. The cost of the database management system (DBMS) used should not be included in the costs of creating a database, but be treated as a computer software asset unless it is used under an operating lease. The cost of preparing data in the appropriate format is included in the cost of the database but not the cost of acquiring or producing the data(see below). Other costs will include staff time estimated on the basis of the amount of time spent in developing the database, an estimate of the capital services of the assets used in developing the database and costs of items used as intermediate consumption.
- 11.117 The main cost elements related to data consist of the costs of planning, preparing, and developing a data production strategy; the costs associated with accessing, recording, and storing information embedded in observable phenomena, which may include, but is not limited to, explicit purchases related to accessing observable phenomena or already produced data; and the costs associated with processing, cleaning, and organising the data to allow for use in productive activities.
- 11.10611.118 Data and data bases for sale should be valued at their market price, which includes the value of the

information content. If the value of a software component is available separately, it should be recorded as the sale of software.

Entertainment, literary and artistic originals

- 11.107 11.119 Entertainment, literary and artistic originals consist of the original films, sound recordings, manuscripts, tapes, models, etc., on which drama performances, radio and television programming, musical performances, sporting events, literary and artistic output, etc., are recorded or embodied. Such works are frequently developed on own account. Subsequently they may be sold outright or by means of licences. The standard conditions on when the originals and copies are recognized as fixed assets apply. If an original is acquired as a valuable, its production does not count as own account production of a fixed asset but it may have been classified as work-in-progress.
- 11.120 An original purchased on the market is valued at the purchaser's price. One developed in-house is valued at its estimated basic price or at its costs of production if it is not possible to estimate the basic price.
- 11.121Households may produce user-generated content on digital platforms, which has an expected service life of<br/>more than one year. If the household receives remuneration from the content that it creates and uploads (e.g.,<br/>advertising or subscription revenue), the investment in the relevant entertainment, literary or artistic original<br/>is within the production boundary of the integrated framework of national accounts, and the asset could be<br/>valued either at the net present value of the benefits generated with the asset, or as the sum of costs needed<br/>to produce the asset.
- 11.108Creation of entertainment, literary and artistic originals for personal enjoyment a common leisure<br/>activity is outside the production boundary. A complicating factor is that online platforms may benefit from<br/>user-generated content. For example, when personal posts attract the user's followers to the platform, they<br/>provide economic benefits, for example in the form of advertising revenue, to the platform. However, user-<br/>generated content cannot be considered an asset of the platform. The benefits accruing to the platform are<br/>externalities, positive spillovers of the user's production of leisure services. For more information on the<br/>impact of digitalisation on the measurement of the economy, see chapter 22.

Other intellectual property products

<u>11.109</u><u>11.123</u> Other intellectual property products include any such products that constitute fixed assets but are not captured in one of the specific items above.

# 2. Changes in inventories (excluding natural capital)

- 11.11011.124 Changes in inventories are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period. Some of these acquisitions and disposals are attributable to actual purchases or sales, but others reflect transactions that are internal to the enterprise.
- 11.11111.125 It is useful to distinguish between two functions performed by an enterprise: its function as a producer of goods and services and its function as an owner of assets. When a good is entered into inventories it is acquired as an asset by the enterprise in its capacity as owner either by purchase (or barter) or by an internal transaction with itself as the producer. Conversely, a good leaving inventories represents the disposal of an asset by the owner either by sale or other use, by an internal transfer to the producer or possibly as a result of recurrent losses (recurrent wastage, accidental damage or pilfering).

# Storage and stocks of inventories

11.11211.126 Most goods going into inventories simply remain there until they are withdrawn in the same state as when they entered. Not infrequently, the price of the goods will have increased while they are in inventories, but these increases are not due to production but are simply holding gains. There are some goods,

though, where the passage of time in store changes the character of the goods. In such cases, the increase in value due to storage is to be treated as production and not as holding gains, though holding gains (or losses) may occur as well.

- 11.11311.127 The indication that storage is being undertaken as a production activity is that the price of the good stored, relative to the general level of prices, is expected to increase by a certain amount over a predetermined time. For example, winter wheat may be expected, on the basis of past experience, to fetch a given multiple of its price at harvest. Similarly, wine that is several years old is more valuable than the current year's vintage by a predictable factor.
- 11.114<u>11.128</u> The activity of storage may be undertaken by any institutional unit, not just the original producer of the product or may be undertaken by several units in succession if the ownership of the goods changes during storage.
- 11.11511.129 The goods in storage are classified as work-in-progress and not finished goods. The increase in value during the accounting period up to the expected level at that time is treated as production of storage; any difference from this level is treated as a holding gain or loss. The method of valuing storage is described in the annex to chapter 67. The expected level of price increase for items being stored for more than one year, though, needs to be calculated in accordance with the principles of valuing work-in-progress described below.

# Valuation

- 11.11611.130 The enterprise in its capacity as a producer may obtain goods or services for intermediate consumption either by purchasing them on the market for immediate use or by internal transfers out of inventories. In order to ensure that all the goods and services used for intermediate consumption are consistently valued at current prices, the goods transferred out of inventories are valued at purchasers' prices current at the time of the withdrawal from inventories.
- 11.11711.131 Similarly, the output produced by the producer may either be sold or otherwise disposed of or be transferred to inventories as finished products or work-in-progress. In order to ensure that output is consistently valued, finished goods transferred into inventories are valued as if they were sold at that time, while additions to work-in-progress are given the value they have at the time they are added to inventories.

# Table 10.311.3: The capital account - changes in inventories and valuables

#### Valuation of work-in-progress

- 11.118\_11.132 Much work-in-progress is of short duration and occurs only because production is a continuous process and some goods will be incomplete at the end of one accounting period but will be completed long before the end of the next. For output with a production period of a year or less, and assuming that prices and costs remain stable during the period of production, the value of the additions to work-in-progress for non-agricultural products within a given accounting period can be approximated by calculating the proportion of the total product. Thus, the value of the output of the finished product is distributed over the accounting periods in which it was produced in proportion to the costs incurred in each period. If the average levels of prices and costs change from period to period, the output should be allocated initially using the prices and costs at the time the production is finished, and then the values of the work-in-progress thus calculated for earlier periods should be recalculated in proportion to the change in average cost levels from period to period.
- 11.11911.133 For agricultural products, this method of allocating output over multiple periods may not be satisfactory. A disproportionate share of the costs may be incurred in sowing a crop with little if any costs being incurred until harvest. Prorating the output to the physical growth of the crop may be considered a possibility but in cases where there is serious risk of climatic damage just before the crop is harvested, this may give over-optimistic indications of probable output. Pragmatic distributions over quarters based on past experience may have to be used, or where multi\_cropping is the norm, to allow the whole output of each crop to be counted in the period when it is harvested.

- 11.12011.134 There are important activities, such as construction of buildings, structures and complex machinery, where the production process may take several years. In these cases, the valuation of the partially complete product requires careful consideration especially since such large projects are by their nature very costly.
- **11.121<u>11.135</u>** Even if one fifth of the work involved is put in place annually over a period of five years, it does not follow that one fifth of the value (assuming zero inflation for simplicity) should be recorded in each year. The work put in place in the first year cannot be used for four more years and so the value of it must be discounted to allow for this delay. In the second year, the value of the work put in place in the first year will increase by one discount factor and this should be added to the value of the work put in place in the second year and so on. This case is discussed in more detail in chapter <u>2017</u>.

## **Transactions in inventories**

11.12211.136 The transactions in the capital account relating to inventories show the change in the level of inventories of each type. The changes comprise the additions less withdrawals and less regular losses from inventories. Table 1011.3 shows the expansion of table 1011.1 to incorporate changes in inventories. Each of the categories is described and defined below.

#### Materials and supplies

- 11.12311.137 Materials and supplies consist of all products that an enterprise holds in inventory with the intention of using them as intermediate inputs into production. Not all necessarily get used in this way, however, as some may be lost as a result of physical deterioration, or recurrent accidental damage or pilfering. Such losses of materials and supplies are recorded and valued in the same way as materials and supplies actually withdrawn to be used up in production.
- 11.12411.138 Enterprises may hold a variety of quite different kinds of goods under the heading of materials and supplies, the most common types being fuels, industrial raw materials, agricultural materials, semi-processed goods, components for assembly, packaging materials, foodstuffs, office supplies, etc. Every enterprise, including non-market producers owned by government units, may be expected to hold some inventories of materials and supplies, if only inventories of office supplies.
- 11.12511.139 Materials and supplies do not include works of art or stocks of precious metals or stones acquired by enterprises as valuables. However, there are some producers that do use gold, diamonds, etc. as intermediate inputs into the production of other goods or services, for example, manufacturers of jewellery or dentists. Stocks of gold, diamonds, etc., intended for use in production are recorded under materials and supplies.

#### Work-in-progress

- 11.12611.140 Work-in-progress consists of output produced by an enterprise that is not yet sufficiently processed to be in a state in which it is normally supplied to other institutional units. Work-in-progress occurs in all industries, but is especially important in those in which some time is needed to produce a unit of finished output, for example, in agriculture, or in industries producing complex fixed assets such as ships, dwellings, software or films. Work-in-progress can therefore take a wide variety of different forms ranging from growing crops to partially completed film productions or computer programs. Although work-in-progress is output that has not reached the state in which it is normally supplied to others, its ownership ismay nevertheless be transferable, if necessary. For example, the ownership of a partially completed asset may be transferred to the ultimate owner, or it may be sold under exceptional circumstances such as the liquidation of the enterprise.
- 11.12711.141 Work-in-progress must be recorded for any output that is not complete at the end of the accounting period. This is a particular problem for output taking a long time to complete, such as construction. The shorter the accounting period, the more important work-in-progress is likely to be relatively to finished output. In particular, it is likely to be more significant for quarterly accounts than annual accounts, if only

because the production of many agricultural crops is completed within a year but not necessarily within a quarter. The only exceptions to recording iIncomplete work is recorded as work-in-progress are for partially completed projects for which the ultimate owner is deemed to have taken ownership, either because the production is for own use or as evidenced by the existence of a contract of sale or purchase.

- 11.12811.142 Reductions in work-in-progress take place when the production process is completed. At that point, all work-in-progress is reclassified as a finished product. This reclassification appears in the other changes in the volume of assets account.
- <u>11.129</u><u>11.143</u> If prices and costs have risen, work-in-progress carried forward from previous periods must be revalued using the prices and costs of the period in which the production is finished.
- 11.13011.144 Current losses from work-in-progress resulting from physical deterioration or recurrent accidental damage or pilfering should be deducted from the additions to work-in-progress accruing as a result of the production carried out in the same period.
- 11.131
   11.145
   Work-in-progress can beis subdivided between work-in-progress on cultivated assetsbiological resources, as discussed under natural capital, and other work-in-progress, as defined below. Other work-in-progress consists of output (other than on cultivated biological resources) that is not yet sufficiently processed to be in a state in which it is normally supplied to other institutional units.

#### 11.132 Other work-in-progress

#### 11.133

## Finished goods

- 11.13411.146 Finished goods consist of goods produced as outputs that their producer does not intend to process further before supplying them to other institutional units. A good is finished when its producer has completed his intended production process, even though it may subsequently be used as an intermediate input into other processes of production. Thus, inventories of coal produced by a mining enterprise are classified as finished products, although inventories of coal held by a power station are classified under materials and supplies. Inventories of batteries produced by a manufacturer of batteries are finished goods, although inventories of the same batteries held by manufacturers of vehicles and aircraft are classified under materials and supplies.
- 11.13511.147 Inventories of finished goods may be held only by the enterprises that produce them. Finished goods entering inventories are valued at the basic prices of those goods at the times the entries take place; finished goods withdrawn from inventories are valued at the basic prices at the time when their withdrawals take place. Current losses of finished goods resulting from physical deterioration or recurrent accidental damage or pilfering should be valued at the prices at the time when the losses occur.

#### Military inventories

11.13611.148 Military inventories consist of single-use items, such as ammunition, missiles, rockets, bombs, etc., delivered by weapons or weapons systems. As noted above in the discussion of weapons systems as fixed capital, most single-use items are treated as inventories but some types of missiles with highly destructive capability may be treated as fixed capital because of their ability to provide an ongoing deterrence service against aggressors.

#### Goods for resale

11.137<u>11.149</u> Goods for resale are goods acquired by enterprises, such as wholesalers or retailers, for the purpose of reselling them to their customers. Goods for resale are not processed further by the enterprises that purchase them, except for presenting them for resale in ways that are attractive to their customers. Thus, goods for resale may be transported, stored, graded, sorted, washed, packaged, etc. by their owners but are not otherwise transformed.

- 11.13811.150 Goods for resale entering the inventories of the enterprises are valued at their actual or estimated purchasers' prices. These prices include any additional transportation charges paid to enterprises other than the suppliers of the goods, but not the costs of any transport services produced on own account by the enterprise taking delivery. In principle, goods acquired by barter are valued at their estimated purchasers' prices at the time of acquisition. However, because there are no taxes or margins on bartered goods, the purchaser's price is the same as the basic price.
- **11.139**<u>11.151</u> Goods for resale withdrawn from inventories are valued at the purchasers' prices at which they can be replaced at the time they are withdrawn as distinct from the purchasers' prices that may have been paid for them when they were acquired. Reductions in inventories are valued in this way whether the goods withdrawn are sold at a profit or at a loss, or even not sold at all as a result of physical deterioration or recurrent accidental damage or pilfering.
- 11.14011.152 By convention, goods acquired by government for distribution as social transfers in kind but that have not yet been so delivered are also included in goods for resale.

# 3. Acquisitions less disposals of valuables

# The asset boundary

11.14111.153 Valuables include precious metals and stones, antiques and other art objects and other valuables. However, not all items that may be described by one of these titles should necessarily be included as a valuable in the balance sheet of the owner. The intent of the heading is to capture those items that are often regarded as alternative forms of investment. At various times, investors may choose to buy gold rather than a financial asset and pension funds have been known to buy "old master" paintings when the prices of financial assets were behaving in a volatile manner. Individuals (households in SNA terminology) may also choose to acquire some of these items knowing that they may be sold if there is a need to raise funds.

# Valuation

11.142<u>11.154</u> Costs of ownership transfer, such as valuers' and auctioneers' margins, are often incurred when valuables are exchanged. As with other non-financial assets, these costs are treated as gross capital formation and included in the value of the items when recorded in the balance sheet.

### **Transactions in valuables**

11.14311.155 A possible categorization of valuables is: precious metals and stones; antiques and other art objects; and other valuables. This list should be regarded as indicative and supplementary rather than a standard breakdown. The context of each category is described to assist in identifying and valuing valuables.

# Precious metals and stones

11.144<u>11.156</u> Precious metals and stones are treated as valuables when they are not held by enterprises for sale or use as inputs into processes of production nor are held as monetary gold and are not held as a financial asset in the form of unallocated metal accounts.

# Antiques and other art objects

11.145<u>11.157</u> Paintings, sculptures, etc., recognized as works of art and antiques are treated as valuables when they are not held by enterprises for sale. In principle, museum exhibits are included under valuables.

# Other valuables

 11.146
 Other valuables not elsewhere classified include such items as collections of stamps, coins, china, books etc. that have a recognized market value, and fine jewellery, fashioned out of precious stones, and metals of significant and realizable value. It may also include non-fungible tokens (NFTs) that only allow for personal use of another product or asset (usually a digital valuable). Some of these NFTs may initially be recorded as final consumption expenditure, but over time gain more features of a valuable. NFTs that grant limited commercial rights are recorded as part of contracts, leases and licenses; see paragraph 11.170.

# C. Acquisitions less disposals of non-produced non-financial assets (excluding natural capital)

- 11.14711.159 Excluding non-produced natural capital (see section D), Tthere are three distinct types of non-produced non-financial assets in the SNA: natural resources, contracts, leases and licences, crypto assets without a corresponding liability designed to act as a medium of exchange, and purchased goodwill and marketing assets. These three types of assets have little in common except that they are all non-produced and non-financial. A separate section discusses each of the three.
- 11.148<u>11.160</u> Table 1011.4 shows table 1011.1 expanded to show the standard detail of non-produced non-financial assets. Each of the categories is discussed under the appropriate section.

 Table 10.411.4:
 The capital account - non-produced non-financial assets

# 1. Contracts, leases and licences (excluding natural capital)

## The asset boundary

- 11.149<u>11.161</u> Contracts, leases and licences are treated as assets only when both the following conditions are satisfied.
  - a. The terms of the contract, lease or licence specify a price for the use of an asset or provision of a service that differs from the price that would prevail in the absence of the contract, lease or licence.
  - b. One party to the contract must be able legally and practically to realize this price difference.

The second condition presupposes that a market for the contract exists. It is recommended that in practice contracts, leases and licences should only be recorded in the accounts when the holder does actually exercise the -right to realize the price difference.

- 11.15011.162 Part 5 of eChapter 2717 discusses the whole question of the treatment of leases within the integrated framework of national accountsSNA and should be consulted if there is doubt about whether a contract, lease or licence should be treated as an asset.
- 11.151<u>11.163</u> As with natural resources, t<u>T</u>he costs of ownership transfer on the acquisition and disposal of contracts, leases and licences should be shown separately as gross capital formation.

#### Types of assets included in contracts, leases and licences

11.15211.164 There are four classes of contracts, leases and licences considered to be assets in the SNA: marketable operating leases, permits to use natural resources, permits to undertake specific activities, and entitlement to future goods and services on an exclusive basis, and non-fungible tokens.
#### Marketable operating leases

**11.153**<u>11.165</u> Marketable operating leases are third-party property rights relating to fixed assets. An example is where a tenant of a building has a fixed rental but the building could fetch a higher rental in the absence of the lease. If, in these circumstances, the tenant is able both legally and practically to sublet the building, then he has an asset of the type of a marketable operating lease.

#### Permits to undertake specific activities

<u>11.15411.166</u> A permit to undertake a specific activity is one where:

- a. the permits are limited in number and so allow the holders to earn monopoly profits,
- b. the monopoly profits do not come from the use of an asset belonging to the permit-issuer,
- c. a permit holder is able both legally and practically to sell the permit to a third party.
- Such permits are issued mainly by government but may also be issued by other units.
- 11.15511.167 When governments restrict the number of cars entitled to operate as taxis or limit the number of casinos permitted by issuing licences, they are in effect creating monopoly profits for the approved operators and recovering some of the profits as the fee. The incentive to acquire such a licence is that the licensee believes that he will thereby acquire the right to make monopoly profits at least equal to the amount he that was paid for the licence. This stream of future income is treated as an asset if the licensee can realize this by on-selling the asset. The type of asset is described as a permit to undertake a specific activity. The value of the asset is determined by the future stream of monopoly profits.
- 11.15611.168 It is less common for units other than government to be able to limit the participation in a given activity. One instance may be where the owner of property limits the numbers of units allowed to operate on the his property, for example a hotel with a policy of only allowing one taxi firm to pick up guests. In this sort of case, the permits are treated as giving rise to payments for services. There is no reason in principle why such permits could not be treated as assets if they were marketable though this may not be a common situation.

#### Entitlement to future goods and services on an exclusive basis

11.169 Entitlement to future goods and services on an exclusive basis relates to the case where one party which has contracted to purchase goods or services at a fixed price at a time in the future is able to transfer the obligation of the second party to the contract to a third party. Examples are footballers' contracts, a publisher's exclusive right to publish new works by a named author or issue recordings by named musicians.

### Non-fungible tokens

 11.157
 11.170
 Non-fungible tokens relate to digital records hosted on a blockchain that are associated with a digital or physical asset or product but that are distinct from that asset or product. In some cases, these non-fungible tokens grant limited commercial rights from which the owner can derive economic benefits (e.g., some form of royalties). These tokens should be recorded as non-produced non-financial assets. Acquisitions of these assets should be valued at their exchange values.

# 2. Crypto assets without a corresponding liability designed to act as a medium of exchange

 11.171
 Crypto assets without a corresponding liability designed to act as a medium of exchange are crypto assets for which there is no issuer. They consist of crypto assets without a corresponding liability designed to act as a general medium of exchange and those designed to act as medium of exchange within a platform only. Different from similar assets issued by, for example, a central bank, crypto assets without a corresponding

liability are recorded as non-produced non-financial assets, and not as financial assets, mainly because a counterpart liability cannot be established. In addition, it can be noted that many of these crypto assets do not yet act as a medium of exchange; instead they are often looked upon as a store of value.

- 11.172 The recording as non-produced non-financial assets means that purchases of goods or services using these assets are considered to be barter transactions. The valuation of these transactions, similar to direct acquisitions or disposals of crypto assets, can be determined by the market price of the relevant crypto assets at the date of exchange.
- 11.173 Crypto assets more generally are a relatively new phenomenon, certainly at the time of writing these standards. As a consequence, the role of crypto assets without a counterpart liability designed to act as a medium of exchange may change in the future, and such crypto assets may qualify as money, to be recorded as financial assets. Important conditions for such a classification are that these assets are (i) authorised by government, (ii) generally accepted as a means of payments, including paying taxes with such assets; (iii) serving as a unit of account; and (iv) widely used as a medium of exchange. In respect of these future developments, the classification of crypto assets without a counterpart liability designed to act as a medium of exchange has been put on the research agenda (see Annex 5)

## 2.3. Purchased Ggoodwill and marketing assets

- 11.15811.174 Potential purchasers of an enterprise are often prepared to pay a premium above the net value of its individually identified and valued assets and liabilities. This excess is described as "goodwill" and reflects the value of corporate structures and the value to the business of an assembled workforce and management, corporate culture, distribution networks and customer base. It may not have value in isolation from other assets, but it enhances the value of those other assets. Looked at another way, it is the addition to the value of individual assets because they are used in combination with each other.
- 11.15911.175 Purchased Ggoodwill cannot be separately identified and sold to another party. The value has to be derived by deducting from the sale value of the corporation the value of assets and liabilities classified elsewhere within the asset boundary of the SNA. (In practice, since it is estimated as a residual, an estimate of goodwill will also reflect errors and omissions in the valuation of other assets and liabilities.)
- 11.16011.176 As well as residual errors, the value of purchased goodwill may include the value to the corporation of items known as marketing assets. *Marketing assets consist of items such as brand names, mastheads, trademarks, logos and domain names.* A brand can be interpreted as far more than just a corporate name or logo. It is the overall impression a customer or potential customer gains from their experience with the company and its products. Interpreted in that wider sense it can also be seen to encompass some of the characteristics of goodwill such as customer loyalty.
- 11.161-11.177 The value of purchased goodwill and marketing assets is defined as the difference between the value paid for an enterprise as a going concern and the sum of its assets less the sum of its liabilities, each item of which has been separately identified and valued. Although goodwill is likely to be present in most corporations, for reasons of reliability of measurement it is only recorded in the integrated framework of national accountsSNA when its value is evidenced by a market transaction, usually the sale of the whole corporation. Exceptionally, identified marketing assets may be sold individually and separately from the whole corporation in which case their sale should also be recorded under this item.

# D. <u>Acquisitions less disposals of natural capital</u>

- <u>11.178</u> Natural capital consists of two distinct classes of assets: natural resources and ecosystem assets. The former are recognised in the integrated framework of national accounts, and the latter are not.
- 11.179Natural resources are assets that naturally occur, such as land, water resources, timber and fish stocks, and<br/>mineral and energy resources that have an economic value and over which ownership may be enforced and<br/>transferred (see below for a more detailed discussion). In monetary terms, the asset boundaries of the SEEA<br/>2012 Central Framework and the integrated framework of national accounts are the same. In physical terms,<br/>the asset boundary of the SEEA 2012 Central Framework is broader and includes all natural resources and

areas of land of an economic territory that may provide resources and space for use in economic activity. Thus, the scope in physical terms is not limited to those assets with economic value.

- 11.180 Ecosystem assets are contiguous spaces of a specific ecosystem type characterized by a distinct set of biotic and abiotic components and their interactions, from which benefits can be derived that are used in economic and other human activity. Ecosystem assets are not recognised in the system of national accounts, mainly because no monetary benefits can be derived from them. An exception may be related to certain provisioning types of services which result in monetary benefits and as such may be implicitly included in the value of natural resources, such as agricultural land or forest land. Ecosystem assets are at the heart of SEEA Ecosystem Accounting.
- <u>11.181</u> For more information on ecosystem assets, and accounting for environmental sustainability more generally, see chapter 35 and the two SEEA standards.
- 11.162
   In the integrated framework of national accounts, natural resources are broken down into five asset

   categories: (i) land; (ii) mineral and energy resources; (iii) biological resources; (iv) water resources; and (v)

   other natural resources. In the discussion below, a distinction is made between biological resources and the

   other types of natural resources. The main reason for this is that biological resources are a mixture of

   produced and non-produced assets, while the other categories exclusively consist of non-produced non-financial assets.

### 1. Land, mineral and energy resources, water resources and other natural resources

#### The asset boundary

- 11.163<u>11.183</u> As noted before, Nnot all environmental resourcesassets qualify as economic assets. It is useful, therefore, to delineate those naturally occurring resources that fall within the asset boundary of the integrated framework of national accountsSNA from those that do not.
- 11.16411.184 In the first place, it must be noted that the accounts and balance sheets of the integrated framework of national accountsSNA are compiled for institutional units or groups of units and can only refer to the values of assets that belong to the units in question. Only those naturally occurring resources over which ownership rights have been established and are effectively enforced can therefore qualify as economic assets and be recorded in balance sheets. They do not necessarily have to be owned by individual units, and may be owned collectively by groups of units or by governments on behalf of entire communities. Certain naturally occurring resources, however, may be such that it is not feasible to establish ownership over them: for example, air, or the oceans. In addition, there may be others that cannot be treated as economic assets because they do not actually belong to any particular units. These include not only those whose existence is unknown but also those, including uncultivated forests, that may be known to exist but remain so remote or inaccessible that, in practice, they are not under the effective control of any units.
- 11.16511.185 Secondly, in order to comply with the general definition of an economic asset, natural assets must not only be owned but must also be capable of bringing economic benefits to their owners, given the technology, scientific knowledge, economic infrastructure, available resources and set of relative prices prevailing on the dates to which the balance sheet relates or expected to do so in the near future. Thus, known deposits of minerals that are not commercially exploitable in the foreseeable future are not included in the balance sheets of the SNA, even though they may possibly become commercially exploitable at a later date as a result of major, unforeseen advances in technology or major changes in relative prices.
- 11.16611.186 In the case of mineral and energy resources, SEEA 2012 Central Framework distinguishes three classes based on the United Nations Framework Classification (UNFC) for Fossil Energy and Mineral Resources: class A: commercially recoverable resources; class B: potentially commercially recoverable resources; and class C: non-commercial and other known deposits. The measurement of monetary estimates is typically restricted to the first class, which in practice could be approximated by those resources for which permissions to exploit have been granted, and/or those for which the existence is explicitly recognised by (past) monetary transactions. Potential mineral and energy resources where it is not foreseen that they will be exploited in the near future are thus explicitly excluded.

## **Ownership** of assets

- **11.167**<u>11.187</u> All owners and purchasers of land and immovable natural resources within the economic territory are deemed to have a centre of economic interest in the economy. If an owner or purchaser would not otherwise qualify as a resident unit, a notional resident unit is created for this purpose. The notional resident unit is deemed to purchase the land while the non-resident is deemed to purchase the equity of the notional unit and thus acquires a financial instead of a non-financial asset. Thus, all purchases and sales of land normally take place between resident units. The one exception is when the boundaries of the economic territory itself are changed, for example, when a foreign government, or international organization, purchases or sells land that is added to, or taken away from, the enclave in which its embassy or offices are located.
- 11.16811.188 Moreover, as purchases and sales of land and natural resources are recorded excluding costs of ownership transfer for both buyers and sellers, the total value of the purchases and sales of land and natural resources must be equal to each other at the level of the total economy, although not at the level of individual sectors or subsectors.
- <u>11.189</u> Similarly, it is assumed that extraction of subsoil resources can only be undertaken by resident institutional units. As soon as an enterprise starts to prepare to establish for extraction, for example by obtaining the requisite licences, it is assumed to become resident at that point.
- 11.190 In the case of mineral and energy resources, a government is often the legal owner of the resources. Once a decision is taken to extract the resources, a license is given to a user/extractor to exploit the resources. In return for the license, the extractor typically pays an annual rent to the government. Any payments made by the user/extractor of a natural resource to the owner of the natural resource, which are linked to the use/extraction of that resource, in particular to the quantity and/or value of that resource, should be recorded as rent. These would include, for example, royalties, sur-taxes, and permits. However, payments that are paid by the user/extractor on the same basis as other corporations who are not users/extractors of natural resources (e.g., standard rate corporation taxes, dividends, payments for services) should not be recorded as rent.
- 11.169The full resource rent can be estimated using the residual value method, by deducting from outputall costs related to the extractions of the resources, including services related to the capital used in production(for more details, see the annex to chapter 4). The government often does not appropriate the full resourcerent which can be derived from the exploitation of mineral and energy resources. If this is the case, the assetshould be allocated to government and the extractor in line with the estimated appropriation of future resourcerents. The coming into existence of the relevant resources is recorded as an other change in the volume ofassets and liabilities, and is therefore not recorded on the capital account.

#### Valuation

11.17011.192 Since land, mineral and energy resources, water resources and the likenatural resources are nonproduced, the costs of ownership transfer, which are part of fixed capital formation, must be shown separately in the capital account and not as part of the value of the transaction in the non-produced asset. For land, the costs of ownership transfer are treated, by convention, as being included with land improvements.

#### Transactions in natural resources

 $\frac{11.1711.193}{\text{according to the classification given in table }\frac{1011}{1000}.$ 

#### Land

11.17211.194 Land consists of the ground, including the soil covering and any associated surface waters, over which ownership rights are enforced and from which economic benefits can be derived by their owners by holding or using them. The value of land excludes any buildings or other structures situated on it or running through it; cultivated crops, trees and animals; mineral and energy resources; non-cultivated biological resources and water resources below the ground. The associated surface water includes any inland waters (reservoirs, lakes, rivers, etc.) over which ownership rights can be exercised and that can, therefore, be the subject of transactions between institutional units. However, water bodies from which water is regularly extracted, against payment, for use in production (including for irrigation) are included not in water associated with land but in water resources.

- **11.173**<u>11.195</u> As explained above, land improvements and the costs of ownership transfer on land are treated as fixed assets and shown separately. In consequence, acquisitions and disposals of natural land are recorded at the same value for both the purchaser and the seller. Since both parties to the transaction must be residents, it follows that, for the economy as a whole, the aggregate value of total purchases of land must equal the aggregate value of total sales, although this is not generally true at lower levels of aggregation, such as individual sectors or subsectors. The value of acquisitions less disposals of land is thus zero for the economy as a whole (excluding transactions that change the boundary of the economic territory itself, as noted in paragraph-10.17011.186.
- 11.196 Buildings, or other structures, and plantations are often purchased or sold together with the land on which they are situated, without separate valuations being placed on the structures and the land. Even if it is not feasible to obtain separate valuations, as may be the case for existing structures, it may be possible to determine which out of the land or the structure accounts for most of their combined value and to classify the transaction as the purchase of land or of a structure depending upon which has the greater value. If it is not possible to determine whether the land or the structure is the more valuable, by convention, the transaction should be classified as the purchase of a structure, that is, as gross fixed capital formation. A similar convention holds for plantations.
- 11.197 Similar considerations apply in the case of mineral and energy resources and biological resources. The value of land may be higher due to the availability of subsoil resources, or the possibility to exploit renewable energy by having permission to put, for example, wind turbines or fields of solar panels on the land. In addition to the relevant structures, the value will also be affected by the net present value of future resource rents derived from exploiting these mineral and energy resources. In the case of biological resources, it may also be difficult to delineate the value of land from the value of plantations yielding repeat products as well as from the net present value of future resource rents related to the exploitation of forests for timber production (excluding work-in-progress). In all these cases, the transaction should preferably be recorded in line with the asset classification. As this may show to be difficult to apply in practice, the transaction is to be recorded as a purchase of land or the purchase of a natural resource depending upon which has the greater value. If it is not possible to determine whether the land or the natural resource is the more valuable, by convention, the transaction should be classified as (the purchase of) land. In all cases, potential double-counting, under land as well as the relevant natural resource, should be avoided.
- 11.174<u>11.198</u> The <u>integrated framework of national accounts</u>SNA does not specify a disaggregation of land but it is recommended that if a disaggregation is required, it should be according to that used in the SEEA.

#### Mineral and energy resources

- 11.17511.199 The first group of Mmineral and energy resources consists of non-renewable mineral and energy reserves located on or below the earth's surface that are economically exploitable, given current technology and relative prices. Ownership rights to the mineral and energy resources are usually separable from those to the land itself. Non-renewable Mmineral and energy resources consist of knowncommercially recoverable reserves of coal, oil, gas or other fuels and metallic ores, and non-metallic minerals, etc., that are located below or on the earth's surface, including reserves under the sea. The transactions recorded in the capital account refer only to those mineral and energy resources over which ownership rights have been established. In most cases, mineral and energy resources may be owned separately from land below which they are located, but in other cases the law may stipulate that the ownership of the mineral and energy resources is inseparably linked to that of the land.
- 11.200 The second group of mineral and energy resources relates to renewable energy resources captured through the exploitation of wind, sun, etc. Although these resources as such are generally not scarce, the exploitation of these resources may be restricted to certain economic agents, for example by needing permissions to put wind turbines on land, or having ownership of particular pieces of land which are highly favourable for exploiting renewable resources.

- <u>11.201</u> The transactions in mineral and energy resources recorded in the capital account refer to acquisitions or disposals of deposits of mineral and energy resources in which the ownership of such assets passes from one institutional unit to another. In the case of the establishment of a license agreement between a legal owner (usually government) and a user/extractor to exploit natural resources, the user/extractor may appropriate part of the value of the assets. This is to be recorded as an other change in the volume of assets; see paragraph 11.190. Reductions in the value of known reserves of mineral and energy resources resulting from their depletion as a result of extracting the assets for purposes of production are notalso recorded in the capital account, in line with the allocation of the relevant assets to the original owner and the extractor (see section E)-but in the other changes in the volume of assets account. Depletion does not apply to renewable energy resources.
- 11.17611.202 Again if a disaggregation is required for certain types of analysis, it is recommended to follow that in the SEEA.distinguish the following categories of non-renewable energy resources: (i) oil and gas resources; (ii) coal resources; (iii) mineral resources and (iv) other non-renewable mineral and energy resources. For renewable energy resources, the following breakdown is recommended: (i) wind energy resources; (ii) solar energy resources; (iii) water energy resources; (iv) geothermal energy resources; and (v) other renewable energy resources.

#### Water resources

11.177<u>11.203</u> Water resources consist of surface and groundwater resources used for extraction to the extent that their scarcity leads to the enforcement of ownership or use rights, market valuation and some measure of economic control. If it is not possible to separate the value of surface water from the associated land, the whole should be allocated to the category representing the greater part of the total value.

Other natural resources

11.178<u>11.204</u> The category other natural resources currently includes radio spectra. Given the increasing move to carry out environmental policy by means of market instruments, it may be that other natural resources will come to be recognized as economic assets. If so, this is the category to which they should be allocated.

## 2. Biological resources

### The asset boundary

- 11.17911.205 Naturally occurring assets in the form of biota (trees, vegetation, animals, birds, fish, etc.) are renewable. The growth and regeneration of trees, crops or other vegetation or the rearing of animals, birds, fish, etc., may take place under the direct control, responsibility and management of institutional units. In this situation, the assets are cultivated, and the activity is treated as falling within the production boundary of the integrated framework of national accountsSNA. The growth of animals, birds, fish, etc., living in the wild, or growth of uncultivated vegetation in forests, is not an economic process of production so that the resulting assets cannot be classed as produced assets. Nevertheless, when these uncultivated biological resources forests or the animals, birds, fish, etc. are actually owned by institutional units and are a source of benefit to their owners, they constitute economic assets. When wild animals, birds, fish, etc. live in locations such that no institutional unit is able to exercise effective ownership rights over them they fall outside the asset boundary. Similarly, the forests or other vegetation growing in such regions are not counted as economic assets. On the other hand, fish stocks in the high seas which are subject to international agreement on how much may be caught by individual countries may be counted as falling within the asset boundary.
- 11.206 In practice, it may be difficult to make a clear distinction between cultivated and non-cultivated biological resources. Here, the treatment of biological resources yielding repeat products (breeding stocks, dairy cattle, fruit trees, etc.) is more straightforward than the treatment of certain biological resources yielding once-only products. The former resources generally take place under the direct control, responsibility and management of institutional units, and are treated as assets, apart from some rather insignificant resources, such as wild shrubs for berry picking. Some biological resources yielding once-only products are also easy to classify as

being under the direct control, responsibility and management of institutional units, the most obvious examples being animals for slaughter and plants and crops which are produced on farms (including fish farms).

11.18011.207 The distinction between cultivated and non-cultivated biological resources becomes more complicated for biological resources yielding once-only products that are often not directly owned by individual institutional units. In these cases, it is recommended to distinguish between resources where the control, responsibility and management does not go beyond the establishment of quota regimes (e.g. migrating wild animals and fish in open waters) versus resources where one can observe a continuum from intensive to extensive forms of control, responsibility and management (e.g., the growth of trees for timber production). In the latter case, ownership rights are usually in place. The relevant assets may not be owned by individual economic agents, but in those cases a government typically exerts collective ownership. It is recommended to treat these resources as cultivated assets, with all growth of trees which in the future are intended to be used for the purpose of producing timber considered as being established under some form of human involvement, instead of applying a discretionary choice between either managed and controlled or not managed and controlled by economic agents. In the former case if assets where the human involvement does not go beyond the establishment of quota regimes, the resources are typically treated as non-cultivated assets.

## **Ownership of assets**

 11.181
 Ownership of assets is generally clear, with the exception of biological resources yielding once-only

 products
 that are often not directly owned by individual institutional units. In these cases, it is recommended

 to allocate the assets to the legal owner and the exploiter of the resources in line with the appropriation of

 future resource rents, similar to the recording of non-renewable mineral and energy resources.

## **Valuation**

- 11.209 The valuation of transactions in biological resources can generally be based on the actual exchange values. For biological resources yielding once-only products that are often not directly owned by individual institutional units, transactions usually do not take place, unless rights to exploit the resources are transacted. Here, one can distinguish three cases: (i) the owner may permit the resource to be used to extinction; (ii) the owner may allow the resource to be used for an extended period of time in such a way that in effect the user controls the use of the resource during this time with little if any intervention from the legal owner; and (iii) the owner can extend or withhold permission to continued use of the asset from one year to the next. When the resource access rights are freely traded, it is possible to estimate the value of the relevant biological resource (after deducting all costs, including the services related to capital used in production). Moreover, if the access rights provide very long term or indefinite access to the assets, the market value of these rights may provide a direct estimate of the total value of the underlying asset.
- H1.18211.210 However, in practice, in many cases governments may give the access rights to extractors for free or do so at a price that is less than the true market value. Further, trading of the rights may be restricted or prohibited. In these cases, there is no directly observable market valuation, and the net present value of future resource rents should be used. The establishment of license arrangements or quota regimes, including the related appropriation of future resource rents, would be recorded as other changes in volume of assets and liabilities, unless the relevant assets are actually transacted. In the latter case of the assets being transacted, the price paid may also be well below the net present value of future resource rents, because the rights are not traded in a free market, while trading is restricted or prohibited. In this case, the difference is to be recorded as a capital transfer from government to the one purchasing the resources. For more details, see chapter 27.

#### Cultivated bBiological resources vielding repeat products

- 11.18311.211 Cultivated bBiological resources yielding repeat products are typically cultivated resources and cover both animal resources yielding repeat products and tree, crop and plant resources yielding repeat products, whose natural growth and regeneration are under the direct control, responsibility and management of institutional units.
- 11.18411.212 In general, when the production of fixed assets takes a long time to complete, those assets whose production is not yet completed at the end of the accounting period are recorded as work-in-progress. This also holds for However, when the assets are produced on own account, they are treated as being acquired by their users at the same time as they are produced and not as work in progress. These general principles also apply to the production of cultivated assets such as animals or trees that may take a long time to reach maturity. Two cases need to be distinguished from each other: the production of cultivated assets by their users.

In the case of the specialist producers, animals or trees whose production is not yet complete and are not ready for sale or delivery are recorded as work in progress. Examples are one year-old horses bred for sale as two year-old race horses, or young fruit trees that need further growth before being marketable. Such work in progress is recorded and valued in exactly the same way as that originating in any other kind of production.

However, when animals or trees intended to be used as fixed assets are produced on own account by farmers or others, incomplete assets in the form of immature animals, trees, etc. that are not ready to be used in production are treated not as work in progress but as gross fixed capital formation by the producing unit in its capacity as eventual user.

#### Animal resources yielding repeat products

- 11.18511.213 Animal resources yielding repeat products cover animals whose natural growth and regeneration are under the direct control, responsibility and management of institutional units. They include breeding stocks, dairy cattle, draft animals, sheep or other animals used for wool production and animals used for transportation, racing or entertainment. Animals raised for slaughter, including poultry, are not included herefixed assets but inventories. Immature cultivated assets <u>yielding repeat products</u> are recorded as workin-progressexcluded unless produced for own use.
- **11.186**<u>11.214</u> This heading <u>may also</u> includes aquatic resources yielding repeat products, consisting of aquatic resources maintained for controlled reproduction. In all but exceptional cases, though, these will be small and may be ignored unless of significant importance.
- **11.18711.215** Gross fixed capital formation in livestock that are cultivated for the products they yield year after year (dairy cattle, draught animals, etc.) is measured by the value of acquisitions less disposals, taking account of the treatment just described of immature livestock reared on own account. It is therefore equal to the total value of all mature animals and immature animals produced on own account acquired by users of the livestock, including all mature animals produced on own account, less the value of their disposals. Disposals consist of animals sold or otherwise disposed of, including those sold for slaughter, plus those animals slaughtered by their owners. Exceptional losses of animals due to major outbreaks of disease, contamination, drought, famine, or other natural disasters are recorded in the other changes in the volume of assets account and not as disposals. Incidental losses of animals due to occasional deaths from natural causes form part of consumption of fixed capitaldepreciation. Consumption of fixed capitalDepreciation of an individual animal is measured by the decline in its value as it gets older.

Tree, crop and plant resources yielding repeat products

- **11.18811.216** Tree, crop and plant resources yielding repeat products cover plants whose natural growth and regeneration are under the direct control, responsibility and management of institutional units. They include trees (including vines and shrubs) cultivated for fruits and nuts, for sap and resin and for bark and leaf products. Trees grown for timber that yield a finished product once only when they are ultimately felled are not fixed assets, just as cereals or vegetables that produce only a single crop when they are harvested cannot be fixed assets.
- 11.18911.217 Gross fixed capital formation in plantations, orchards, etc., consists of the value of the acquisitions less disposals of mature trees, shrubs, etc., including acquisitions of immature trees, shrubs, etc., produced on own account. As explained aboveImmature products are recorded as work-in-progress, the value of which the latter may be approximated, if necessary, by the value of costs incurred in their production during the period: for example, the costs of preparing the ground, planting, staking, protection from weather or disease, pruning, training, etc., <u>Onceuntil</u> the trees reaches maturity and starts to yield a product, they are transferred from work-in-progress to gross fixed capital formation. Disposals consist of trees, shrubs, etc., sold or otherwise transferred to other units plus those cut down before the end of their service lives. All agricultural output is at the mercy of the weather. Expected output must take account of normal variations in climatic conditions and exceptional losses of trees due to drought or other natural disasters such as gales, or hurricanes or forest fires, these being recorded in the other changes in the volume of assets account.

Work-in-progress on cultivated biological resources vielding repeat products

<u>11.218</u> Work-in-progress on cultivated biological resources <u>yielding repeat products</u> consists of output that is not yet sufficiently mature to be in a state in which it is normally supplied to other institutional units, or to be <u>used in production</u>. In the present context it is necessary to distinguish single-use plants, trees and livestock that produce an output once only (when the plants or trees are cut down or uprooted or the livestock slaughtered) from the relevant work-in-progress related to trees (including vines and shrubs) and livestock that are used repeatedly or continuously for more than one year to produce outputs such as fruit, nuts, rubber, milk, wool, power, transportation and entertainment. Work in progress should be recorded for single use resources. For The growth of repeat yield resources, being cultivated on own account, or under an agreed contract with another unit, the growth is <u>also</u> counted as <u>work-in-progressfixed capital formation and so</u> excluded from inventories. Any remaining cultivation of resources with repeat yields should be included in work-in-progress. This may be the case for nurseries and breeders of race horses or other special animals, for example.

Cultivated biological resources yielding once-only products, including work-in-progress

- 11.219 Leaving apart the farming of single-use plants and livestock that produce an output once only, cultivated biological resources yielding once-only products mainly consist of non-migrating resources, the most prominent example being the growth of trees for timber production. As noted before, for this type of resources no distinction is made between cultivated and non-cultivated resources. For those resources over which (collective) ownership can be enforced, all growth of trees intended to be used for the purpose of producing timber is considered as being under some degree of human management and control. Possible benefits derived from the growth of trees not intended for future timber production are not given rise to the recognition of assets.
- 11.220 Two types of assets need to be considered and estimated for this type of cultivated biological resources yielding once-only products: the underlying asset, i.e., the forest land, and the work-in-progress representing the growth of trees. Market prices for forest land are usually not available, and need to be approximated using the net present value of future benefits, after deduction of the value of the work-in-progress (see chapter 14). Any increase in the volume of this underlying asset, which is the result of an increase in the regenerative potential of the forest land, is to be recorded as gross fixed capital formation. Any decline in this regenerative potential should be recorded as depreciation.
- 11.221 Work-in-progress related to cultivated biological resources yielding once-only products represents the accrual accounting of the growth of trees intended for the future production of timber. A distribution of output

over the accounting periods of the growth of the trees in proportion to the costs incurred may not provide satisfactory results when looking at individual generations of trees, as a disproportionate share of the costs may be incurred in the beginning and the end of the period of growth. Given the fact that the growth of trees is a more or less continuous process, with a forest typically consisting of trees in different age categories, an equal distribution of the growth over the life-length of the tress is considered a good approximation. Due to the considerable time it takes before a tree is mature enough for timber production, it is important, however, that the growth of the trees in subsequent periods is appropriately discounted. For the farming of single-use plants and livestock which take more time to mature than the reference period (quarter, year), the guidance for the recording and estimation of work-in-progress is similar to that for other products; see section B2 of this chapter.

Non-cultivated biological resources

11.19011.222 Non-cultivated biological resources consist of animals, birds, fish and plants that yield both onceonly and repeat products over which ownership rights, often collectively by government, are enforced but for which natural growth or regeneration is not under the direct control, responsibility and management of institutional units. Examples are virgin forests and fisheries within the territory of the country. Only those resources that are currently, or are likely soon to be, exploitable for economic purposes should be included.<u>In</u> practice, these resources are restricted to migrating biological resources, such as fish in open seas, which are subject to some form of quota regime.

In the SEEA, this category is further split into aquatic resources, animal resources other than aquatic resources, tree, crop and plant resources. Aquatic resources are further split into aquatic resources in national waters including the exclusive economic zone (EEZ) and those in the high seas.

Permits to use natural resources

*Permits to use natural resources are third-party property rights relating to natural resources.* An example is where a person holds a fishing quota and he is able, again both legally and practically, to sell this to another person.

# E. Consumption of fixed capital Depreciation and depletion

11.191<u>11.223</u> The concept of consumption of fixed capitaldepreciation and depletion has been is first described and defined in chapter <u>76</u> in connection with the difference between gross and net value added and then carries through all subsequent balancing items that may also be shown gross or net of consumption of fixed capitaldepreciation and depletion. The capital account is where the counterpart entriesy to the entriesy in the production account appears though unusually theyit appears on the same side as in the production account but with a negative sign rather than on the opposite side of the account.

## 1. Depreciation

**11.19211.224** Consumption of fixed capitalDepreciation constitutes a negative change in the value of the fixed assets used in production. Consumption of fixed capitalDepreciation must be measured with reference to a given set of prices, that is, the average prices of the type of asset of constant quality over the period. It may then be defined as the decline, between the beginning and the end of the accounting period, in the value of the fixed assets owned by an enterprise, as a result of their physical deterioration and normal rates of obsolescence and accidental damage. Consumption of fixed capitalDepreciation may be deducted from gross fixed capital formation to obtain net fixed capital formation to match the balancing item of net saving carried

down from the use of income account.

11.19311.225 Consumption of fixed capitalDepreciation applies to all fixed assets and for every year the asset is in use in production. Because costs of ownership transfer are treated as fixed assets, including terminal costs, they are also subject to consumption of fixed capitaldepreciation. All buildings and other structures are assumed to have finite service lives, even when properly maintained, so that consumption of fixed capitaldepreciation is calculated for all such fixed assets, including railways, roads, bridges, tunnels, airports, harbours, pipelines, dams, etc. Service lives are not determined purely by physical durability, and many pieces of equipment as well as buildings and structures are eventually scrapped because they have become obsolete. However, the service lives for some structures such as certain roads, bridges, dams, etc., may be as long as a century or more.

#### Costs of ownership transfer

- 11.19411.226 The costs of ownership transfer on the acquisition and disposal of a fixed asset are treated as gross fixed capital formation and included in the value of the asset on acquisition and disposal as recorded in the capital account and in the value of the asset in the balance sheet. However, although consumption of fixed capitaldepreciation is calculated on the value of the asset excluding the costs of ownership transfer over the whole of its life, the consumption of fixed capitaldepreciation in respect of the costs of ownership transfer is calculated only over the period that the owner expects to hold the asset. In this way there are no remaining costs of ownership transfer included in the value of the asset when it is sold to a new owner, so the amount the old owner receives is equal to the amount the new owner pays except for any costs of ownership transfer inclured by the new owner.
- 11.195<u>11.227</u> In the case of natural resources other than land, the costs of ownership transfer are shown as transactions in gross fixed capital formation in the capital account separately from the acquisition and disposal of natural resources, but the value of the natural resources in the balance sheet includes the value of the costs of ownership transfer. The costs of ownership transfer are still written off according to the expected length of time the owner will hold the asset and treated as <u>consumption of fixed capitaldepreciation</u> in the relevant production account.
- 11.19611.228 In the case of land, costs of ownership transfer are treated as a part of land improvement, which is itself treated as a produced asset. The value of land improvements other than the costs of ownership transfer is written off over a suitably long period but the costs of ownership transfer are written off over the period the owner expects to own the land.

#### **Terminal costs**

- 11.19711.229 In principle, the value of consumption of fixed capital depreciation cumulated over the life of an asset, once price changes are taken into account, should be equal to the difference between the acquisition and disposal values. In the case of assets with actual costs at the time of disposal, this means that consumption of fixed capital<u>depreciation</u> should cover anticipated terminal costs. Terminal costs should therefore be written off over the whole life of the asset, regardless of the number of owners during the life of the asset. To avoid a negative value of the asset at the end of its life, the expected terminal costs are added to the value of the asset at the time the asset enters the balance sheet, with a counterparty entry of provisions at the liability side, both to be recorded in the other changes in the volume of assets and liabilities accounts. At the end of the life of the asset, the actual investment expenditures on terminal costs, which lead to a positive change in the value of the asset, are counterbalanced with a reversal of the flows in the beginning of the period, i.e., a decline in the value of assets with a concomitant decline of the related provisions, again recorded as other changes in the volume of assets and liabilities. Immediately before the disposal, the value of the asset will have a negative value which is reduced to zero when the terminal costs incurred are treated as gross fixed capital formation. The apparent oddity of an asset with negative value reflects the fact that the owner not only could not sell it but would have to pay another unit to take over responsibility for the asset.
- 11.198<u>11.230</u> In practice, it may be difficult to predict terminal costs accurately. In that case, cumulated consumption of fixed capital depreciation may not cover all the terminal costs. However, the full costs are

still treated as gross fixed capital formation and any amount not already covered by consumption of fixed capitaldepreciation during the life of the asset is written off at the time the costs are incurred as consumption of fixed capitaldepreciation. This is a pragmatic recommendation and will lead to NDP being overstated over the time the asset is in use and understated in the year when the remaining costs are incurred.

 $\frac{11.19911.231}{\text{chapter 2017}}$  There is further discussion on the treatment of costs of ownership transfer and terminal costs in chapter  $\frac{2017}{7}$ .

## 2. <u>Depletion</u>

- 11.232 In physical terms, depletion refers to the decrease in the quantity or value of the stock of a non-produced natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of regeneration. In monetary terms, it corresponds with the decline in future income, due to extraction, that can be earned from a resource, the value of which is based on the physical flows of depletion using the price of the natural resource in situ.
- 11.233 For non-renewable mineral and energy resources, depletion is confined to the decrease of the value on the natural resource due to extraction. Other changes in value, such as those related to the discoveries and upward and downward reappraisals are recorded as other changes in the volume of assets and liabilities. The same holds for transfers of natural resources out of economic activity because of changing technology, or reduced demand for the resulting output or for legislative reasons. However, the stranding of these assets is to be recorded as revaluations. For more details, see chapter 13.
- 11.20011.234 Land in its natural state and renewable energy resources are not subject to depletion. However, in the case the value of land is combined with another asset, the combined asset may be subject to depreciation or depletion. For non-cultivated biological resources yielding once-only products, a decline in the regenerative potential of the underlying asset (e.g., the case where the extraction of fish in open seas is larger than its natural growth) is to be recorded as depletion. A growth in the regenerative potential is to be recorded as depletion. In the case of cultivated biological resources yielding once-only products, the growth and decline of the regenerative potential of the underlying asset (e.g., forest land in the case of the growth of trees for the production of timber) is to be recorded as gross fixed capital formation and depreciation, respectively. Biological resources yielding repeat products are typically classified as fixed assets, and the decline as a result of their physical deterioration and normal rates of obsolescence and accidental damage should be recorded as part of depreciation.

# F. Capital transfers

### 1. Capital versus current transfers

11.201<u>11.235</u> Capital transfers are unrequited transfers, either in cash of in-kind, in which the ownershipwhere either the party making the transfer realizes the funds involved by disposing of an asset (other than cash or inventories) changes from one party to another; or that oblige one or both parties to acquire or dispose of an asset (other than cash or inventories); or where a liability is forgiven by the creditor, by relinquishing a financial claim (other than accounts receivable) or the party receiving the transfer is obliged to acquire an asset (other than cash or inventories) or both conditions are met. Capital transfers are often large and irregular but neither of these are necessary conditions for a transfer to be considered a capital rather than a current transfer.

Table 110.5: The capital account - capital transfers - changes in liabilities and net worth

11.20211.236 A current transfer reduces the income and consumption possibilities of the first party and increases the income and consumption possibilities of the second party. Current transfers are therefore not linked to, or conditional on, the acquisition or disposal of assets by one or both parties to the transaction.

- 11.20311.237 Some cash transfers may be regarded as capital by one party to the transfer but as current by the other. For example, the payment of an inheritance tax may be regarded as the transfer of capital by the taxpayer but be regarded as a current receipt by government because it receives many such transfers. Similarly, a large country that makes investment grants to a number of smaller countries may regard the grants as current transfers even though they are specifically intended to finance the acquisition of capital assets. In an integrated system of accounts, such as the SNA, it is not feasible, however, to classify the same transaction differently in different places. Accordingly, a transfer should be classified as capital for both parties even if it involves the acquisition or disposal of an asset, or assets, by only one of the parties. By convention, social transfers are always treated as current transfers.
- 11.204<u>11.238</u> There may be cases in which it is difficult to decide on the evidence available whether to classify a cash transfer as current or capital. When there is serious doubt, the transfer should be classified as current rather than capital. It should be noted, however, that the decision as to which way to classify a transfer has important consequences for the allocation of saving between sectors and subsectors, and possibly between the economy as a whole and the rest of the world. Other things being equal, a current transfer increases the saving of the recipient and reduces that of the donor, whereas a capital transfer does not affect the saving of either party. If, therefore, cash transfers are incorrectly classified between current and capital, the saving behaviour recorded for the units or subsectors involved may be misleading for purposes of economic analysis and policymaking.

### 2. Transfers in cash and in kind

- 11.20511.239 As explained in chapter 9, transfers may take place in cash or in kind. A capital transfer in kind necessarily concerns the change of ownership of a product previously recorded as a non-financial asset in the accounts of the donor. In this case, the four entries relating to the transaction are all recorded in the capital account. Two relate to the transfer of wealth implied by a capital transfer; the other two are shown as disposal of the asset being transferred by the donor and its acquisition by the recipient. The treatment of fixed assets produced by communal construction and then transferred to government to maintain is discussed in paragraph 11.66.10.58.
- 11.240All other capital transfers have two entries in the capital account and two in the financial account.In the case of debt forgiveness, the two entries in the financial account show the reduction in the debt liability<br/>of the recipient towards the donor and the claim of the donor on the recipient.In the case of debt assumption<br/>(without an effective claim) the two entries in the financial account are a reduction in the debt liability of the<br/>original debtor and a parallel increase in the debt liability of the party assuming the debt.Other capital<br/>transfers are recorded as a transfer in cash and show a decrease in cash or deposits of the donor and an<br/>increase by the recipient.

### Valuation

11.207<u>11.241</u> The value of a non-financial asset being transferred is the estimated price at which the asset, whether new or used, could be sold on the market plus any transport, installation or other costs of ownership transfer incurred by the donor but excluding any such charges incurred by the recipient. Transfers of financial assets, including the cancellation of debts, are valued in the same way as other acquisitions or disposals of financial assets or liabilities.

### 3. Capital taxes

- 11.208<u>11.242</u> Capital taxes consist of taxes levied at irregular and infrequent intervals on the values of the assets or net worth owned by institutional units or on the values of assets transferred between institutional units as a result of legacies, gifts inter vivos or other transfers. They include capital levies and taxes on capital transfers:
  - a. Capital levies consist of taxes on the values of the assets or net worth owned by institutional units levied at irregular, and very infrequent, intervals of time. Capital levies are treated as exceptional

both by units concerned and by the government. They may be payable by households or enterprises. They include betterment levies: that is, taxes on the increase in the value of agricultural land due to planning permission being given by government units to develop the land for commercial or residential purposes (*GFSM20012014* tax code 1133; OECD 4500));

b. Taxes on capital transfers consist of taxes on the values of assets transferred between institutional units. They consist mainly of inheritance taxes, or death duties, and gift taxes, including gifts inter vivos made between members of the same family to avoid, or minimize, the payment of inheritance taxes. They do not include taxes on sales of assets as these are not transfers (*GFSM20042014* tax code 1134; OECD 4300).

#### 4. Investment grants

- 11.209<u>11.243</u> Investment grants consist of capital transfers made by governments to other resident or non-resident institutional units to finance all or part of the costs of their acquiring fixed assets. The recipients are obliged to use investment grants for purposes of gross fixed capital formation, and the grants are often tied to specific investment projects, such as large construction projects. If the investment project continues over a long period of time, an investment grant in cash may be paid in instalments. Payments of instalments continue to be classified as capital transfers even though they may be recorded in a succession of different accounting periods.
- 11.244 Investment grants in kind consist of transfers of transport equipment, machinery and other equipment by governments to other resident or non-resident units and also the direct provision of buildings or other structures for resident or non-resident units. These may be constructed by enterprises owned by the donor government or by other enterprises that are paid directly by the donor government. In such cases, a capital transfer in cash is usually recorded followed by purchase of the items actually transferred in kind. Exceptionally, if the transfer is of an existing asset, and the recipient is resident, the transfer of ownership of the asset may be recorded as negative capital formation by government and positive capital formation by the recipient, but a capital transfer is still also recorded so that the balance sheet of both parties correctly reflects the change in net worth that has taken place.

#### 5. Other capital transfers

- 11.21111.245 Other capital transfers consist of all capital transfers except capital taxes and investment grants. One notable category included here is the cancellation of debt by mutual agreement between the creditor and the debtor. Such a cancellation is treated as a capital transfer from the creditor to the debtor equal to the value of the outstanding debt at the time of cancellation. It includes, but is not confined to, the cancellation of debt owed by non-residents to residents, and vice versa. Another example is the assumption of debt where a unit taking over the debt of another unit does not have an effective claim on the original debtor.
- 11.212<u>11.246</u> However, the unilateral writing off of debt is not a transaction between institutional units and therefore does not appear either in the capital account or the financial account of the SNA. If the creditor accepts such a write off or default, it should be recorded in the other changes in the volume of assets account of the creditor and the debtor. Provisions, among which those for bad debt, are treated as bookkeeping entries that are internal to the enterprise and do not appear in the integrated framework of national accountsSNA except in the cases described in chapter 14, where they of expected losses on non-performing loans, which appear as memorandumsupplementary items in the balance sheets. The unilateral repudiation of debt by a debtor is also not a transaction and is not recognized in the SNA.
- 11.21311.247 Capital transfers may take various other forms, of which some examples are given below:
  - <del>a.</del>
  - a. Major payments in compensation for extensive damages or serious injuries not covered by insurance policies. They are typically intended to recover losses over a multi-year period or to replace an asset (financial or non-financial). The payments may be awarded by courts of law or settled out of court. They may be made to resident or non-resident units. They include payments of compensation for

damages caused by major explosions, oil spillages, the side effects of drugs, etc.;

- b. Economic contributions by individuals to another country to obtain an additional citizenship, passport, or long-term visa, if these contributions are specifically earmarked for capital investment projects,
- c. Exceptionally large insurance settlements in the wake of a disaster. For more details on when this is the appropriate form of recording see chapter  $\frac{1724}{2}$ ;
- d. Transfers from government units to publicly or privately owned enterprises to cover large operating deficits accumulated over two or more years;
- e. Transfers from central government to units at lower levels of government to cover some, or all, of the costs of gross fixed capital formation or large expenditure deficits accumulated over two or more years;
- f. Legacies or large gifts inter vivos, including legacies to NPIs;
- g. Exceptionally large donations by households or enterprises to NPIs to finance gross fixed capital formation: for example, gifts to universities to cover the costs of building new residential colleges, libraries, laboratories, etc.;
- h. Unrequited or partially requited Ttransfers of responsibility for pension entitlements, for example when general government assumes responsibility for pensions provision from an employer;
- h.i. Negotiated changes in the terms and conditions of defined benefit pension entitlements;
- <u>i-j.</u> Community built assets where responsibility for maintenance is then assumed by government or by an NPISH.



# National Statistician's Committee for Advice on Standards for Economic Statistics

NSCASE October 2024 – Chapter 11 NSCASE Meeting Minutes

# System of National Accounts 2025 – Chapter 11: Capital Account

- 1. Paul and David led the discussion on this paper.
- 2. Cliodhna informed the Committee that the ONS was broadly happy with this chapter but identified two main areas of concern. In the consultation, the ONS raised the resource rent approach concerning the value of renewable resources. This was partially based on the practical results of countries' experiences measuring renewable resources, such as wind. She noted some countries found zero or negative values for the wind as the resource; she suggested that this contradicted the purpose of including it in the SNA. The chapter referred to crypto assets and Cliodhna reinforced this was not aligned with ONS' preferred classification of crypto assets without corresponding liabilities.
- 3. She highlighted that the paper included responses from other countries, which raised that the information on natural capital was still not completely clear, and specifically the distinction between produced and non-produced assets still applied to natural capital.
- 4. She outlined some of the main changes to the chapter. This included the introduction of natural capital as a new category, which brought together cultivated and non-cultivated biological resources. It also introduced data as an asset, which was grouped with data sets. She noted the ONS were supportive of this change. The chapter made several updates, including terminology changes and a new split asset approach to natural capital. It clarified the treatment of household durables for market production and revised the use of terminal costs to prevent negative value assets. Additionally, it distinguished between software as a service and packaged software with updates.
- 5. Richard Heys added issues arising in the financial markets around crypto lending and that there could be a further paper submitted to AEG that tackled this question. He therefore expected clarificatory information to be released, which could affect the passages of the chapter related to crypto assets.
- 6. Paul stated paragraph 11.13 defined fixed assets as structures, machinery, and equipment but also IP products. He agreed conceptually that IP products were fixed assets because they were long-lived and used beyond one year, therefore, were not immediate consumption. However, he highlighted that they were subject to depreciation in different ways and considered if separate categories would be needed to distinguish fixed assets that depreciated in different ways.
- 7. Paul also highlighted where drafting revisions were needed to clarify categories of non-produced assets. He said the paragraph should distinguish where



contracts, leases and licences refer to financial or non-financial assets and noted that categories could include physical assets alongside natural resources. He agreed with comments already made about natural capital and referred to Eurostat's comment that it was not easy to distinguish between produced and non-produced assets in this context. He also agreed with Eurostat's argument that it would be better to divide between which assets were produced, non-produced and natural.

- 8. He had a comment on depreciation, obsolescence, and depletion, which he noted was covered during the discussion on chapter 7. The chapter stated that many of the fixed assets depreciated in the usual way but some were subject to obsolescence and other natural resources were subject to depletion. He noted clarity on this would be welcomed. Paragraph 11.224 also referred to this concept and he believed the inclusion of obsolescence here would be beneficial.
- 9. He noted that some assets were used for both consumption and for production and he believed extra guidance for compilers on how to apportion the asset to production or to auto-consumption would be helpful. He argued there were a number of examples available for this but that it would not necessarily be accurate to consider assets based on what they were purchased for as transitions could happen quite regularly.
- 10. He acknowledged the ONS's concern about undervaluation of natural resources, highlighting this as an issue arising from the current valuation methods. He suggested that further exploratory work could be beneficial in addressing this problem.
- 11. Richard said that the point on loans on non-financial assets fed into the discussions around crypto lending. He stated that in their current classification as non-financial non-produced assets, lending of crypto assets would be a lease as they were not a financial instrument.
- 12. Nick agreed that the manual as a whole was not clear on depletion and depreciation; he noted that chapter 7 also referred to degradation.
- 13. Paul recommended that the editorial team targeted section E to resolve this issue. He suggested that the section covered depreciation, degradation, obsolescence and depletion.
- 14. Cliodhna thanked Paul for his comments, especially on capital purchased by households and their usage. She agreed the original purpose of the item was not necessarily the best way to classify it and agreed that transitions occurred. She noted that the implication of the capital transitioning between household and production usage would be that it would have to include some household consumption if the good was sold on to buy up the 'company' capital and use the good for personal purposes. She clarified that this referred to unincorporated businesses owned by households, not corporations.
- 15. David agreed that the distinction between asset classes was not clear for cultivated assets. He argued that heat pumps and solar panels should be capitalised for households as they generated power that was now inside the



production boundary. He raised concern with paragraph 11.100 around bundled software which could be included in the price of capital assets but would not in itself have a lifetime of over one year. He expressed concern that the chapter suggested the cost of the database software should be included in the value of the data that had been built up. He believed there was an element of intermediate consumption for databases built in the cloud. He questioned how to separate the different costs to build a database.

- 16. He highlighted that paragraph 11.126 discussed price rises and changes in the price of stocks. He noted that it should include holding losses as well as holding gains. He noted the section on terminal costs was not clear and raised that he personally disagreed with the capitalisation of weapons systems.
- 17. Robert questioned how the ONS would deal with the involvement of households in production. He referred to paragraphs 11.121-11.122 which discussed usergenerated content on digital platforms as being within the production boundary if advertising or subscription revenue were generated. Those assets used in such production could be valued at the net-present value of the benefits expected to be generated. He asked how the ONS would capture increased gross fixed capital investment of households and acknowledged the challenge of measuring this.
- 18. Cliodhna answered that the ONS would complete initial research to understand the scale of this and understand if it surpassed a materiality threshold. The ONS would consider how far these data were captured under data of self-employed micro businesses. Richard added that the ONS had been very involved in the data as an asset approach to ensure the UK was happy with the final approach. He noted that he foresaw a large amount of development work to get the UK to an appropriate end point because of the way the world was changing but that the framework was helpful to tackle these issues. He appreciated that this SNA recognised these developments whereas the SNA2008 was pre-digital and it was difficult to accommodate smaller firms into traditional structures. Craig McLaren added that the ONS could return to NSCASE to consider where they felt it necessary to deviate.
- 19. Paul asked how people who worked from home and used capital assets would be accounted for. Richard answered that the challenge lay in what was where; he noted they may need additional data from household surveys but highlighted that the value was very small and only significant once aggregated across all households.
- 20. Nick raised that platform sharing had been discussed in a previous Committee meeting and again highlighted the potential intermediation of household-to-household transactions through digital platforms. David agreed and suggested it was another example of a split asset. He highlighted that the measurement problems associated were significant and that there were boundary issues as working and home lives were merging, for example. He noted it was difficult to know where they should be reflected in the economic accounts. Paul agreed and argued it was challenging to know how to allocate the assets that were used, in consumption or production.



- 21. The Chair asked Richard and Cliodhna whether other NSIs had considered this; he cited that working from home was not only a UK phenomenon.
- 22. Richard mentioned that the Americans had done research around Airbnb. He noted that in larger cities, it could have a significant impact on both the housing and tourism markets. He recognised that there were challenges here around splitting the asset and if a different deflator was needed because it was not a traditional hotel service. He expected that different countries' regional or subnational accounts would determine if there was demand for producing more data at an aggregate level.
- 23. Cliodhna commented that the economic ownership of household capital that could be determined by who bore the risks or benefits.

# Chapter 12: Financial account (OLD Chapter 11: The financial account)

# A. Introduction

- 12.1 The financial account is the final account in the full sequence of <u>economic</u> accounts that records transactions between institutional units. Net saving is the balancing item of the use of income accounts, and net saving plus net capital transfers receivable or payable can be used to accumulate non-financial assets. If they are not exhausted in this way, the resulting surplus is called net lending. Alternatively, if net saving and capital transfers are not sufficient to cover the net accumulation of non-financial assets, the resulting deficit is called net borrowing. This surplus or deficit, net lending or net borrowing, is the balancing item that is carried forward from the capital account into the financial account. The financial account does not have a balancing item that is carried forward to another account, as has been the case with all the accounts discussed in previous chapters. It simply explains how net lending or net borrowing is effected by means of changes in holdings of financial assets and liabilities. The sum of these changes is conceptually equal in magnitude, but on the opposite side of the account, to the balancing item of the capital account.
- 12.2 The financial account records transactions that involve financial assets and liabilities and that take place between resident institutional units and between resident institutional units and the rest of the world. The left-hand side of the account (table 1112.1) records acquisitions less disposals of financial assets less disposals, while the right-hand side records incurrence less repayments of liabilities less their repayment.

### 1. Financial assets and liabilities

- 12.3 As described in chapter 34, an asset is defined as follows. An asset is a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time. It is a means of carrying forward value from one accounting period to another.
- 12.4 Benefits are exchanged by means of payments. From this a financial claim, and hence a liability, can be defined. There are no non-financial liabilities recognized in the SNA, thus the term liability necessarily refers to a liability that is financial in nature.
- 12.5 A liability is established when one unit (the debtor) is obliged, under specific circumstances, to provide a payment or series of payments to another unit (the creditor). <u>This includes shares and other equity in</u> corporations. The most common circumstance in which a liability is established is a legally binding contract that specifies the terms and conditions of the payment(s) to be made and payment according to the contract is unconditional.
- 12.6 In addition, a liability may be established not by contract but by long and well-recognized custom that is not easily refuted. Some payments by government to individuals fall under this category. In these cases, the creditor hasmay have a valid expectation of payment, despite the lack of a legally binding contract. Such liabilities, are called usually referred to as constructive liabilities, are not recognised in the sequence of economic accounts.
- 12.7 Whenever<u>a</u> either of these types of liability exists, there is a corresponding financial claim that the creditor has against the debtor. *A financial claim is the payment or series of payments due to the creditor by the debtor under the terms of a liability*. Like the liabilities, the claims are unconditional. In addition, a financial claim may exist that entitles the creditor to demand payment from the debtor but whereas the payment by the debtor is unconditional if demanded, the demand itself is discretionary on the part of the creditor.
- 12.8 Financial assets consist of financial claims and gold bullion held by monetary authorities as a reserve asset. Financial claims represent all financial instruments that give rise to an economic asset that has a counterpart liability, including shares and other equity in corporations.all financial claims, shares or other equity in corporations plus gold bullion held by monetary authorities as a reserve asset. Gold bullion held by monetary authorities as a reserve asset is thus treated as a financial asset even though the holders do not have a claim on other designated units. Shares are treated as financial assets even though the financial claim

their holders have on the corporation is not a fixed or predetermined monetary amount.

### 2. Quadruple-entry accounting

- 12.9 The accounting rules of the SNA, explained in chapter 34, describe how the quadruple principle of accounting is implemented. When a good, service, asset or liability is sold by one institutional unit to another, two pairs of entries are recorded. The first pair records the supply of the item by one unit and the acquisition by the other. The second pair of entries records the second party supplying the means of payment for the item, and the first party receiving this. Similar quadruple entries are required in respect of transactions involving property income and transfers. The second pair of entries usually appears in the financial account though in a few cases of transfers in kind, the second pair of entries may appear as negative and positive final consumption expenditure or disposal and acquisition of a non-financial asset. The latter also holds for cases where the counterpart entry consists of crypto assets without a corresponding liability designed to act as a general medium of exchange, and those designed to act as a medium of exchange within a platform only, which are treated as non-produced non-financial assets. In all cases of transactions involving financial instruments, except those relating to an exchange of financial instruments, the acquisition of a financial asset or settlement of a liability the first pair of entries appears in one or more of the non-financial accounts. In the case of the exchange of a financial instrument, all four entries appear in the financial account.
- 12.10 There are thus two reasons for entries in the financial account. The first reason is as counterpart to entries in other accounts; the second is to record transactions involving the exchange of financial assets and liabilities only, so both the original and the counterpart entries are recorded in the financial account.

### **3.** Counterparts of non-financial transactions

- 12.11 Transactions involving the transfer of ownership of a good or non-financial asset, or the provision of a service or labour almost always entail a counterpart entry in the financial account for means of payment or claims on future means of payment. Even many transactions in kind, such as barter sales and remuneration in kind, conceptually lead to entries in the financial account. If unit A provides a product of value x to unit B, expecting another product of the same value in return, A has a financial claim of x on B. This financial claim is settled and thus no longer needs to be recorded when B fulfils delivery of the product promised. Entries in the financial account are needed when all elements of the in-kind transaction are not completed simultaneously.
- 12.12 The sale of a good, service, or asset may have as its counterpart a change in currency or transferable deposit. Alternatively, the counterpart may be reflected in the financial account in a trade credit or other category of accounts receivable or payable.

### 4. Exchanges of financial assets and liabilities

- 12.13 Whenever one financial asset is exchanged for another or when a liability is repaid with a financial asset, transactions are recorded only in the financial account. These transactions change the distribution of the portfolio of financial assets and liabilities and may change the totals of both financial assets and liabilities, but they do not change the difference between total financial assets and liabilities. For example, trade credits are extinguished by payments. The claim represented by the trade credit no longer exists when the debtor provides means of payment to the creditor. The resulting four entries in the financial account are:
  - a. the creditor reduces its holdings of trade credits and increases its means of payment (currency or transferable deposits); and
  - b. the debtor reduces its liabilities (in the form of trade credits) and reduces its financial assets (in the form of means of payment).
- 12.14 When existing financial assets are exchanged for other financial assets, all entries take place in the financial

account and only affect assets. For example, if a debt security such as an existing bond is sold by one institutional unit to another on the secondary market, the seller reduces his holdings of securities and increases his holdings of means of payment by an equal amount. The purchaser increases his holdings of securities and decreases his holdings of means of payment.

12.15 When a new financial asset is created through the incurrence of a liability by an institutional unit, all related entries are also made in the financial account. For example, a corporation may issue short-term securities in exchange for means of payment. The financial account of the corporate sector accordingly shows an increase in liabilities in the form of securities and an increase in financial assets in the form of means of payment; the financial account of the purchasing sector shows a reduction in assets in the form of means of payment and an increase in assets in the form of securities.

#### 5. Net lending

12.16 Some sectors or subsectors are net lenders while others are net borrowers. When institutional units engage in financial transactions with each other, the surplus resources of one sector can be made available by the units concerned for use by other sectors. The financial account indicates how deficit, or net borrowing, sectors obtain the necessary financial resources by incurring liabilities or reducing assets and how the net lending sectors allocate their surpluses by acquiring financial assets or reducing liabilities. The account also shows the relative contributions of various categories of financial assets to these transactions.

#### Table 121.1: The financial account - concise form - changes in assets

Table 124.1 (cont): The financial account - concise form - changes in liabilities and net worth

- 12.18 Although much borrowing and lending is routed through financial intermediaries, some borrowers can transact directly with non-financial lenders. For example, governments can issue securities in the market; these securities can be purchased by households, non-financial corporations and the rest of the world as well as by financial institutions. In many other cases, financial intermediaries have as their special function the creation of a financial market that links lenders and borrowers indirectly. The financial institution incurs liabilities to net lenders through taking deposits or issuing securities and providing the financial resources thus mobilized to borrowers, for example in the form of loans, holding of debt securities and holdings of equity securities. Thus, their transactions in financial assets and liabilities will be comparatively large relative to other sectors and to the size of their own net lending or borrowing. In table <u>1+12</u>.1, the financial corporations sector has a net borrowing of <u>151</u>, which is financed by net incurrence of liabilities of <u>182173</u> and net acquisition of financial assets of <u>167172</u>.
- 12.19 An examination of the financial transactions of the subsectors of the financial corporations sector, in addition to those of the consolidated financial sector, is often useful.
- 12.20 It is important to note that, for each institutional sector, the financial account indicates the types of financial instruments utilized by that sector to incur liabilities and acquire financial assets. The financial account does not, however, indicate to which sectors the liabilities are incurred and on which sectors the assets indicate financial claims. A more detailed and complex analysis of financial flows between sectors is discussed in chapter 2737. The analysis there illustrates debtor or creditor relationships by type of financial asset.
- 12.21 In the hypothetical case of a closed economy in which resident institutional units do not engage in transactions with non-residents, the total net lending and total net borrowing of the various sectors would have to be equal since the net borrowing requirements of deficit sectors would be met by net lending of surplus sectors. For the economy as a whole, net lending or borrowing would have to be zero. This equality reflects the symmetric

nature of financial assets and liabilities. When residents engage in transactions with non-residents, the sum of the net lending and net borrowing of each of the sectors making up the total economy must equal the economy's net lending to, or borrowing from, the rest of the world. In table <u>112</u>.1 the total economy has acquired financial assets of 436 and incurred liabilities of 426. Net lending for the total economy to the rest of the world is therefore 10.

### 6. Contingen<u>t asset and liabilitiescies</u>

- 12.22 Many types of contractual financial arrangements between institutional units do not give rise to unconditional requirements either to make payments or to provide other objects of value; often the arrangements themselves do not have transferable economic value. These arrangements, which are often referred to as contingent assets and liabilities<del>cies</del>, are not actual current financial assets and are not recorded in the SNA. The principal characteristic of contingent assets and liabilitiescies is that one or more conditions must be fulfilled before a financial transaction takes place. One-off guarantees of payment by third parties, whether implicit or explicit, are contingen<u>t assets and liabilities</u>eies since payment is only required if the principal debtor defaults. Until the default is evident, the value of the one-off guarantee should may be shown as a memorandumsupplementary item. Loan commitments provide a guarantee that funds will be made available but no financial asset exists until funds are actually advanced. Letters of credit constitute promises to make a payment conditional upon the presentation of certain documents specified by contract. Underwritten note issuance facilities (NIFs) provide a guarantee that a potential debtor will be able to sell short-term securities (notes) that he issues and that the bank or banks issuing the facility will take up any notes not sold in the market or will provide equivalent advances. The facility itself is contingent, and the creation of the facility does not give rise to anno entry in the financial account. Only if the underwriting institution is requested to make funds available will it acquire an actual asset, which is recorded in the financial account.
- 12.23 Certain financial derivatives are not treated as contingent financial assets but as actual assets. These are described in section C below. Standardized guarantees are also-treated as giving rise to actual and not contingent liabilities. A standardized guarantee is one where many guarantees of similar characteristics are issued. Even though the probability of any one guarantee being called is uncertain, the fact that there are many similar guarantees means that a reliable estimate of the number of calls under the guarantee can be made. Liabilities of this sort where the size of the liability may be determined probabilistically are often described as provisions. The term liability is used when the fact that payment will be required and the amount of the payment or the way in which the amount will be calculated are agreed. The term provision is used when the fact that a payment will be required is regarded as certain but there is no agreement on how the amount payable will be determined. A contingent liability is one where the size of payment may or may not be known with certainty but there is uncertainty about whether there will be a payment required or not.
- 12.24 For the purposes of the SNA, the treatment of contingent assets and liabilitieseies is simple. Any payments of fees related to the establishment of contingent arrangements are treated as payments for services. Transactions are recorded in the financial account only when an actual financial asset is created or changes ownership. However, by conferring certain rights or obligations that may affect future decisions, contingent arrangements obviously produce an economic impact on the parties involved. Collectively, such contingent assets and liabilitieseies may be important for financial programming, policy, and analysis. Therefore, where contingent positions are important for policy and analysis, it is recommended encouraged that information be collected and presented as supplementary data. Even though no payments may eventually be due for contingent liabilities, the existence of a high level of them may indicate an undesirable level of risk on the part of those units offering them. An example is an overdraft facility on a bank account, which is contingent until exercised.
- 12.25 Country practices <u>may</u> vary in determining which instruments are considered contingent and which are considered actual assets to be recorded in the balance sheet. Flexibility in the application of this recommendation is required to take national practices and variations in the nature of these instruments into account. An example, which is quantitatively important in trade financing, is the bankers' acceptance. A banker's acceptance involves the acceptance by financial institutions of drafts or bills of exchange and the unconditional promise to pay a specific amount at a specified date. The banker's acceptance represents an unconditional claim on the part of the holder and an unconditional liability on the part of the acceptance is treated as

an actual financial asset in the SNA even though no funds may have been exchanged.

12.26 There are other circumstances where future payments are not treated as assets, even though both the size of the payment and the fact that it will be paid are known with a high degree of certainty. One example is that although a bank loan may be granted to an individual using the fact that he is in permanent employment with a regular wage as security, the promise of future earnings is not recognized as a financial asset; nor are future receipts from sales for an enterprise nor a stream of future tax revenue for government.

# B. Transactions in financial assets and liabilities

#### 1. The classification of financial assets and liabilities

- 12.27 Because of the symmetry of financial claims and liabilities, the same classification can be used to portray both assets and liabilities. Further, the same classification is used in all accumulation accounts for financial transactions. Within the SNA, the term "instrument" may be used to relate to the asset or liability aspect of an item on the financial balance sheet. In monetary statistics, some off-balance sheet items may also be described as instruments. The use of the same term in the SNA is for convenience only and does not imply an extension of the coverage of assets and liabilities to include these off-balance-sheet items.
- 12.28 <u>One</u>Two classes of financial assets that cannot properly be equated with identified claims over other designated institutional units are included in the classification of financial instruments. The first class is gold bullion owned by monetary authorities and others subject to the monetary authorities' effective control and held as a financial asset—and as a component of foreign reserves. There is no matching liability for gold bullion. The second class is shares, other corporate equity securities and financial participations. These do not have fixed redemption values, as is the case for many other financial assets, but represent claims by the shareholders on the net worth of the corporation.
- 12.29 Table <u>112</u>.2 shows an elaboration of table <u>112</u>.1 incorporating the classification of financial instruments. The exact coverage and the definition of each of the items are described in section C along with an explanation of the types of transactions appearing in the financial account that apply to each instrument. (For a discussion of financial instruments in the context of Islamic finance, reference is made to chapter 26.) The remainder of this section deals with general matters of classification and the application of the accounting rules of the SNA as they apply to transactions in financial instruments.
- 12.30 The detail in which the classification is employed depends on the institutional sector to be analysed. The types of financial assets in which households transact are more limited than those for other sectors, and sources of information are generally more limited than those for other sectors. Financial corporations, on the other hand, transact in the full range of instruments, and information on their operations is often the most detailed and timely of any institutional units. Consequently, a detailed breakdown may be developed for financial corporations. Blanks, rather than zeros in table <u>112</u>.2 show where entries are conceptually impossible; zeros show that entries are possible but expected to be small.
- 12.31 The standard items in the classification of financial assets and liabilities provide a useful basis for international comparison of national data. Presentation of data for individual countries, however, must be tailored to meet their analytical needs and to reflect national practices. Thus the particular form of presentation chosen may reflect differing institutional arrangements, the extent and nature of national financial markets, the complexity of financial assets available, and the degree of regulation and other financial control exercised. For this reason, a number of supplementary items are suggested for use in addition to the standard components of the SNA. These are described together with the standard items in section C.
- 12.32 The classification of financial transactions has become more difficult because of financial innovation that has led to the development and increased use of new and often complex financial assets and other financial instruments to meet the needs of investors with respect to maturity, yield, avoidance of risk, and other factors. The identification issue is further complicated by variations in characteristics of financial instruments across countries and variations in national practices on accounting and classification of instruments. These factors tend to limit the scope for firm recommendations with respect to the treatment of certain transactions within the SNA. Thus, a substantial amount of flexibility, particularly with regard to further breakdowns, is required to match the classification scheme to national capabilities, resources and needs. In particular, further

breakdowns of the standard items are desirable for many countries to distinguish important types of assets within categories (such as short-term securities included in measures of money).

### 2. Negotiability

12.33 Financial claims can be distinguished as to whether they are negotiable or not. A claim is negotiable if its legal ownership is readily capable of being transferred from one unit to another unit by delivery or endorsement. While any financial instrument can potentially be traded, negotiable instruments are designed to be traded on organized and other markets. Negotiability is a matter of the legal form of the instrument, and evidence of actual trading is not required. Those financial claims that are negotiable are referred to as securities. Some securities may be legally negotiable, but there is not, in fact, a liquid market where they can be readily bought or sold. Securities include shares and debt securities. <u>However</u>, the SNA treats financial derivatives as a distinct type of financial asset that is neither a debt or equity security.

### **3.** Valuation of transactions

- 12.34 The payments required under a contract relating to financial assets and liabilities almost always represent more than one transaction in the sense used in the SNA. Payments of interest on loans and deposits, as specified by financial institutions, involve both interest as recorded in the SNA and a service fee, which is the service payment to the financial institution for <u>intermediating depositors and loan borrowersmaking the loan available or safe guarding the deposit</u>. The buying and selling prices for foreign currency, <u>debt securities</u> and shares are usually different; the difference between the buying price and mid-price represents a service provided to and charged to the buyer and the difference between the mid-price and selling price a service provided to and charged to the seller. The mid-price is the mid-point of the buying and selling price at the time a transaction takes place; if the purchase and sale of a share, for instance, do not take place simultaneously, the mid-point for the sale and purchase price at the time of sale and of purchase will not necessarily be equal. For some financial instruments, for example bonds, the increase in value over time is taken to represents interest, not simply a price increase in the value of the asset. In some cases more than one adjustment may be needed to the apparent transaction value to identify and re-route both the service charge and interest associated with the asset.
- 12.35 It is essential that the value of the transactions in financial instruments recorded in the financial account carefully excludes these service charges and interest payments. Part 4 of eChapter 1725 describes the adjustments necessary to make these exclusions on an instrument-by-instrument basis.
- 12.36 Financial transactions with respect to proprietors' net additions to the accumulation of equity in quasicorporations and changes in households' claims on insurance companies and pension funds raise complex issues of valuation that are referred to in the relevant item under classification of these categories below and more extensively in chapters 4724 and 25.

### 4. Time of recording

- 12.37 In principle, the two parties to a financial transaction should record the transaction at the same point in time. When the counterpart to an entry in the financial account is in another account, the time of recording of financial claims is to be aligned with the time of recording in the other accounts of the transactions that gave rise to the financial claim. For example, when sales of goods or services give rise to a trade credit, the entries in the financial accounts should take place when ownership of the goods is transferred or when the service is provided. Similarly, when accounts receivable or payable arise from transactions related to taxes, compensationremuneration of employees and other distributive transactions, the entries in the financial account should take place when the entries are made in the relevant non-financial account.
- 12.38 When all entries relating to a transaction pertain only to the financial account, they should be recorded when the ownership of the asset is transferred. This point in time is usually clear when the transaction involves the sale of existing financial assets. When the transaction involves the incurrence or redemption of a liability,

both parties should record the transaction when the liability is incurred or redeemed. In most cases, this will occur when cash or some other financial asset is paid by the creditor to the debtor or repaid by the debtor to the creditor.

12.39 In practice, the two parties to a financial transaction may perceive the transaction as being completed at different points in time. This is especially true when trade credits or other accounts payable or receivable are extinguished by final payments and there is a lag between the point in time when payments are made and received, creating a "float". There are several stages at which creditors and debtors could record a transaction. The debtor could record the liability as being extinguished when the <del>cheque or other</del> means of payment is issued to the creditor. A substantial certain period of time may elapse before the creditor receives the means of payment and records the payment in his accounts. There may then be further time lags between presentation of a cheque to a bank, cheque clearance, and final settlement of the transaction. Asymmetries in time of recording of this transaction are, therefore, likely to emerge-unless the debtor records his transaction on a "cheques cleared" basis, a fairly uncommon accounting procedure. A financial claim exists up to the point that the payment is cleared and the creditor has control of the funds; this would be the optimal point in time for recording the transaction. In some cases, Tthe float, in practice, may be significant very large and may affect, in particular, transferable deposits, trade credits, and other accounts receivable. This effect is especially pronounced in countries where the postal system and bank clearing procedures are weak. When the float is significant and accounts for large discrepancies in reporting, it is necessary to develop estimates of the size of the float in order to adjust the accounts.

### 5. Netting and consolidation

#### Netting

- 12.40 As described in chapter 34, netting is a process whereby entries on alternate sides of the account for the same transaction item and same institutional unit are offset against one another. In general the preference of the SNA is to avoid netting where possible but this may not always be possible and for some particular analyses, not always desirable.
- 12.41 The degree of netting at which transactions in financial assets and liabilities should be recorded depends to a great extent on the analysis for which the data are to be used. In practice, the degree of netting will depend on how data can be reported, and reporting may vary substantially for different classes of institutional units. If detailed information on financial transactions is maintained and reported, gross presentations are possible; if transactions must be inferred from balance sheet data, a certain level of netting is inevitable. A number of degrees of netting can be identified:
  - a. no netting or fully gross reporting in which purchases and sales of assets are separately recorded, as are the incurrence and repayment of liabilities;
  - b. netting within a given specific asset, such as subtracting sales of bonds from acquisition of bonds and redemption of bonds from new incurrences of liabilities in the form of bonds;
  - c. netting within a given category of assets, such as subtracting all disposals of debt securities from all acquisitions of such assets;
  - d. netting transactions in liabilities against transactions in assets in the same asset category; and
  - e. netting transactions in groups of liability categories against transactions in assets in the same groups.
- 12.42 Transactions recorded in the financial account represent net acquisition of assets and net incurrence of liabilities. However, it is clear that, when data are collected on as gross a basis as possible, they can be netted to whatever degree is necessary for a particular use; when data are collected net, they cannot be grossed up. In general, netting beyond the level described in (c) above is discouraged as it hinders the usefulness of the financial accounts for tracing how the economy mobilizes resources from institutional units with positive net lending and transmits them to net borrowers. For detailed flow of funds-analysis of flows from creditors to debtors, gross reporting or netting at level (b) above is desirable, particularly for analysis of securities, but netting at level (c) above still provides useful information on financial flows.

#### Consolidation

12.43 Consolidation in the financial account refers to the process of offsetting transactions in assets for a given group of institutional units against the counterpart transactions in liabilities for the same group of institutional units. Consolidation can be performed at the level of the total economy, institutional sectors, and subsectors. Different levels of consolidation are appropriate for different types of analysis. For example, consolidation of the financial accounts for the total economy emphasizes the economy's financial position with the rest of the world since all domestic financial positions are netted on consolidation for sectors permits the tracing of overall financial movements between sectors with positive net lending and those with net borrowing and the identification of financial intermediation. Consolidation only at the subsector level for financial corporations can provide much more detail on intermediations. Another area where consolidation can be instructive is within the general government sector when transactions between the various levels of government are consolidated. Chapter 2230 makes a specific recommendation in this regard. Within the main-sequence of economic accounts, however, the SNA discourages consolidation.

# C. Recording of individual financial instruments

### 1. Monetary gold and SDRs

12.44 Monetary gold and Special Drawing Rights (SDRs) issued by the International Monetary Fund (IMF) are assets that are normally held only by monetary authorities.

### Monetary gold

- 12.45 Monetary gold is gold to which the monetary authorities (or others who are subject to the effective control of the monetary authorities) have title and is held as a reserve asset. It comprises gold bullion (including gold held in allocated gold accounts) and unallocated gold accounts with non-residents that give title to claim the delivery of gold. All monetary gold is included in reserve assets or is held by international financial organizations. Only gold that is held as a financial asset and-as a component of foreign reserves is classified as monetary gold. Therefore, except in limited institutional circumstances, gold bullion can be a financial asset only for the central bank or central government. Transactions in monetary gold consist of sales and purchases of gold among monetary authorities. Purchases (sales) of monetary gold are recorded in the financial account of the domestic monetary authority as increases (decreases) in assets, and the counterparts are recorded as decreases (increases) in assets of the rest of the world. Transactions in non-monetary gold (including non-reserve gold held by the monetary authorities and all gold held by financial institutions other than the monetary authorities) are treated as acquisitions less disposals of valuables, (if the sole purpose is to provide a store of wealth,) and otherwise as final or intermediate consumption, change in inventories, exports or imports. Deposits, loans, and securities denominated in gold are treated as financial assets (not as gold) and are classified along with similar assets denominated in foreign currencies in the appropriate category. A discussion on the treatment of allocated and unallocated gold accounts appears under currency and deposits.
- 12.46 Monetary gold under reverse transactions, such as gold swaps, is collateralized and generally not readily available for balance of payments financing needs, because restrictions to a cash borrower's control of its gold collateral are imposed during the tenure of the swap agreement. Such collateralized amounts of monetary gold should be excluded from reserve assets and either demonetized (in the case of gold bullion) or reclassified as other investment, currency and deposits (in the case of unallocated gold accounts). (See paragraphs 6.xxx to 6.xxx of BPM7 for additional details.)

12.47

12.4812.47 Gold bullion in monetary gold takes the form of coins, ingots, or bars with a purity of at least 995 parts per thousand; it is usually traded on organized markets or through bilateral arrangements between central banks. Therefore, valuation of transactions is generally not a problem. Gold bullion held as a reserve

asset is the only financial asset with no corresponding liability.

## **SDRs**

- <u>12.48</u> Special Drawing Rights (SDRs) are international reserve assets created by the International Monetary Fund (IMF) and allocated to its members to supplement existing reserve assets. <u>SDRs are held only by the monetary authorities of IMF members and a limited number of international financial institutions that are authorized holders. The Special Drawing Rights Department of the IMF manages reserve assets by allocating SDRs among member countries of the IMF and certain international agencies (collectively known as the participants).</u>
- 12.49 Holdings of SDRs by an IMF member are recorded as a financial asset, while the allocation of SDRs is recorded as the incurrence of a liability of the member receiving them (because of a requirement to repay the allocation in certain circumstances, and also because interest accrues). The holdings and allocations should be shown gross, rather than net.
- 12.49
   12.50
   Domestic arrangements for holding SDRs and the accounting treatment may differ across IMF

   members according to differences in legal and institutional frameworks. The majority of members record the SDR positions on the central bank's balance sheet while some members record them on the balance sheet of a government agency. Regardless of where SDRs are recorded, the country's reserve assets increase with the allocation.

The mechanism by which SDRs are created (referred to as allocations of SDRs) and extinguished (cancellations of SDRs) gives rise to transactions. These transactions are recorded at the gross amount of the allocation and are recorded in the financial accounts of the monetary authority of the individual participant on the one part and the rest of the world representing the participants collectively on the other.

SDRs are held exclusively by official holders, which are central banks and certain other international agencies, and are transferable among participants and other official holders. SDR holdings represent each holder's assured and unconditional right to obtain other reserve assets, especially foreign exchange, from other IMF members. SDRs are assets with matching liabilities but the assets represent claims on the participants collectively and not on the IMF. A participant may sell some or all of its SDR holdings to another participant and receive other reserve assets, particularly foreign exchange, in return.

## 2. Currency and deposits.

- 12.51 Financial transactions in currency and deposits consist of additions to, or disposals of, currency and establishing or incrementing a deposit or making a withdrawal from it. In the case of a deposit, an apparent increase in the value may be due to the payment of interest on an existing stock level. Payments of bank interest are always separated into SNA interest and a charge for <u>implicit</u> financial intermediation services on loans and deposits indirectly measured (FISIM). SNA interest is first recorded in the distribution of primarycarned income account and then may be recorded in the financial account as a new deposit. An increase in deposits may correspond to a rundown of currency or vice versa.
- 12.5012.52 Off-market central bank currency swap arrangements should be recorded as an exchange of deposits with maintenance of value. However, if the central banks conduct the transaction as a standard (market priced) currency swap, then it is recommended that the swap be recorded as an exchange of deposits with the simultaneous creation of a financial derivative, namely a forward contract (see paragraphs 6.102-104, BPM7 for additional details on central bank swap arrangements, and chapter 25 for the treatment of off-market swap more generally).
- 12.5112.53 The aggregate of currency, transferable deposits (including inter-bank deposits) and other deposits should always be calculated. A distinction should alwayspreferably be made between currency and deposits in domestic currency and in foreign currency. If it is considered useful to have data for individual foreign

currencies, a distinction should be made between currency and deposits in each currency.

### Currency

- 12.54 Currency consists of notes and coins (including digital versions) that are of fixed nominal values and are issued or authorized by the central bank or government. Currency thus also includes digital currencies issued by the central bank or government. (Commemorative coins that are not actually in circulation should be excluded as should unissued or demonetized currency.) A distinction should be drawn between domestic currency (that is, currency that is the liability of resident units, such as the central bank, other banks and central government) and foreign currencies that are liabilities of non-resident units (such as foreign central banks, other banks and governments). All sectors may hold currency as assets, but normally only central banks and government may issue currency. In some countries, commercial banks are able to issue currency under the authorization of the central bank or government.
- 12.5212.55 Notes and coins are treated as liabilities at full face value. The cost of producing the physical notes and coins is recorded as government expenditures of the issuing authority and not netted against the receipts from issuing the currency.

#### <u>Crypto-assets with a corresponding liability designed to act as a general medium of</u> exchange

 12.53
 This category includes crypto assets with a corresponding liability designed to act as a general medium of exchange that are not issued or authorized by the central bank or government. They consist of, for example, stablecoins with a claim on the issuer. Similar assets designed as a medium of exchange within a platform are classified as debt or equity securities. Crypto assets without a corresponding liability designed to act as a medium of exchange are recorded as non-produced non-financial assets; see chapter 11.

### **Transferable deposits**

<u>12.5412.57</u> Transferable deposits comprise all deposits that:

- a. are exchangeable for bank notes and coins <u>(including digital versions)</u> on demand at par and without penalty or restriction; and
- b. are directly usable for making payments by cheque, draft, giro order, direct debit/credit, or other direct payment facility.

Some types of deposit accounts embody only limited features of transferability; these are excluded from the category of transferable deposits and treated as other deposits. For example, some deposits have restrictions such as on the number of third-party payments that can be made per period or on the minimum size of the individual third-party payments. A transferable deposit cannot have a negative value. A bank current or checking account, for example, is normally treated as a transferable deposit but if it is overdrawn, the withdrawal of funds to zero is treated as the withdrawal of a deposit and the amount of the overdraft is treated as the granting of a loan.

12.58 Transferable deposits also include electronic money or e-money. E-money is monetary value stored electronically, which represents a liability of the issuer and is denominated in a currency backed by an authority. E-money must represent general purchasing power, in the sense that it may be used for purchasing goods and services from a variety of other entities. For more details, reference is made to the Monetary and Financial Statistics Manual and Compilation Guide (MFSMCG) 2014.

<u>12.55</u>12.59 Transferable deposits should <u>preferably</u> be cross-classified according to:

a. whether they are denominated in domestic currency or in foreign currencies; and

b. whether they are liabilities of resident institutions or the rest of the world.

#### Inter-bank positions

- 12.60 Though not strictly accurate, the term bank is frequently used as a synonym for the central bank and other deposit-taking corporations. Banks take deposits from and make loans to all other sectors. There may also be substantial borrowing and lending within the banking subsector, but this is of different economic significance from their intermediation activities involving other sectors. Chapter 2737 describes how a full analysis of the debtor and creditor sector for each instrument can be portrayed. Such an analysis is known as a detailed flow of fundsfrom-whom-to-whom table. However, not all countries are able to provide these tables on a timely basis.
- 12.5612.61 Inter-bank positions can usually be identified and arecould usefully <u>be</u> recorded as a separate instrument category. This is one reason to consider separating inter-bank loans and deposits from other loans and deposits. A second reason concerns the calculation of the charge for <u>implicit</u> financial intermediation services <u>on loans and deposits</u> indirectly measured (FISIM). This calculation depends on knowing the level of loans and deposits extended by banks to non-bank customers and calculating the difference between the interest the banks receive or pay and the interest when a reference rate is applied to the same levels of loans and deposits. However, there is normally little if any <u>implicit financial services on loans and deposits</u> payable between banks as banks usually borrow from and lend to each other at a risk-free rate. For both these reasons, <u>it should be possible to separate</u> inter-bank loans and deposits

#### Table 124.2: The financial account - full detail - changes in assets

#### Table 124.2 (cont): The financial account - full detail - changes in liabilities and net worth

12.5712.62 There may be cases where the instrument classification of inter-bank positions is unclear, for example because the parties are uncertain, or one party considers it as a loan and the other a deposit. Therefore, aAs a convention to assure symmetry, allsuch inter-bank positions other than securities and accounts receivable or payable, and including the changes in these positions, are classified under deposits. Chapter 2737 describes the detailed flow of fundsfrom-whom-to-whom tables which removes the need for identifying inter-bank deposits as a separate category.

#### Other transferable deposits

#### 12.58

12.1 Other transferable deposits are those where one party or both parties to the transaction, or either the creditor or debtor or both of the positions, is not a bank.

12.59

#### Other deposits

12.63 Other deposits comprise all claims, other than transferable deposits, that are represented by evidence of deposit. Typical forms of deposits that should be included under this classification are savings deposits (which are always non-transferable), fixed-term deposits and non-negotiable certificates of deposit. The category also covers shares or similar evidence of deposit issued by savings and loan associations, building societies, credit unions and the like. Deposits of limited transferability that are excluded from the category of transferable deposits are included here. Claims on the IMF that are components of international reserves and are not evidenced by loans should be recorded in other deposits. (Claims on the IMF evidenced by loans should be included in loans; see paragraphs 5.43 and 5.51 of BPM7 for further details on claims on the IMF included in other deposits and loans.)

12.60 12.64 Repayable margin payments in cash in financial contracts, such as those related to financial

derivative contracts (described below), are classified as deposits (if the debtor's liabilities are included in broad money), other accounts receivable/payable, or loans. -are included in other deposits, as are overnight and very short term repurchase agreements if they are considered part of the national definition of broad money. Other repurchase agreements should be classified under loans.

- 12.6112.65 It is possible to hold accounts for both "allocated gold" and "unallocated gold". The distinction is precise, practical and recognized in the balance sheets of units holding these accounts. An allocated gold account gives full outright ownership of the gold and is equivalent to a custody record of title. The unallocated gold account does not give the holder the title to physical gold but provides a claim against the account provider denominated in gold. In effect, therefore, it is a deposit denominated in gold. They are thus treated as deposits in foreign currency. Accounts that are held for allocated gold, on the other hand, are treated as holdings of valuables. Both allocated and unallocated gold accounts are classified in reserve assets if-unless they are held by monetary authorities, or other units authorized by them, and meet other criteria fores reserve assets. The relevant unallocated gold account liabilities are classified as deposits. (See paragraphs 5.76 and 5.77 of BPM7 for further details on allocated and unallocated gold accounts.)
- 12.62 Similar accounts, distinguishing between unallocated and allocated accounts for different precious metals, are also possible and should be treated in a similar way; those for unallocated metals are deposits in foreign currency, those for allocated accounts are holdings of valuables. If the practice of using commodities in this way extends beyond metals, it will be for consideration whether to extend this practice.
- 12.63 Transferable and other deposits may be held as assets by all sectors. Deposits are most often accepted as liabilities by financial corporations but institutional arrangements in some countries permit non-financial corporations, general government and households to accept deposits as liabilities.

12.6412.68 Other deposits should preferably be cross-classified according to:

- a. whether the deposits are denominated in domestic currency or in foreign currencies, and
- b. whether they are liabilities of resident institutions or the rest of the world.

### **3.** Debt securities

- 12.65<br/>
  12.69 Debt securities are negotiable instruments serving as evidence of a debt. They include bills, bonds,<br/>
  negotiable certificates of deposit, commercial paper, debentures, asset-backed securities, money-market<br/>
  instruments, and similar instruments normally traded in the financial markets. Bills are defined as securities<br/>
  that give the holders the unconditional rights to receive stated fixed sums on a specified date. Bills are<br/>
  issued and usually traded in organized markets at discounts to face value that depend on the rate of interest<br/>
  and the time to maturity. Examples of short-term securities are Treasury bills, negotiable certificates of<br/>
  deposit, bankers' acceptances and commercial paper. Bonds and debentures are securities that give the<br/>
  holders the unconditional right to fixed payments or contractually determined variable payments, that is,<br/>
  the earning of interest is not dependent on earnings of the debtors. Bonds and debentures also give holders<br/>
  the unconditional rights to fixed sums as payments to the creditor on a specified date or dates.
- 12.70 Utility tokens that provide the holders future access to goods or services, should be classified as debt securities. The same holds for crypto assets with a corresponding liability designed to act as a medium of exchange within a platform. Because these latter payment tokens are quite different from traditional debt securities, it is recommended to record them in a separate subcategory (see below).
- 12.6612.71 Loans that have become negotiable from one holder to another are to be reclassified from loans to debt securities under certain circumstances. For such reclassification, there needs to be evidence of secondary market trading, including the existence of market makers, and frequent quotations of the instrument, such as provided by bid-offer spreads.
- 12.6712.72 Non-participating preferred stocks or shares are those that pay a fixed income but do not provide for participation in the distribution of the residual value of an incorporated enterprise on dissolution. They are repaid after standard debt and before equity in the order of repayment in case of bankruptcy. These shares are classified as debt securities. Bonds that are convertible into equity should also be classified in this category prior to the time that they are converted.

- 12.6812.73 Asset-backed securities and collateralized debt obligations are arrangements under which payments of interest and principal are backed by payments on specified assets or income streams. Securitization may also be used as a term to describe this process. Asset-backed securities may be issued by a specific holding unit or vehicle, which issues securities that are sold to raise funds to pay the originator for the underlying assets. Asset-backed securities are classified as debt securities because the security issuers have a requirement to make payments, while the holders do not have a residual claim on the underlying assets; if they did, the instrument would be equity or investment funds shares. Asset-backed securities are backed by various types of financial assets, for example, mortgages and credit card loans, non-financial assets, or by future income streams (such as the earnings of a musician or a government's future revenue) that are not recognized in themselves as an economic asset in macro-economic statistics.
- 12.6912.74 A banker's acceptance involves the acceptance by a financial corporation, in return for a fee, of a draft or bill of exchange and the unconditional promise to pay a specific amount at a specified date. In contrast to acceptances more generally, a banker's acceptance must be tradable. Much international trade is financed this way. Bankers' acceptances are classified under the category of debt securities. The banker's acceptance represents an unconditional claim on the part of the holder and an unconditional liability on the part of the accepting financial corporation; the financial corporation's counterpart asset is a claim on its customer. Bankers' acceptances are treated as financial assets from the time of acceptance, even though funds may not be exchanged until a later stage.
- 12.70 Stripped securities are securities that have been transformed from a principal amount with coupon payments into a series of zero-coupon bonds, with a range of maturities matching the coupon payment date(s) and the redemption date of the principal amount(s). The function of stripping is that investor preferences for particular cash flows can be met in ways different from the mix of cash flows of the original security. Stripped securities may have an issuer different from the original issuer; in which instance, new liabilities are created. There are two cases of stripped securities:
  - a. When a third party acquires the original securities and uses them to back the issue of the stripped securities. Then new funds have been raised and there is a new financial instrument.
  - b. When no new funds are raised and the payments on the original securities are stripped and marketed separately by the issuer or through agents (such as strip dealers) acting with the issuer's consent.

12.7112.76 Index-linked securities are instruments for which either the coupon payments (interest) or the principal or both are linked to an index such as a price index, an interest rate or the price of a commodity. The objective is to conserve purchasing power or wealth during a period of inflation in addition to earning interest income. When the coupon payments are index-linked they are treated entirely as interest, as is the case with any variable interest rate financial asset. When the value of the principal is indexed to an indicator that moves in line with a broad-based measure of inflation, the issue price of the security is recorded as the principal and the index payment paid periodically and at maturity is treated as interest. The payment owing to indexation should be recorded as interest (property income) over the life of the security and the counterpart should be recorded under debt securities in the financial account. When a security is indexed to a commodity and thus may be subject to large price fluctuations, a variation on this procedure is recommended. It is explained in detail in part 4 of chapter 1725.

#### Supplementary classifications of debt securities

12.7212.77 It is recommended to compile the following breakdownA supplementary subclassification of debt securities: by maturity into short term and long term should be based on the following criteria.

- a. Short-term debt securities include those securities that have an original maturity of one year or less. Securities with a maturity of one year or less should be classified as short-term even if they are issued under long-term facilities such as note issuing facilities.
- b. Long-term debt securities include those securities that have an original maturity of more than one year. Claims with optional maturity dates, the latest of which is more than one year away, and claims with indefinite maturity dates should be classified as long-term.

#### b.c. Crypto assets that qualify as debt securities.

In addition, it may sometimes be useful to distinguish listed debt securities from unlisted ones and to record them according to whether they are short- or long-term. It may also be useful to distinguish securities with an original maturity of more than one year, whose remaining maturity is less than one year.

#### 4. Loans

**12.73**12.78 Loans are financial assets that:

- a. are created when a creditor lends funds directly to a debtor, and
- b. are evidenced by documents that are not negotiable.
- 12.7412.79 The category of loans includes overdrafts, instalment loans, hire-purchase credit and loans to finance trade credit, including factoring claims. Peer-to-peer lending through digital platforms, which facilitate lending of money from individuals and other lenders, often unsecured, to unrelated individuals or small businesses, thereby circumventing traditional financial intermediaries, are also considered as loans. Claims on or liabilities to the IMF that are in the form of loans are also included. An overdraft arising from the overdraft facility of a transferable deposit account is classified as a loan. However, undrawn lines of credit are not recognized as a liability as they are contingent. Securities, repurchase agreements, gold swaps and financing by means of a financial lease may also be classified as loans. However, accounts receivable/payable, which are treated as a separate category of financial assets, and loans that have become debt securities are also excluded from loans.
- 12.80 A securities repurchase agreement (repo) is an arrangement involving the provision of securities in exchange for cash with a commitment to repurchase the same or similar securities at a fixed price either on a specified future date (often one or a few days hence, but also further in the future) or with an "open" maturity. Securities lending with cash collateral and sale/buy-backs are economically the same as a repurchase agreement; all involve the provision of securities as collateral for a loan or deposit. A repo is a securities repurchase agreement where securities are provided for cash with a commitment to repurchase the same or similar securities for cash at a fixed price on a specified future date. (It is called a repo from the perspective of the security provider and a reverse repo from the perspective of the security taker.)
- 12.7512.81 The supply and receipt of funds under a securities repurchase agreement may be treated as a loan or deposit. It is generally a loan, but is classified as a deposit if it involves liabilities of a deposit-taking corporation and is included in national measures of broad money. However, margin calls in cash under a repo are classified as loans. If a securities repurchase agreement does not involve the supply of cash (that is, there is an exchange of one security for another, or one party supplies a security without collateral), there is no loan or deposit. However, margin calls in cash under a repo are classified as loans.
- 12.82 The securities provided as collateral under securities lending, including a securities repurchase agreement, are treated as not having changed economic ownership. This treatment is adopted because the cash receiver is still subject to the risks or benefits of any change in the price of the security.
- 12.76
   12.83
   The party that acquires securities under a repurchase agreement or security lending (borrowing) can on-sell the securities due to the change in legal ownership of the securities). This on-selling of the securities is recorded as a negative asset, to avoid the double-counting of the security by both the economic (original) owner and the final owner.
- 12.84 A gold swap involves an exchange of gold for foreign exchange deposits with an agreement that the transaction be reversed at an agreed future date at an agreed gold price. The gold should not be recorded on the balance sheet of the gold taker (cash provider) will not usually record the gold on its balance sheet, while the gold should also not be removed from the balance sheet of the gold provider (cash taker) will not usually remove the gold from its balance sheet. In this manner, the transaction is analogous to a repurchase agreement and should be recorded as a collateralized loan or deposit. Gold swaps are similar to securities repurchase agreements except that the collateral is gold.

# 12.77<u>12.85</u> Reverse transactions that involve commodities (or potentially other non-financial assets) are recorded in the same way as the above reverse transactions for securities and gold.

- 12.86 When goods are acquired under a financial lease, a change of economic ownership of the goods from the lessor to the lessee is deemed to take place. The change of economic ownership may be distinguished by the fact that all the risks and rewards of ownership are transferred from the legal owner of the good, the lessor, to the user of the good, the lessee. The lessee contracts to make payments that enable the lessor, over the period of the contract, to recover all, or virtually all, of his costs including interest. This de facto change in ownership is recorded by assuming a loan is made by the lessor to the lessee, the lessee uses this loan to acquire the asset and the payments by the lessee to the lessor represent not rentals on the asset but payments of interest, possibly a service charge and repayments of principal on the imputed loan. Interest is recorded as property income payable or receivable and debt repayment is recorded in the financial account as reducing the value of the asset (loan) of the lessor and the liability of the lessee. There is more extensive discussion of financial leases in part 5 of chapter 1727.
- 12.7812.87 Factoring is a transaction in which a factor, which can be a bank, a specialized factoring company, or other financial organization, buys trade accounts receivable from a supplier at a discount. Factoring is commonly viewed as a purchase or sale of invoices transferring the legal right of the claim on the debtor to the factor. In factoring, the indirect financing by the factor to the debtor is treated as a loan. The accounts receivable concerned are trade-related receivables arising from the provision of goods, services, or work in progress. There are two basic types of factoring: non-recourse and recourse factoring. In a nonrecourse agreement, the factor assumes the full risk of non-payment by the debtors at maturity and therefore may charge the supplier a higher fee. In a recourse agreement, all or part of the risk is kept by the supplier. The factor may also keep a reserve that should be paid back to the supplier once the debtor pays its liability in full. The instrument reclassification from trade credit to a loan should be recorded as a transaction in the financial account. The recourse is seen as a guarantee treated as a contingent liability for the supplier, which should therefore not be recorded unless and until being activated by the factor. The factoring income is treated as a fee paid by the supplier; see paragraph 7.xxx. The reserve held by a factor is classified as a deposit, a loan, or other accounts receivable/payable, following the recording of other cash collaterals (e.g., repayable margins for financial derivatives).

### Supplementary classifications of loans

12.7912.88 Loans may be divided, on a supplementary basis, between short- and long-term loans.

- a. Short-term loans comprise loans that have an original maturity of one year or less. Loans repayable on the demand of the creditor should be classified as short-term even when these loans are expected to be outstanding for more than one year.
- b. Long-term loans comprise loans that have an original maturity of more than one year.
- 12.8012.89 It may also be useful to distinguish loans that, though taken out for a period longer than a year, have less than one year to maturity in the accounting period considered, as well as loans secured by mortgages.

#### 5. Equity and investment fund shares

- **12.81**<u>12.90</u> Equity and investment fund shares have the distinguishing feature that the holders own a residual claim on the assets of the institutional unit that issued the instrument. Equity represents the owner's funds in the institutional unit. In contrast to debt, equity does not generally provide the owner with a right to a predetermined amount or an amount determined according to a fixed formula.
- 12.8212.91 Investment fund shares have a specialized role in financial intermediation as a kind of collective investment in other assets, so they are identified separately.

# Equity

- 12.8312.92 Equity comprises all instruments and records acknowledging claims on the residual value of a corporation or quasi-corporation after the claims of all creditors have been met. Equity is treated as a liability of the issuing institutional unit.
- 12.93 Ownership of equity in legal entities is usually evidenced by shares, stocks, depository receipts, participations, or similar documents. They may also take the form of equity crypto assets, which are similar to standard equity albeit with a novel technology for being created, allocated, transferred and managed. Shares and stocks have the same meaning, while depository receipts are securities that facilitate ownership of securities listed in other economies; a depository issues receipts listed on one exchange that represent ownership of securities listed on another exchange. Participating preferred shares are those that provide for participation in the residual value on the dissolution of an incorporated enterprise. Such shares are also equity securities, whether or not the income is fixed or determined according to a formula. (Non-participating preferred shares are treated as debt securities as explained above.)
- 12.84Subscription rights are the rights of corporate shareholders to participate in the acquisition of shares<br/>newly issued by the corporation. Subscription rights are designed to offset any potential dilution effect in the<br/>value of the stake of current shareholders resulting from the terms of issuance: by exercising the rights, the<br/>investor maintains their percentage of ownership in the corporation buying a proportionate number of shares<br/>of the issuance. Despite their expiry date, subscription rights are classified as equity, as they represent part<br/>of the own funds of the corporation.
- 12.8512.95 Equities are subdivided into:
  - a. listed shares;
  - b. unlisted shares; and
  - c. other equity and equity in international organisations.

Both listed and unlisted shares are negotiable and are therefore equity securities.

- 12.8612.96 Listed shares are equity securities listed on an exchange. They are also referred to as quoted shares. The existence of quoted prices of shares listed on an exchange means that current market prices are usually readily available.
- 12.8712.97 Unlisted shares are equity securities not listed on an exchange. Unlisted shares can also be called private equity; venture capital usually takes this form. Unlisted shares tend to be issued by subsidiaries and smaller scale enterprises and typically have different regulatory requirements but neither qualification is necessarily the case.
- 12.8812.98 Other equity and equity in international organisations consists of all forms of equity other than listed and unlisted sharesis equity that is not in the form of securities. It can include equity in quasicorporations (such as branches, trusts, limited liability and other partnerships), unincorporated funds and notional units for ownership of real estate and other natural resources. The equity ownership of many international organizations (e.g., ownership of currency union central banks) is usually not in the form of tradable shares and so is classified in this item. Although equity in some international organizations, such as the Bank for International Settlements (BIS), is in the form of unlisted shares, the equity is not tradable by member countries; therefore, it should also be classified as other equity (although equity in the Bank for International Settlements (BIS) is in the form of unlisted shares).
- 12.8912.99 Transactions in equity in the financial account cover three different types of transactions. The first is the recording of the value of shares bought and sold<u>on an exchange</u>. From time to time corporations restructure their shares and may offer shareholders a new number of shares for each share previously held. These bonus shares, which are different from subscription rights (see above), are not however treated as transactions but as a form of redenomination since the value of the new number of shares times the new price represents the same proportion of the value of the corporation as the old number of shares times the old price.

- The second type of transaction concerning equity is capital injections by the owners or, on occasion, <del>12.90</del>12.100 withdrawals of equity by the owners. Dividends are recorded in the distribution of primary allocation of earned income account as if they were always paid out of operating surplus earned in the current period. An enterprise, though, usually aims to have a smooth track record of dividend payments and will therefore sometimes pay out more than the <del>current operating surplus</del>net earnings from current production, property income (excluding distributed income in the form of dividends) and transfer income transactions and sometimes rather less, the balance carrying through to the accumulation accounts by way of saving (which might be negative). However, if the dividends paid out are significantly in excess of recent average earningsoperational profits excluding holding gains and losses, then the excess should no longer all be recorded in the allocation of primaryearned income account but should be regarded recorded as a financial transaction (withdrawal of equity) by the owners akin to the partial liquidation of the enterpriseand be reflected under this item. Such payments are sometimes referred to as "super dividends" (see paragraph 8.xxx). Withdrawals may take the form of proceeds from sales of fixed or other assets, transfers of fixed and other assets from the quasi-corporation to the owner and funds taken from accumulated retained earnings and reserves for the consumption of fixed capital depreciation. In the case of foreign direct investment relationships, the treatment of these exceptional payments as withdrawals of equity is restricted to those related to non-operating activities (sales of assets, liquidations of branches). For domestic direct investment relationships, such as government controlled public corporations, super dividends may also concern payments out of reserves accumulated in past periods. (The particular case of payments between government and public enterprises corporations is discussed in chapter 2230.) Equally, liquidating dividends paid to shareholders when an enterprise becomes bankrupt should be recorded as withdrawal of equity.
- 12.9112.101 Conversely, owners may inject extra finance into an enterprise. If the enterprise is publicly controlled and runs a regular deficit each year as a matter of government economic or social policy that is covered by a receipt from government to match this deficit, the payment is regarded as a subsidy. If the payment from government is irregular but clearly designed to cover accumulated losses, it is treated as a capital transfer. If government makes an investment grant to a public corporation this also is recorded as a capital transfer. However, there may be cases where the owners (public or private) agree to make new finance available to permit expansion, say, and represent not just a reduction of debt but a positive addition to the enterprise's own funds. The finance consists of funds for use by the enterprise in purchasing fixed assets, accumulating inventories, acquiring financial assets or redeeming liabilities. Transfers by owners of fixed and other assets to the quasi-corporation are also included as addition to equity. Such payments are to be included in this item as an acquisition of equity, even if no new shares are issued in response to the financial contribution.
- 12.9212.102 The third type of transaction concerning equity is the special case of equity addition and withdrawal that happens in respect of the reinvestment of earnings of foreign direct investment enterprises. In the distribution of primaryearned income account, the share of operating surplusretained earnings (i.e., net earnings from current production, property and transfer income transactions that have not been distributed) proportionate to the foreign direct investor's share of equity is shown as being withdrawn and distributed to him as reinvested earnings. Because it is not actually withdrawn, it adds to the value of the equity of the enterprise by a recording as reinvestment of earnings in the financial account.
- 12.9312.103 Notional resident units are treated in the same manner as quasi-corporations. For example, an extension to a holiday home of a non-resident is recorded as an increase in the value of an asset owned by a resident notional unit with a matching increase in the equity of the non-resident owner. However, the entire income from a holiday home is treated as a withdrawal by the owner of the notional resident unit so there are no earnings left to be reinvested. This ensures that the entire net worth of the notional resident unit is the value of the property in question.

#### Investment fund shares or units

- <u>12.94</u><u>12.104</u> Investment funds are collective investment undertakings through which investors pool funds for investment in financial or non-financial assets <u>or both</u>. Those units acquiring shares in the funds thus spread their risk across all the instruments in the fund.
- 12.9512.105 In a detailed flow of fundsfrom-whom-to-whom table, the acquisition of instruments by the
investment funds is shown separately from the acquisition of shares in the funds and a full analysis of the from-whom-to-whom transactions captures the holdings of instruments via investment funds without needing to have a separate category for it. However, as noted in connection with the category of inter-bank positions, timely flow of funds from-whom-to-whom tables are not always available. Therefore, in order to distinguish when non-financial units acquire instruments such as securities and equities directly and when they are acquired via investment funds, the latter are shown separately.

- 12.9612.106 Investment funds include mutual funds and unit trusts. Investment funds issue shares when a corporate structure is used and units when a trust structure is used. Investment fund shares refer to the shares issued by mutual funds, rather than the shares the mutual fund may hold.
- 12.9712.107 Investment funds are divided into money market funds (MMF) and non-MMF investment funds. The fundamental difference between them is that MMFs typically invest in money market instruments with an original-residual maturity of less than one year, are often transferable and are often regarded as close substitutes for deposits. Non-MMF investment funds typically invest in longer-term financial assets or certain non-financial assets and possibly real estate. They are not transferable and are typically not regarded as substitutes for deposits.
- 12.9812.108 The increase in value of investment fund shares or units other than from holding gains and losses and after any reinvested earnings are deducted is shown in the SNA as distributed to the share or unit holders and reinvested by them in the financial account, after deduction of all implicit and explicit charges for management and operating costs.

#### Money market fund shares or units

12.9912.109 Money market funds are investment funds that invest only or primarily in short-term money market securities such as Treasury bills, certificates of deposit and commercial paper. Money market funds sometimes are functionally close to transferable deposits, for example, accounts with unrestricted chequewriting privileges. If these fund shares are included in broad money in the reporting economy, they should be recorded as a separate item to allow reconciliation with monetary statistics. Money market fund shares or units represent a claim on a proportion of the value of an established money market fund.

#### **OtherNon-MMF** investment fund shares or units

12.10012.110 OtherNon-MMF investment fund shares or units represent a claim on a proportion of the value of an established investment fund other than a money market fund.

# Supplementary classifications of investment fund shares

- <u>12.10112.111</u> It may be useful to distinguish listed from unlisted investment fund shares.
- 12.10212.112 Investment funds invest in a range of assets including debt securities, equity, commodity-linked investments, real estate, shares in other investment funds and structured assets. Data on the composition of their assets could be useful in economies where investment funds are significant. See chapter 29 for more details.

#### 6. Insurance, pension and standardized guarantee schemes

12.10312.113 Insurance, pension and standardized guarantee schemes all function as a form of redistribution of income or wealth mediated by financial institutions. The redistribution may be between individual institutional units in the same period or for the same institutional unit over different periods or a combination of the two. Units participating in the schemes contribute to them and may receive benefits (or have claims settled) in the same or later periods. While they hold the funds, insurance corporations invest them on behalf of the participants. The part of the investment income that is distributed to the participants as property income is returned as extra contributions. In all cases, net contributions or premiums less service charges are defined

as actual contributions or premiums plus distributed property income less the service charge retained by the financial institution concerned. Entries in the financial account, therefore, reflect the difference between net contributions or net premiums less service charges paid to the schemes less benefits and claims paid out. Significant other additions to the reserves of the schemes come via other changes in the volume of assets and especially holding gains. There is more extensive discussion on the recording of all these schemes in parts 1, 2 and 3 of chapters 1724 and 25.

12.10412.114 There are fivesix sorts of reserves applicable to insurance, pension and standardized guarantee schemes. These are non-life insurance technical reserves, life insurance and annuities entitlements, pension entitlements, claims of pension funds on the pension manager, entitlements to non-pension benefits and provisions for calls under standardized guarantees.

#### Non-life insurance technical reserves

12.10512.115 Non-life insurance technical reserves consist of prepayments of net-non-life insurance premiums less service charges and reserves to meet outstanding non-life insurance claims. They consist of actual premiums paid but not yet earned (called unearned actual premiums) and claims due but not yet settled, including cases where the amount is in dispute or the event leading to the claim has occurred but has not yet been reported (called claims outstanding). The only transactions for non-life insurance technical reserves recorded in the financial account are accrual adjustments. In this respect, refunded premiums at surrender of an insurance policy should be recorded as a financial transaction (i.e., a decrease of insurance technical reserves).

#### Life insurance and annuities entitlements

12.10612.116 Life insurance and annuities entitlements show the extent of financial claims policyholders have against an enterprise offering life insurance or providing annuities. The only transaction for life insurance and annuity entitlements recorded in the financial account is the difference between net premiums less service charges receivable and claims payable.

#### **Pension entitlements**

12.10712.117 Pension entitlements show the extent of typically concern financial claims both existing and future pensioners hold against either their employer or a fund designated by the employer to pay pensions earned as part of a compensation agreement between the employer and employee. However, they may also relate to collective arrangements established for selected groups of self-employed persons, if certain conditions are met (see chapter 24 for more details). The only transaction for pension entitlements recorded in the financial account is the difference between net-contributions less service changes receivable and benefits payable. The increase in pension entitlements shown in the financial account is equal to the entry in the use of income accounts for the change in pension entitlements plus any transfer of entitlements from a previous pension manager.

#### Claims of pension funds on pension manager

12.10812.118 An employer may contract with a third party to administer the pension funds for his employees. If the employer continues to determine the terms of the pension schemes and retains the responsibility for any deficit in funding as well as the right to retain any excess funding, the employer is described as the pension manager, or pension sponsor, and the unit working under the direction of the pension manager is described as the pension administrator. If the agreement between the employer and the third party is such that the employer passes the risks and responsibilities for any deficit in funding to the third party in return for the right of the third party to retain any excess, the third party becomes the pension manger as well as the administrator.

12.10912.119 When the pension manager, or sponsor, is a unit different from the administrator, with the

consequences that responsibility for any deficit, or claims on any excess, rest with the pension manager, the claim of the pension fund on the pension manager is shown under this heading. (The entry is negative if the pension fund makes more investment income from the pension entitlements it holds than is necessary to cover the increase in entitlements and the difference is payable to the pension manager of the scheme.)

#### **Entitlements to non-pension benefits**

12.11012.120 Funded schemes for social insurance benefits other than pensions are not very common. They may, however, exist in two circumstances. The first is when an employer has a fund for such benefits and accumulates any underspend in one year to pay for possible overspends in future years. Alternatively, an employer may realise that the commitments to make payments in future are such that it is prudent to build reserves to be able to make such payments. An example of such a scheme might be one that provides health cover, invalidity or other (non-longevity) risks to present and past employees. Unlike in the case of pensions, estimates of possible future claims on social insurance benefits other than pensions are generally not included in the SNA. Liabilities are recorded only when and to the extent that they exist in the employer's accounts.

#### Provisions for calls under standardized guarantees

12.11112.121 Provisions for calls under standardized guarantees consist of prepayments of net-fees less service charges and provisions to meet outstanding calls under standardized guarantees. The transactions for provisions for calls under standardized guarantee schemes recorded in the financial account are similar to the reserves for non-life insurance; they include unearned fees and calls not yet settled.

#### 7. Financial derivatives and employee stock options

#### **Financial derivatives**

- 12.112 Financial derivatives, including derivative crypto assets (i.e., derivative contracts that rely on cryptography and that can be exchanged peer-to-peer even if the underlying asset is not a crypto asset), are financial instruments that are linked to a specific financial instrument or indicator or commodity, through which specific financial risks can be traded in financial markets in their own right. The value of a financial derivative derives from the price of the underlying item: the reference price. The reference price may relate to a commodity, a financial asset, an interest rate, an exchange rate, another derivative or a spread between two prices. The derivative contract may also refer to an index or a basket of prices.
- 12.11312.123 An observable market price or an index for the underlying item is essential for calculating the value of any financial derivative. If a financial derivative cannot be valued because a prevailing market price or index for the underlying item is not available, it cannot be regarded as a financial asset. Unlike debt instruments, no principal amount is advanced to be repaid and no investment income accrues. Financial derivatives are used for a number of purposes including risk management, hedging, arbitrage between markets and speculation. Financial derivatives enable parties to trade specific financial risks (interest rate risk, currency, equity and commodity price risk and credit risk, etc.) to other entities who are more willing, or better suited, to take or manage these risks, typically, but not always, without trading in a primary asset or commodity. The risk embodied in a derivatives contract can be "traded" either by trading the contract itself, such as is possible with options, or by creating a new contract that embodies risk characteristics that match, in a countervailing manner, those of the existing contract owned. The latter is termed offsetability and is particularly common in forward markets or where there are no formal exchanges through which to trade derivatives.
- 12.11412.124 Financial derivative instruments that can be valued separately from the underlying item to which they are linked should be treated as financial assets, regardless of whether "trading" occurs on- or off-exchange. Transactions in financial derivatives should be treated as separate transactions, rather than as integral parts of the value of underlying transactions to which they may be linked. The two parties to the derivatives may have different motives for entering into the transaction. One may be hedging, while the other may be dealing in derivative instruments or acquiring the derivative as an investment. Even if both parties

are hedging, they may be hedging transactions or risks that involve different financial assets or even transactions in different accounts. Therefore, if derivative transactions were treated as integral parts of other transactions, such treatment would lead to asymmetries of measurement in different parts of the accounts or to asymmetries of measurement between institutional sectors.

- 12.11512.125 Any commissions paid to or received from brokers or other intermediaries for arranging options, futures, swaps and other derivatives contracts are treated as payments for services in the appropriate accounts. Financial derivatives transactions may take place between two parties directly, or through an intermediary. In the latter case, implicit or explicit service charges may be involved. However, it is usually not possible to distinguish the implicit service element. Net settlement payments under derivative contracts are therefore recorded as financial transactions. However, where possible, the service charge component should be separately recorded. Financial derivatives contracts are usually settled by net payments of cash. This often occurs before maturity for exchange-traded contracts such as commodity futures. Cash settlement is a logical consequence of the use of financial derivative contracts, particularly involving foreign currency, are associated with transactions in the underlying item. A transaction in an asset underlying a financial derivative contract that goes to delivery should be recorded at the prevailing market price for the asset with the difference between the prevailing price and the price actually paid (times the quantity of the asset) recorded as a transaction in financial derivatives.
- 12.11612.126 There are two broad classes of financial derivatives: option-type contracts (options) and forwardtype contracts (forwards). Within each class, a further distinction could be made by market risk categories; foreign exchange, single currency interest rate, equity, commodity, credit and other. Option-type contracts entail two payment streams, a "premium leg", comprising of fixed payments from the buyer to the seller, and a "contingent leg", comprising payments from the seller to the buyer depending on the underlying asset's pricing, whereas forward-type contacts entail contingent payments between the parties involved depending on the underlying asset's pricing. The contingent leg in an option-type contract usually entails a single payment at maturity; the premium leg in standard put and call options consists in a single payment at inception.

12.127 Option-type contracts can be contrasted with forward-type contracts in that:

- a. at inception, there is usually no up-front payment for a forward-type contract and the derivative contract begins with zero value, whereas there is usually a premium paid for an option-type contract representing a non-zero value for the contract;
- b. during the life of the contract, for a forward-type contract, either party can be creditor or debtor, and it may change, whereas for an option-type contract, the buyer is always the creditor and the writer is always the debtor except for contracts with multiple payments in the premium leg like credit default swaps; and
- d.c. at maturity, redemption is unconditional for forward-type contracts, whereas for standard call and put option contracts it is determined by the buyer of the contract.

12.2 A major difference between forward and option contracts is that, whereas either party to a forward contract is a potential debtor, the buyer of an option contract acquires an asset and the option writer incurs a liability. However, option contracts frequently expire without worth; options are exercised only if settling a contract is advantageous for the option holder.

#### 12.117

#### Option-type contracts (options)

12.11812.128 Options are contracts that give the purchaser of the option the right, but not the obligation, to buy (a "call" option) or to sell (a "put" option) a particular financial instrument or commodity at a predetermined price (the "strike" price) within a given time span (American option) or on a given date (European option). Many options contracts, if exercised, are settled by a cash payment rather than by delivery of the underlying assets or commodities to which the contract relates. Options are sold or "written" on many types of underlying bases such as equities, interest rates, foreign currencies, commodities and specified indices. The buyer of the option pays a premium (the option price) to the seller for the latter's commitment to sell or purchase the specified amount of the underlying instrument or commodity on demand of the buyer. While the premium paid to the seller of the option can conceptually be considered to include a service charge, in practice, it is usually not possible to distinguish the service element. The full price should be recorded as acquisition of a financial asset by the buyer and as incurrence of a liability by the seller. However, where possible, the service charge component should be separately recorded.

- 12.11912.129 The timing of premium payments on options varies. Depending on the type of contract, premiums are paid when the contracts begin, when the options are exercised, or when the options expire. The value of an option at inception should be recorded at the full price of the premium. If the premiums are paid after the purchase of an option, the value of the premium payable is recorded as an asset at the time the derivative is purchased, financed by an account receivable from the writer.Sometimes a premium is paid after the inception of the contract. In that case, the value of the premium is recorded at the inception of the contract in the same manner as if it had been paid then, but is shown as being financed by accounts receivable/payable between the writer and the purchaser. Subsequent purchases and sales of options are also to be recorded in the financial account. If an option based on a financial asset is exercised or if a commodity based option proceeds to delivery, the acquisition or sale of the underlying asset should be recorded at the prevailing market price in the appropriate accounts with the difference between this amount and the amount actually paid recorded as transactions in financial derivatives.
- 12.12012.130 Warrants are a form of options that are treated in the financial account in the same way as other options. Warrants are tradable instruments giving the holder the right to buy, under specified terms for a specified period of time, from the issuer of the warrant (usually a corporation) a certain number of shares or bonds. There are also currency warrants based on the amount of one currency required to buy another and cross-currency warrants tied to third currencies. They can be traded apart from the underlying securities to which they are linked and therefore have a market value. The issuer of the warrant incurs a liability, which is the counterpart of the asset held by the purchaser.

#### Forward-type contracts (forwards)

- 12.12112.131 Under a forward contract, the Forwards are unconditional contracts by which two counterparties agree to buy or sellexchange a specified quantity of an underlying item (a particular product or financial or non-financialasset) at an agreed-upon contract price (the "strike" price) on a specified date. Futures contracts are forward contracts traded on organized exchanges. A forward contract is an unconditional financial contract that represents an obligation for settlement on a specified date. Futures and other forward contracts are typically, but not always, settled by the payment of cash or the provision of some other financial instrument rather than the actual delivery of the underlying item and therefore are valued and traded separately from the underlying item. At the inception of the contract, risk exposures of equal market value are exchanged and hence the contract has zero value. Some time must elapse for the market value of each party's risk to differ so that an asset (creditor) position is created for one party and a liability (debtor) position for the other. The debtor/creditor relationship may change both in magnitude and direction during the life of the forward contract.
- <u>12.12212.132</u> Common forward-type contracts include interest rate swaps, forward rate agreements (FRA), foreign exchange swaps, forward foreign exchange contracts and cross-currency interest rate swaps.
  - a. An interest rate swap contract involves an exchange of cash flows related to interest payments, or receipts, on a notional amount of principal, which is never exchanged, in one currency over a period of time. Settlements are often made through net cash payments by one counterparty to the other.
  - b. A forward rate agreement (FRA) is an arrangement in which two parties, in order to protect themselves against interest rate changes, agree on an interest rate to be paid, at a specified settlement date, on a notional amount of principal that is never exchanged. FRAs are settled by net cash payments. The only payment that takes place is related to the difference between the agreed

forward rate agreement rate and the prevailing market rate at the time of settlement. The buyer of the forward rate agreement receives payment from the seller if the prevailing rate exceeds the agreed rate; the seller receives payment if the prevailing rate is lower than the agreed rate.

- c. A foreign exchange swap is a spot sale/purchase of currencies and a simultaneous forward purchase/sale of the same currencies.
- d. A forward foreign exchange contract involves two counterparties who agree to transact in foreign currencies at an agreed exchange rate in a specified amount at some agreed future date.
- e. A cross-currency interest rate swap, sometimes known as a currency swap, involves an exchange of cash flows related to interest payments and an exchange of principal amounts at an agreed exchange rate at the end of the contract.
- 12.133 When a contract requires ongoing servicing (such as payments in an interest rate swap) and a cash payment is received, there is a decrease (increase) in a financial derivative asset (liability) if, at the time of the payment, the contract is in an asset (liability) position. If compilers are unable to implement this approach because of market practice, all cash receipts should be recorded as reductions in financial assets, and all cash payments should be recorded as decreases in liabilities. There might also be an exchange of principal at the beginning of the contract and, in these circumstances, there may be subsequent repayments, which include both interest and principal, over time according to the predetermined rules. Streams of net settlement payments resulting from swap arrangements are to be recorded as transactions in financial derivatives and repayments of principal are to be recorded under the relevant instrument item in the financial account.
- 12.134 For financial derivative contracts involving foreign currency, such as currency swaps, it is necessary to distinguish between a transaction in a financial derivative contract and transactions in the underlying currencies. At inception, the parties' exchange of the underlying financial instruments is usually classified under deposits. At the time of settlement, the difference in the values, as measured in the unit of account at the prevailing exchange rate, of the currencies swapped are allocated to a transaction in a financial derivative, with the values swapped recorded in the relevant other item (usually other investment).

#### Credit derivatives

12.12312.135 The financial derivatives described in the previous paragraphs are related to market risk, which pertains to changes in the market prices of securities, commodities, interest and exchange rates. Credit derivatives are financial derivatives whose primary purpose is to trade credit risk. They are designed for trading in loan and security default risk. Under a credit default swap, premiums are paid in return for a cash payment in the event of a default by the debtor of the underlying instrument. Credit derivatives take the form of both forward-type and option-type contracts and like other financial derivatives, they are frequently drawn up under standard master legal agreements and involve collateral and margining procedures, which allow for a means to make a market valuation.

#### Margins

12.136 Margins are payments of cash or deposits of collateral that cover actual or potential obligations incurred. The required provision of margin reflects market concern over counterparty risk and is standard in financial derivative markets, especially futures and exchange-traded options. Ownership of the margin remains with the unit that deposited it. Margin payments in cash are classified as deposits (if the debtor's liabilities are included in broad money), loans, or other accounts receivable/payable. When a repayable margin deposit is made in a non-cash asset (such as securities), no transaction is recorded because no change in economic ownership has occurred. In organised exchanges and clearing houses, margins are increased or decreased as a result of settling profits/losses of the derivative contracts by marking them to market value often on a daily or intraday basis; they are recorded as an increase or decrease in deposits, loans, or other accounts receivable/payable with a corresponding entry in a decrease in financial derivative assets or liabilities. If the margin falls short of a required level (often called a maintenance margin), an additional margin must be posted to meet the requirement; this payment is not to settle a financial derivative contract and should not be recorded in financial derivatives. Margins are payments of eash or collateral that cover actual or potential obligations under financial derivatives, especially futures or exchange traded options. Repayable margins consist of deposits or other collateral deposited to protect a counterparty against default risk, but that remain under the ownership of the unit that placed the margins. Although its use may be restricted, a deposit is classified as repayable if the depositor retains the risks and rewards of ownership. Repayable margin payments in cash are transactions in deposits, not transactions in a financial derivative. The depositor has a claim on the exchange or other institution holding the deposit. Some compilers may prefer to classify these margins within other accounts receivable or payable in order to reserve the term deposits for monetary aggregates. When repayable margin payments are made in non-cash assets, such as securities, no entries are required because the entity on whom the depositor has a claim (the issuer of the security) is unchanged. Nonrepayable margins reduce a financial liability created under a financial derivative contract. The entity that pays a non-repayable margin no longer retains ownership of the margin nor has the right to the risks and rewards of ownership, such as the receipt of income or exposure to holding gains and losses. A payment of a non-repayable margin is normally recorded as a decline in currency and deposits with a counter entry in the reduction in financial derivative liabilities and the receipt of a non-repayable margin is recorded as an increase of holdings of currency and deposits with the counter entry in the reduction in financial derivative assets.

#### 12.137 Financial derivatives should be broken down by type of market risk, as follows:

- foreign exchange derivatives;
- single currency interest rate derivatives;
- equity derivatives;
- credit derivatives; and
- other derivatives.

#### 12.138 In addition, the following breakdowns are encouraged as supplementary items:

• By instrument, as follows:

- o forwards;
- <u>o options;</u>
- o credit derivatives; and
- o other and hybrid derivatives

• By trading venue, as follows:

- o exchange-traded derivatives;
- o Over-the-counter derivatives;
- o cleared derivatives; and
- o non-cleared (over-the-counter) derivatives.

<u>12.12412.139</u> It may also be considered useful to compile data on the currency composition of the notional values of the derivatives linked to foreign currencies.

# **Employee stock options (ESOs)**

- 12.140 An employee stock option is an agreement made on a given date (the "grant" date) under which an employee may purchase a given number of shares of the employer's stock at a stated price (the "strike" price) either at a stated time (the "vesting" date) or within a period of time (the "exercise" period) immediately following the vesting date. The exercise date is the time at which the option is exercised. It cannot be earlier than the vesting date or later than the end of the exercise period. Transactions in employee stock options are recorded in the financial account as the counterpart to the element of <u>compensationremuneration</u> of employees represented by the value of the stock option. The means of valuing and time of recording ESOs is discussed in part 6 of chapter 17.
- <u>12.12512.141</u> Chapter 25 contains a more detailed discussion on the classifications and (time of) recording of financial derivatives and employee stock options, including related financial instruments.

#### 8. Other accounts receivable or payable

#### Trade credit and advances

12.142 This category comprises trade credit for goods and services extended to corporations, government, NPISHs, households and the rest of the world, and advances for work that is in progress (if classified as such under inventories) or is to be undertaken. Trade credits and advances do not include loans to finance trade credit, which are classified as loans. It may be valuable to separate short-term trade credits and advances from long-term trade credit and advances by employing the same criteria used to distinguish between other short- and long-term financial assets.

12.12612.143 For the recording of factoring, see paragraph 12.xxx.

#### Emission permits

12.144 An emissions permit (cap-and-trade) system is a flexible market mechanism that establishes a maximum level of pollution - a cap. Enterprises must have a permit to cover each unit of pollution they produce. Each permit stipulates the amount of greenhouse gas emissions that can be emitted (quota). Payments for such emission permits are recorded as prepaid taxes on production, with taxes recorded at the time of surrender, at issuance prices. As such, they qualify as a category of other accounts receivable and payable.

#### Other

12.145 This category includes accounts receivable and payable, other than those described previously, that is the amounts are not related to the provision of goods and services. It covers amounts related to taxes, dividends, purchases and sales of securities, rent, wages and salaries, and social contributions. Interest that accrues but is not paid is included in this item only if the accrued interest is not added to the value of the asset on which the interest is payable (as is usually the case).

<u>12.127</u><u>12.146</u> This category does not include statistical discrepancies.

# 9. <u>SupplementaryMemorandum</u> items

#### Foreign direct investment

12.12812.147 Transactions in financial assets and liabilities arising from the provision of, or receipt of, foreign direct investment are to be recorded under the appropriate categories: debt securities, loans, equity, trade credit or other. However, it is encouraged to also record the amounts of foreign direct investment included within each of those categories should also be recorded separately as memorandum supplementary items. Foreign direct investment is discussed further in chapter <u>33s 17 and 24</u>.

# Non-performing loans

<u>12.148</u> It is useful to identify transactions relating to non-performing loans as <u>memorandumsupplementary</u> items. There is a discussion of the definition of and recording for non-performing loans in chapter <u>1314</u>. In addition, when they are important it may be useful to group all arrears of interest and repayment under a <u>memorandumsupplementary</u> item. The recording of provisions, among which those related to non-performing loans, including arrears of interest and repayment, is also discussed in chapter <u>14</u>.

# Sustainable finance

- 12.149Two primary types of sustainable finance are defined: ESG (Environmental, Social, Governance) finance and<br/>green finance with green finance being a sub-set of ESG finance. ESG finance is finance for activities or<br/>projects that sustain or improve the condition of the environment or society or governance practices. Green<br/>finance is finance for activities or projects that sustain or improve the condition of the environment.
- 12.129
   12.150
   Countries are encouraged to compile measures of ESG finance and green finance as of which items for the following financial instruments: debt securities, loans, equity, and investment fund shares/units. For more information, see chapter 35.



# National Statistician's Committee for Advice on Standards for Economic Statistics

NSCASE October 2024 – Chapter 12 NSCASE Meeting Minutes

# System of National Accounts 2025 – Chapter 12: Financial Account

- 1. Mairi and the Chair led the discussion on this paper.
- 2. Richard informed the Committee that the ONS comments raised that there was significant repetition between Chapter 12 and Chapter 25: Selected issues in financial instruments. He suggested the repetition could be resolved through cross-referencing or merging the chapters. The chapter also confronted crypto assets, it stated that stable coins and other crypto currencies which were backed by real currency were classified in the financial account. However, not all stable coins were fully backed by their currency of denomination and he noted there was potential for a stable coin to be part backed by a real currency and part backed by Bitcoin. He questioned how the accounts would classify this. ONS also responded that the general presence of financial codes would have improved the usability for compilers in this area. Paragraph 12.45 also caused confusion around gold. Richard added that the consultation process had been difficult as they had not had full sight of the tables that were to be included.
- 3. Mairi observed that the editors were spreading the supplementary items throughout all of the separate financial instruments which was different from other chapters. She noted there was a significant amount of choice and optional items in the chapter for countries to adopt based on what was most relevant. She agreed with Richard's point on repetition and saw the value in an argument to merge the chapters, especially if there was a need for specification of all the different supplementary items. She noted the chapter covered a lot about the risk attached to certain types of financial assets and questioned whether trying to help countries understand their financial stability was within the scope of the SNA. She questioned whether this might be better placed in an IMF-type handbook.
- 4. She asked whether the next edition would include the tables. Cliodhna agreed it should. She also raised, on innovation around crypto, how the SNA would be fit for purpose for the next 15 years when crypto assets were not novel. Similarly, on the final supplementary item on the green economy and ESG, she noted that green finance or the terminology around green finance might not be relevant and suitable long-term.
- 5. The Chair added that the chapter would benefit from clarification that gold coin, even if legal tender, was not monetary gold. Secondly, he said that the chapter noted gold as the only financial asset without a corresponding liability. The Chair suggested that paper currency also did not have a matching liability.
- 6. Robert noted that, on paper currency, there would be a claim on the central bank if one exchanged local for foreign currency. Also, a non-resident could exchange



the currency for a resource in the economy, such as goods and services; therefore a liability would be involved. The Chair argued that if a commercial bank was prepared to trade in currency, that did not equate to a corresponding liability as they were also prepared to trade in gold, for example.

- 7. The Chair also expressed concerns that there was no reference to share buybacks. He questioned when something was a financial transaction and when was it property income. He asked whether there was any interest in reclassifying regular transactions as current rather than capital; thus regular buy-backs would be reclassified as dividends. Robert suggested this would be an exchange of a financial assets, which was why it would not be a dividend. The Chair responded that if it were a repeated transaction, it would be akin to making a transfer of property income.
- 8. Nick asked how the ONS currently score share buybacks.
- 9. Perry answered that they were in the financial account and the Bank received information from the London Stock Exchange on share buybacks, which were treated as disposal of equity.
- 10. The Chair asked if Perry was aware of any companies that received buybacks on a regular pattern. Perry answered that a lot of the largest oil companies did.
- 11. Mairi asked if Perry wanted to raise any other concerns on this chapter.
- 12. Perry noted that gold was a contentious issue that has circulated frequently and there was confusion over allocated and unallocated accounts. He suggested that there has been interpretation of a claim of unallocated accounts; he did not think there was a physical asset that was unallocated gold but it could give a claim on potential delivery, but this was only an interpretation. He stated he did not have major concerns.
- 13. Paul raised comments on section 5 on consolidation. The SNA discouraged consolidation and netting but thought the language should be stronger. He appreciated that as a guidance document, it should set standards. Mairi agreed and noted that ONS points raised the same concern.
- 14. Robert disagreed with paragraph 12.5 on shares and other equities. It said the liability was established when one unit was obliged under specific circumstances to provide payments and this included shares. He noted there was no obligation under shares to provide payment so the sentence should be deleted but he understood that this impacted the definition of financial assets in which equity was assumed as a liability. He argued that the BPM6 defined it better.
- 15. Robert highlighted that paragraph 12.70 emphasised medium of exchange but this phrase was not defined. He stressed his view that crypto without a liability should be classed as a financial instrument within the capital account, as a financial valuable. He suggested that gold, traded between financial institutions, could be classified in the same way. He pointed out that paragraph 12.87 stated if a factor bought an account payable or receivable then it would be reclassified as a loan but it was unclear how the debtor would know it was reclassified. This



could lead to inconsistency between the debtor and the factor creditor. On 12.107 on investment funds, Robert questioned why the text removed real estate as a possible asset underlying an investment fund.

- 16. Robert also referred to Mairi's point on financial stability. He stated that most of the statistics had been developed for macroeconomic policy making rather than financial stability purposes.
- 17. Richard thanked the Committee for their comments. He added, on Robert's points on real estate, that he thought the SNA tried to include real estate and other things into 'certain non-financial assets' but in fact it made it less clear. He added, on emissions permits, that the UK wanted to treat them as a non-financial asset but because they were a tax they should be treated slightly differently.
- 18. Rebecca Richmond added that comments on real estate investment trusts were also picked up by other countries.

# Chapter 13: Other changes in assets and liabilities accounts (revised title)

# (OLD Chapter 12: The other changes in assets accounts)

# A. Introduction

- 13.1 This chapter is concerned with the recording of changes in the values of assets and liabilities, and thus of the changes in net worth, between opening and closing balance sheets that result from flows that are not transactions, referred to as other flows. Transactions in assets and liabilities and the immediate consequences of transactions on net worth are recorded in the capital account and financial account. The change in the value of <u>produced\_non-financial</u> assets resulting from <u>consumption of fixed capital\_depreciation and depletion as well those resulting and</u> from recurrent losses from inventories are treated as transactions and so do not appear in the other changes in assets <u>and liabilities</u> accounts.
- 13.2 Although the entries relate to flows that are not transactions, they are not "residual" entries. Rather they serve to demonstrate significant changes in the value and composition of items between the opening and closing balance sheets due to other events.
- 13.3 The entries in the other changes in assets <u>and liabilities</u> accounts cover many different kinds of changes in assets, liabilities and net worth. Some of these are particular to the type of asset concerned, some may apply to all types of assets <u>and liabilities</u>. All changes relating to holding gains and losses are included in the revaluation account. Holding gains and losses arise from changes over time in the level <u>and structure</u> of prices, <u>including those arising from changes in currency rates for assets and liabilities expressed in foreign currency</u>. All other changes in the value of assets <u>and liabilities</u> are treated as being due to a change in volume due to quality change rather than due to changes in prices and are recorded in the other changes in the volume of assets <u>and liabilities</u> account. This includes changes in value that result instantaneously, for example, from a reclassification of an asset or from other one-off events.
- 13.4 The chapter discusses the two accounts in turn, beginning with the other changes in the volume of assets and <u>liabilities</u> account and proceeding to the revaluation account. Under each account, the entries for each type of asset are discussed separately.

# B. The other changes in the volume of assets and liabilities account

13.5 The other changes in the volume of assets and liabilities account records the changes in assets, liabilities, and net worth between opening and closing balance sheets that are due neither to transactions between institutional units, as recorded in the capital and financial accounts, nor to holding gains and losses as recorded in the revaluation account. The format of the other changes in the volume of assets and liabilities account, shown in table 4213.1, is similar to that of the other accumulation accounts. The entries for changes in assets are on the left and the entries for changes in liabilities are on the right. Non-financial assets, both produced and non-produced, and financial assets are shown separately. The balancing item in the account, the change in net worth due to other changes in <u>the</u> volume of assets. and <u>liabilities</u>, is the excess of the sum of the changes in assets over the sum of the changes in liabilities recorded in the account and is shown on the right-hand side of the account.

 Table 132.1: The other changes in the volume of assets and liabilities account - concise form - transactionschanges in assets

 Table 132.1 (cont):\_The other changes in the volume of assets and liabilities\_account - concise form - transactionschanges in liabilities and net worth

# 1. Functions of the other changes in the volume of assets and liabilities account

- 13.6 In the capital account, produced assets enter and leave the <u>integrated framework of national accountsSNA</u> through acquisition less disposal of fixed assets, <u>consumption of fixed capitaldepreciation</u> and additions to, withdrawals from and recurrent losses from inventories. <u>In addition, the capital account also records the depletion of natural resources</u>. In the financial account, most financial assets enter the <u>integrated framework</u> <u>of national accountsSNA</u> when the debtor acquires something of value and accepts the obligation to make payment, or payments, to the creditor. Financial assets are extinguished when the debtor has fulfilled the financial obligation under the terms of the agreement.
- 13.7 Both the capital and financial accounts also record transactions in existing assets <u>and liabilities</u> among the institutional sectors. However, these acquisitions and disposals merely change the ownership of the assets without changing the total net worth for the economy as a whole except where the transactions are between residents and the rest of the world.
- 13.8 One important function of the other changes in the volume of assets <u>and liabilities</u> account is to allow certain assets to enter and leave the <u>integrated framework of national accountsSNA</u> other than by transactions. The acts of entering and exiting from the balance sheet are referred to as economic appearances and disappearances. Some entrances and exits happen when naturally occurring assets, such as subsoil assets, gain economic value or become worthless. Such entrances and exits come about as interactions between institutional units and nature, thus contrasting with entrances and exits that come about as a result of transactions, which typically are interactions by mutual agreement between institutional units. Yet other entrances and exits may also relate to assets created by human activity, such as valuables, purchased goodwill or gold.
- 13.9 A second function of the account is to record the effects of exceptional, unanticipated events that affect the economic benefits derivable from assets (and corresponding liabilities). These occurrences are referred to as the effect of external events. They include one institutional unit's effectively removing an asset from its owner without the owner's agreement, an action that is not considered a transaction because the element of mutual agreement is absent. These events also include those that destroy assets, such as natural disaster or war.
- 13.10 A third function of the account is to record changes in classifications of institutional units<u>and</u> assets <u>and</u> <u>liabilities</u>, and in the structure of institutional units.
- 13.11 The three sections that follow discuss first the recording of the economic appearance and disappearance of assets <u>and liabilities</u>, then the effects of external events on the value of assets and finally changes in the classification and structure of assets.

#### 2. Appearance and disappearance of assets <u>and liabilities</u> other than by transactions

- 13.12 Entries relating to the appearance and disappearance of assets <u>and liabilities</u> can be grouped according to the main type of asset under consideration as follows:
  - a. entries relating to recognition of produced assets;
  - b. entries relating to entry and exit from the asset boundary of natural resources, with the exception of <u>depletion;</u>
  - c. entries relating to contracts, leases and licences;
  - d. changes in <u>purchased</u> goodwill and marketing assets; and
  - e. entries relating to financial assets and liabilities.

Table  $\frac{1213}{2}$ .2 shows a disaggregation of table  $\frac{1213}{2}$ .1 including the various entries for economic appearance and disappearance of assets and liabilities.

#### Economic recognition of produced assets

- 13.13 Two types of assets can appear under this item: public monuments and valuables. As was described in chapter 1011, public monuments are objects, structures or sites of significant or special value. Valuables are items held as stores of value because their value is expected to appreciate, or at least not depreciate, over time. The capital account records the acquisition of valuables and public monuments when these are newly produced goods or imported and it records transactions in existing goods already classified as valuables and public monuments.
- 13.14 However, existing goods, valuables and public monuments may not already have been recorded in the balance sheets for any of several reasons; they may date from a time before the time period covered by the accounts, they were originally recorded as consumption goods or, if structures, they have already been written off.

#### Public monuments

13.15 Public monuments are included with dwellings and with other buildings and structures in the classification of fixed assets. When the special archaeological, historical or cultural significance of a structure or site not already recorded in the balance sheet is first recognized, it is classified as an economic appearance and recorded in the other changes in the volume of assets and liabilities account. For example, such recognition might be accorded to an existing structure or site that is fully written off and thus no longer recorded in the balance sheet. Alternatively, a structure or site that is already within the asset boundary but is new or only partially written off, then its recognition as a public monument is recorded as an economic appearance of an asset. If it was previously classified as another type of asset, it is recorded as a reclassification of an asset (discussed below) and if at the same time a new valuation is placed on the monument, this increase in value is recorded under economic appearance. If the reclassification occurs at the time of a sale of the asset, for example the acquisition of an asset by general government, this acquisition is recorded in the capital account as normal.

#### Valuables

13.16 For valuables, such as precious stones, antiques and other art objects, when the high value or artistic significance of an object not already recorded in the balance sheet is first recognized, it is classified as an economic appearance. Hitherto, the object may have been of little value and not considered an asset. For example, the item might have been considered an ordinary good whose purchase had been included in household final consumption expenditure or been regarded as a consumer durable. Recognition of its worth as a store of value leads to its entrance into the balance sheet as a valuable. The recognition of the value of a previously unvalued item is often associated with a sale (for example at auction). The sale is recorded in the capital account as the sale and purchase of a valuable, it having been entered first into the balance sheet of the seller.

# Entry of natural resources into the asset boundary

Discoveries and upwards reappraisals of *subsoilmineral and energy* resources

- 13.17 In the SNA, <u>non-renewable mineral and energy resourcessubsoil assets</u> are defined as those proven subsoil resources of coal, oil and natural gas, of metallic minerals or of non-metallic minerals that are economically exploitable, given current technology and relative prices. <u>This coincides with commercially recoverable resources (class A of SEEA 2012 Central Framework, which is based on the United Nations Framework Classification for Fossil Energy and Mineral Resources (UNFC) 2009).</u> The capital account records <u>depletion as well as</u> acquisitions <u>lessand</u> disposals <u>among sectors</u> of the resources that exist under those conditions. The other changes in the volume of assets <u>and liabilities</u> account, in contrast, records increases <u>due to discoveries and reappraisals-and decreases that change the total volume for the economy as a whole</u>.
- <u>13.18</u> One way in which the resources may increase is by the discovery of new exploitable deposits, whether as a result of systematic scientific explorations or surveys or by chance. Economic appearance may also occur because resources may be increased by the inclusion of deposits for which exploitation was previously

uneconomic but becomes economic as a result of technological progress or relative price changes. In practice, the economic appearance of these resources can be approximated by those resources for which permissions to exploit have been granted, and/or those for which the existence is explicitly recognised by (past) monetary transactions. Resources for which permissions have been granted would thus come into existence, via other changes in the volume of assets, in the accounts of the lessor (usually government), and the accounts of the lessee (i.e., the extractor) in line with the appropriation of the net present value of the future resource rents.

13.18 Renewable energy resources may come into existence by exploiting new opportunities to generate electricity through wind turbines, solar panels, and the like. This may result in an increased value of the land, which would typically be reflected in the underlying value of the land. However, if the underlying value of land has not been recognised and valued as an economic asset (e.g., public land) or does not become apparent through market transactions, or land is not involved (e.g., the exploitation of wind turbines on open seas), the value of the renewable energy resource is to be calculated using the net present value of future resource rents. In all cases, the increase in the value of these assets is to be recorded as an other change in the volume of <u>assets</u>.

#### Natural growth of uncultivated biological resources

- 13.1913.20 The natural growth of uncultivated biological resources, such as natural forests and fish stocksfish in open seas, may take various forms: a stand of natural timber may grow taller, or fish in the estuaries may take the form of fish becominge more numerous. Although these resources are economic assets, growth of this kind is not under the direct control, responsibility and management of an institutional unit and thus is not treated as production. The increment in the asset must then be regarded as an economic appearance, and it is recorded in the other changes in the volume of assets account
- 13.2013.21 The value of these biological resources may consist of two elements: the natural growth of fish itself, and the value of the underlying asset (i.e., the geographical area through which the fish migrates). In the latter case, the value is often encapsulated in the value of the quota put in place. If the levels of extraction are lower than the sustainable levels, then the regenerative potential of the underlying asset will increase, while it will decrease if the levels of extraction surpass sustainable yields. The latter is treated as depletion, to be recorded as a cost of production. If levels of extraction are lower than sustainable yields, this is to be recorded as negative depletion. Only the natural growth of fish will thus be treated as other changes in the volume of assets. In principle, natural growth should be recorded gross, and the depletion of these resources should be recorded as economic disappearance, as described below. This recording would be consistent with the separate recording of acquisitions and disposals described in the capital account. In practice, however, many countries will record natural growth net because the physical measures that are likely to be the only basis available for the recording are, in effect, net measures. These measures may be used in conjunction with a market price for a unit of the asset to estimate the value of the volume change to be recorded.

#### Transfers of other <u>non-produced</u> natural resources to economic activity

- 13.21<u>13.22</u> Not all land included in the geographic surface area of a country is necessarily within the asset boundary of the SNA. Land may make its economic appearance when it is transferred from a wild or waste state to one in which ownership may be established and the land can be put to economic use. It may also acquire value because of activity in the vicinity, for example, land that becomes more desirable and thus more valuable because a new development is established nearby or the creation of an access road. The cost of land improvements, affecting the parcel of land being considered directly, is treated as gross fixed capital formation, recorded as land improvements and subsequently subject to eonsumption of fixed eapitaldepreciation. Any excess in the increase in value of the land over the value of land improvements or any increase due to adjacent capital activity is recorded as economic appearance.
- 13.23 For other (non-produced) natural resources, the first substantial market appearance, generally involving commercial exploitation, is the reference point for recording in this account. For virgin forests, gathering firewood is not commercial exploitation, but large scale harvesting of a virgin forest for timber is and brings the forest into the asset boundary. SimilarlyFor example, drawing water from a natural spring does not bring an aquifer into the asset boundary of the SNA, but a significant diversion of groundwater does. A move to

charge for regular extraction from a body of surface water may also bring a water resource into the balance sheet. Another example relates to the appearance of rights to use natural resources in the form of radio spectra.

#### Quality changes in natural resources due to changes in economic uses

13.22<u>13.24</u> The SNA, in general, treats differences in quality\_as differences in volume. As explained with respect to goods and services in chapter <u>1518</u>, different qualities reflect different use values (and in the case of goods and services, different resource costs). Different qualities are, therefore, economically different from each other. The same principle applies to <u>non-financial</u> assets. The quality changes recorded here occur as the simultaneous counterparts of the changes in economic use that are shown as changes in classification, as described below. For example, the reclassification of cultivated land to land underlying buildings may result in a change of value as well as a change in classification. In this case, the asset is already within the asset boundary, and it is the change in quality of the asset due to changes in its economic use that is regarded as the appearance of additional amounts of the asset. Another example is that of livestock treated as capital formation, for example, dairy cattle, if they are sent to slaughter earlier than expected.

#### Exit of natural resources from the asset boundary

13.23 Exits of natural resources from the balance sheets are shown as negative entries on the left-hand side of the <u>other changes in the volume of assets and liabilities</u> account. Many of the possible entries are simply the negative alternative to the positive entries just discussed. <u>However, depletion of natural resources</u> is recorded as a cost of production.

#### *Extractions and dD*ownwards reappraisals of subsoil resources

- 13.26 Disregarding depletion (see below), #the changes recorded here are the negative analogues of gross additions to the level of exploitable subsoil resources that result from reassessments of exploitability because of changes in technology or relative prices. In practice, only net additions may be available, and these will be recorded under discoveries and upwards reappraisals of subsoil resources.
- 13.2413.27 Mitigation objectives related to climate change may lead to worldwide reductions in fossil fuel consumption, which may cause losses in the values of corresponding energy resources due to falls in commodity prices. In addition, downwardly bended extraction path projections may give rise to declining energy resource asset values. This phenomenon is also known as stranded assets. Such downward appraisals of the value of energy resources should be recorded as revaluations, not as other changes in the volume of assets. This also holds for related downward changes in the future extraction path.

#### **Depletion**

13.2513.28 The depletion of natural resources-covers the reduction in the value of deposits of subsoil assets as a result of the physical removal and using up of the assets..., in physical terms, represents the decrease in the quantity or value of the stock of a natural resource over an accounting period that is due to the extraction of the natural resource occurring at a level greater than that of regeneration; in monetary terms, it corresponds with the decline in future income, due to extraction, that can be earned from a resource. Depletion is recorded as a cost of production similar to depreciation, and not as an other change in the volume of assets. See also section I of chapter 7.

Table 1<u>3</u>2.2: The other changes in the volume of assets <u>and liabilities</u> accounts <u>—</u> changes in assets due to economic appearance and disappearance

Table 132.2 (cont):\_The other changes in the volume of assets <u>and liabilities</u> accounts — changes in liabilities and net worth due to economic appearance and disappearance

13.26 Harvesting of uncultivated biological resources

13.27

13.28 The depletion of natural forests, fish stocks in the open seas and other uncultivated biological resources included in the asset boundary as a result of harvesting, forest clearance, or other use beyond sustainable levels of extraction should be included here.

13.29

#### Transfers of other natural resources out of economic activity

13.3013.29 It is possible that some natural resources cease to be deployed in economic activity because of changing technology, or reduced demand for the resulting product or for legislative reasons, for example the suspension of fishing to ensure the survival of fish stocks.

#### Quality changes in natural resources due to changes in economic uses

- <u>13.31</u><u>13.30</u> The changes recorded here are the negative equivalent of the upward changes in volume associated with the changes in classification. For example, if a change in land use leads to reclassifying some land from cultivated land to communal grazing land, there <u>well</u>-may be a resulting change in the value of the land.
- 13.32\_13.31 All degradation of land, water resources and other natural assets caused by economic activity is recorded in the other changes in the volume of assets account. The degradation may be an anticipated result from regular economic activity ordue to less predictable erosion and other damage to land from deforestation or improper agricultural practices- should also be considered as a quality change, and thus recorded in the other changes in the volume of assets and liabilities account.

#### Initiation and cancellation of contracts, leases and licences

- 13.32 The contracts, leases and licences that can be treated as assets in their own right are all some form of transferable lease, contract or permit. They may relate to the use of a fixed asset under an operating lease, the use of a natural resource under a resource lease, a permit to undertake some specific economic activity or a service contract relating to future services to be provided by a named individual. Non-fungible tokens that grant limited commercial rights are also included under this category. However, in the case of certain natural resources, the relevant asset may already be accounted for as a natural resource (and not as a resource lease), as a result of allocating the natural resource to the lessor and lessee in line with the appropriation of the net present value of future resource rents.
- 13.33 Holding the operating lease, the resource lease, the permit or the service contract represents an asset for the holder only when two conditions hold:
  - a. the current prevailing price for the use of the asset, permit or provision of the service differs from the price specified in the contract or lease or paid for the permit, and
  - b. the holder of the lease, contract or permit can legally and practically realize this difference by subcontracting the lease or contract or on-selling the permit.

In practice, it is recommended to try to record such assets only when they are sold. In this case they are first recorded in the other changes in the volume of assets <u>and liabilities</u> account and subsequently form the basis of a transaction (or series of transactions) in the capital account.

13.34 The value of the contract, lease or licence treated as an asset is equal to the net present value of the excess of the prevailing price over the contract price. It will decline as the period of the agreement declines and the difference in price is no longer evident. Changes in the value of the contract, lease or licence due to changes in the prevailing price are recorded as revaluation; changes due to the expiration of the advantage given by the asset as the time over which it is valid are recorded as other changes in volume. There is more extensive discussion of the treatment of contracts, leases and licences in part 5 of chapter 1727.

# Entry of crypto asset without a corresponding liability designed to act as a medium of exchange

13.35 Crypto assets without a corresponding liability designed to act as a medium of exchange are considered nonproduced non-financial assets. As a consequence, the creation of such crypto assets is recorded as other changes in the volume of assets in the accounts of the unit where they appear for the first time. Any remuneration for the miners of these assets are treated as a validation types of service. Changes in the prices are to be recorded as holding gains and losses, in the revaluation account.

#### Changes in the value of purchased goodwill and marketing assets

- 13.3513.36 When an enterprise, whether a corporation, quasi-corporation or unincorporated enterprise, is sold, the price paid may not equal the sum of all the assets less the liabilities of the enterprise. The difference between the price paid and the sum of all the assets less liabilities is called the purchased goodwill and marketing assets of the enterprise. The value may be positive or negative (or zero). By its calculation and designation as an asset of the enterprise, the net worth of the enterprise at the moment it is bought is exactly zero, whatever the legal status of the enterprise.
- 13.3613.37 The value of purchased goodwill and marketing assets is calculated at the time of the sale, entered in the books of the seller in the other changes in the volume of assets and liabilities account and then exchanged as a transaction with the purchaser in the capital account. Thereafter the value of the purchased goodwill and marketing asset must be written down in the books of the purchaser via entries in the other changes in the volume of assets <u>and liabilities</u> account. Thereafter the value of the purchased goodwill and marketing asset must be written down in the books of the purchaser via entries in the other changes in the volume of assets <u>and liabilities</u> account. The rate at which it is written down should be in accordance with commercial accounting standards. These are typically conservative in the amount that may appear on the balance sheet of an enterprise and should be subject to an "impairment test" whereby an accountant can satisfy himself that the remaining value is likely to be realizable in case of a further sale of the enterprise.
- 13.37<u>13.38</u> Goodwill that is not evidenced by a sale or purchase is not considered an economic asset in the SNA. Exceptionally, a marketing asset may be subject to sale. When this is so, entries should be made for the buyer and the seller along the lines of those made for purchased goodwill and marketing assets when the entire enterprise is sold.

# Appearance and disappearance of financial assets and liabilities

- 13.38<u>1</u>3.39 Financial assets that are claims on other institutional units are created when the debtor accepts the obligation to make a payment, or payments, to the creditor in the future; they are extinguished when the debtor has fulfilled the obligation under the terms of the agreement. Monetary gold held in the form of gold bullion, however, cannot be created and extinguished in this way; hence when it becomes a reserve asset it enters the financial part of the balance sheet as a reclassification in the other changes in the volume of assets and liabilities account from valuables to monetary gold. (At the time it is acquired by a monetary authority it is first classified as a valuable.) The same recording is followed for allocated gold accounts that become part of monetary gold. When allocated gold accounts become reserve assets they are reclassified from currency and deposits to monetary gold, also in the other changes in the volume of assets and liabilities accounts. Gold bullion under reverse transactions (i.e., gold swaps), which is not readily available for meeting balance of payments financing needs, is also recorded as an other change in the volume of reserve assets; see also paragraph 12.46. Monetary gold may be sold to another monetary authority but otherwise any reduction in holdings follows a similar declassification path; the monetary gold is reclassified to be either a valuable (in the case of gold bullion) or currency and deposits (in the case of allocated gold accounts). Subsequent transactions, if and when they occur, are recorded in terms of valuables or currency and deposits and not in terms of monetary gold.
- 13.3913.40 Also recorded here are the effects of events not anticipated when the terms of financial claims were set.

#### Debt operations

- 13.4013.41 There are a number of circumstances that may lead to reduction or cancellation of debt by other than normal repayment of liabilities. The most common instances are described below.
- 13.41<u>13.42</u> A debtor and creditor may become parties to a bilateral agreement (often referred to as "debt forgiveness") that a financial claim no longer exists. Such an agreement gives rise in the <u>integrated framework</u> of <u>national accountsSNA</u> to the recording of a capital transfer payable or receivable (recorded in the capital account at the time the debt forgiveness occurs) and the simultaneous extinction of the claim (recorded in the financial account). Debt forgiveness usually concerns government debt. Some taxes and social security contributions that government recognizes as unlikely to be collected from the outset are excluded from tax and social security contribution receipts and so do not appear in the other changes in the volume of assets <u>and liabilities</u> account.
- 13.4213.43 Changes in claims resulting from debt assumption or rescheduling should be reflected in the financial account when the terms of the debt contract (maturity, interest rate, etc.) change, or when the institutional sector of the creditor or debtor changes, as these are considered new contractual arrangements. However, all other changes in claims resulting from write-offs and write-downs are excluded from the financial account because there is no mutual agreement between the parties. Specifically, a creditor may recognize that a financial claim can no longer be collected because of bankruptcy, liquidation or other factors for which there is public evidence of loan deterioration, and he may remove the claim from his balance sheet. This recognition (by the creditor) should be accounted for in the other changes in the volume of assets and liabilities account. (The corresponding liability must also be removed from the balance sheet of the debtor to maintain balance in the accounts of the total economy.)
- 13.4313.44 Most commercial situations where the impossibility of debt collection is recognized are treated as unilateral cancellation of debt. Unilateral cancellation of a financial claim by a debtor (debt repudiation) is not recognized in the SNA. Write-downs that reflect <u>changes in</u> the actual market values of financial assets should be accounted for in the revaluation account. However, changes in value that are imposed solely to meet regulatory, supervisory or accounting requirements do not reflect the actual market values of those financial assets and should not be recorded in the SNA.
- 13.44<u>13.45</u> Another debt-related operation that raises questions as to how it should be recorded in the <u>integrated</u> framework of national accountsSNA relates to debt defeasance. Debt defeasance allows a debtor (whose debts are generally in the form of debt securities and loans) to remove certain liabilities from the balance sheet by pairing irrevocably assets of equal value to the liabilities. Subsequent to the defeasance, neither the assets nor the liabilities are included in the balance sheet of the debtor, nor, frequently, need they be reported for statistical purposes. Defeasance may be carried out either by placing the paired assets and liabilities in a trust account within the institutional unit concerned, or by transferring them to another institutional unit. In the former case, no entry is recorded for defeasance and the assets and liabilities are moved to the second institutional unit are recorded in the financial account of the units concerned and reported in the balance sheet of the unit that holds the assets and liabilities. Therefore, debt defeasance as such never results in <u>assets and</u> liabilities being removed from the SNA, although it sometimes leads to a change in the institutional unit that reports those <u>assets and</u> liabilities.

## Creation and *exhaustion*<u>expiration</u> of financial derivatives

<u>13.45</u> Typically there are no entries in the other change in the volume of assets accounts for financial derivatives. Financial derivatives appear in the financial account when an agreement is reached between the two parties concerned. Employee stock options are similarly recorded in the same account at the grant date. They then may be subject to transactions in the financial account. When the agreement described in the derivative is activated, or it lapses because the time period is exhausted, the value of the derivative becomes zero and the change in value is shown in the revaluation account.

13.4613.47 If the amount payable under a derivative remains due for payment after the derivative matures, the

amount due no longer represents a derivative as there is no longer any risk associated with it. It is therefore reclassified as an other account receivable or payable.

#### 3. The effect of external events on the value of assets and liabilities

13.47<u>13.48</u> There are three principal causes of the reduction in value of an asset (and related liability), or even its total disappearance, that are not related to the nature of the asset but to conditions prevailing in the economy that impact either the value or ownership of assets. These are catastrophic losses, uncompensated seizures and other volume changes in volume not elsewhere classified of assets. Each is discussed below. Table <u>1213</u>.3 shows an expansion of table <u>1213</u>.1 to include entries for these events.

Table 1<u>3</u>2.3: The other changes in the volume of assets <u>and liabilities</u> account - changes in assets due to external events

Table 123.3 (cont): The other changes in the volume of assets <u>and liabilities</u> account - changes in liabilities due to external events

#### **Catastrophic losses**

- 13.4813.49 The volume changes recorded as catastrophic losses in the other changes in the volume of assets and liabilities account are the result of large scale, discrete and recognizable events that may destroy a significantly large number of assets within any of the asset categories. Such events will generally be easy to identify. They include major earthquakes, volcanic eruptions, tidal waves, exceptionally severe hurricanes, drought and other natural disasters; acts of war, riots and other political events; and technological accidents such as major toxic spills or release of radioactive particles into the air. Included here are such major losses as deterioration in the quality of land caused by abnormal flooding or wind damage; destruction of <del>cultivated</del> <del>assetsbiological resources</del> by <u>forest fires</u>, drought or outbreaks of disease; destruction of buildings, equipment or valuables in <u>flooding</u>, forest fires or earthquakes.
- 13.4913.50 Catastrophic losses of financial assets are less common but where evidence of ownership depends on written records and these records are destroyed, it may not be possible to re-establish ownership. Accidental destruction of currency or bearer securities may result from a natural catastrophe or political events.

#### **Uncompensated seizures**

- 13.5013.51 Governments or other institutional units may take possession of the assets of other institutional units, including non-resident units, without full compensation for reasons other than the payment of taxes, fines, or similar levies. If the compensation falls substantially short of the values of the assets as shown in the balance sheet, the difference should be recorded as an increase in assets for the institutional unit doing the seizing and a decrease in assets for the institutional unit losing the asset under the entry for uncompensated seizures of assets.
- 13.5113.52 It should be noted that foreclosures and repossessions of goods by creditors are not treated as uncompensated seizures. They are treated as transactions, specifically as disposals by debtors and acquisitions by creditors, because, explicitly or by general understanding, the agreement between debtor and creditor provided this avenue of recourse.

#### Other changes in volume n.e.c.

13.5213.53 The value of a fixed asset is continually reduced by the <u>consumption of fixed capitaldepreciation</u> until the asset is disposed of or has no remaining value. It is possible, though, for the assumptions underlying the calculation of <u>consumption of fixed capitaldepreciation</u> to be mistaken and when this is so, corrections need to be made in the other changes in the volume of assets <u>and liabilities</u> account. Similarly, if the assumption about the rate of shrinkage of inventories is mistaken, this should also be corrected in the other changes in the volume of assets <u>and liabilities</u> account. The financial assets and liabilities that can be affected by volume change are some of the reserves for insurance, pension and standardized guarantee schemes. There is further discussion of this in <u>parts 1, 2 and 3 of chapters</u> <u>1724</u> and 25.

#### Fixed assets

- 13.5313.54 The calculation of the consumption of fixed capital<u>depreciation</u> reflects an assumption about normal rates of physical deterioration, obsolescence and accidental damage. Each of these assumptions may prove to be faulty. In that case, an adjustment in the other changes in the volume of assets <u>and liabilities</u> account must be made. In principle, revised assumptions, reflecting the new circumstances, should then be used to calculate <u>consumption of fixed capitaldepreciation</u> for the remainder of the asset's useful life. If this is not done, continual adjustment in the other changes in the volume of assets <u>and liabilities</u> account is necessary and the measure of net value added in subsequent years is overstated.
- 13.54<u>13.55</u> Physical deterioration may include the effect of unforeseen environmental degradation on fixed assets. Entries must, therefore, be made in the other changes in the volume of assets <u>and liabilities</u> account for the decline in the value of the fixed assets from, for example, the effects of acidity in the air and acid rain on building surfaces or vehicle bodies.
- <u>13.56</u> The introduction of improved technology such as improved models of the asset or of a new production process that no longer requires the asset may lead to unforeseen obsolescence. In consequence, the amount included for their previously expected obsolescence may fall short of the actual obsolescence.
- 13.5513.57 Military weapons systems comprising vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc. are used continuously in the production of defence services, even if their peacetime use is simply to provide deterrence. Depreciation of these systems is typically based on its use in peacetime. More than expected decreases in value, due to their use and destruction in war times, should be recorded as other changes in the volume of assets.
- 13.5613.58 More generally, Fthe amount included for normally expected damage may fall short of the actual damage. For the economy as a whole, this difference should normally be small; for individual units this difference may be significant and may fluctuate in sign. Adjustments must therefore be made in the other changes in the volume of assets and liabilities account for the decline in the value of the fixed assets due to these events. These losses are larger than normal, but are not on a scale sufficiently large to be considered catastrophic.
- 13.57<u>13.59</u> As explained in chapter 10<u>11</u>, costs of ownership transfer should be written off over the expected time the asset will be in the possession of the purchaser. If the asset is disposed of before the costs of ownership transfer are completely written off, the remainder should also be recorded in the other changes in the volume of assets and liabilities account.
- 13.5813.60 It is possible that the initial assumptions on any or all of these conditions were overcautious. If that proves to be so, then an upward revision to the value of the asset should be made rather than a downward one.
- 13.59
   Production facilities with long construction periods may cease to have an economic rationale before they are complete or are put into service. For example, a nuclear power plant or industrial site may never be put into service. When the decision to abandon is made, the value of the fixed asset (or in some case, work-in-progress inventories, as explained in chapter 1011), as recorded in the balance sheet should be written off in the other changes in the volume of assets and liabilities account.

#### Exceptional losses in inventories

<u>13.62</u> Exceptional losses from fire damage, from robberies, from insect infestation of grain stores, from an unusually high level of disease in livestock, etc., should be recorded here. In this context, exceptional losses indicate that the losses are not only large in value but also irregular in occurrence. Even very large losses, if

they occur regularly, should be taken into account when calculating the change in inventories calculated for entry in the capital account as explained in chapter <u>1011</u>.

# Natural resources

13.6013.63 The valuation of natural resources is typically based on the net present value of expected future resource rents. The calculation of these values relies on a number of assumptions, such as the expected path of extractions, the discount rate, etc. Changes in these assumptions, not driven by changes in expected resource rents as a result of, for example, changes in the longer term expectations of commodity prices or price changes in the costs of extraction, should be recorded as other changes in the volume of assets. However, the stranding of assets due to changes in commodity prices should generally be recorded as revaluations; see paragraph 13.27.

#### Life insurance and annuities entitlements

13.61<u>13.64</u> For an annuity, the relationship between premiums and benefits is usually determined when the contract is entered into, taking account of mortality data available at that time. Any subsequent changes will affect the liability of the annuity provider towards the beneficiary and the consequences are recorded here.

#### Pension entitlements

- 13.6213.65 The changes in the volume of reserves for pension entitlements apply to defined benefit schemes, those where the pension to be provided is determined wholly or in part by a formula. No such adjustments are needed for defined contribution schemes where the benefits are determined solely in terms of the investment earnings on contributions fed into the scheme.
- The exact delineation between which changes in pension entitlements are treated as transactions and which 13.66 as other changes in the volume of assets is still being researched. Part 2 of chapter 17 describes the present situation. Because the nature of a defined benefit pension scheme is that the amounts due are determined by a formula, there are several factors other than increases from current and past service, and the unwinding of the pensions entitlements, that may intervene to change the level of entitlements. These factors include, for example, actuarial gains and losses, i.e., changes in entitlements resulting from experience adjustments (the effects of differences between the previous actuarial assumptions and what has actually occurred) and the effects of changes in actuarial assumptions, among which changes in the discount rate, changes in demographic assumptions about life length and other changes in the formula used to determine benefits. It may also include the impact of settlements that eliminate all further entitlements for part or the whole of entitlements. These changes in entitlements are generally to be recorded as other changes in the volume of assets and liabilities, unless they are clearly driven by a price element (such as change in the estimates of entitlements due to changes in the expected levels of price indexation). Changes in volume of assets and liabilities may also arise from non-negotiated changes in the terms of pension entitlements. Negotiated changes are generally recorded as capital transfers. For more information, reference is made to chapter 24.

#### Provisions for calls under standardized guarantee schemes

13.6313.67 If standardized guarantees are provided on a purely commercial basis, the provisions for calls will be covered by the fees paid and investment earnings on them and possible recoveries from the debtor in default. However, government often underwrites such schemes. When it does so, a provision should be entered in the government accounts for the expected excess of calls under the scheme over any fees received, investment income or recoveries made. If the guarantees cover a long period and there is provision for government to claim assets in the case of default, this expected excess should be calculated on the basis of the net present value of calls to be made under the scheme. An entry is required whenever a new scheme is introduced or a significant change to the expected level of calls is recognized, beyond what will be recovered by fees or other means.

#### 4. Changes in classifications

13.64<u>13.68</u> The other changes in the volume of assets and liabilities account records changes in assets and liabilities that reflect nothing more than changes in the classification of institutional units among sectors, changes in the structure of institutional units and changes in the classification of assets and liabilities. Table <u>1213</u>.4 shows an expansion of table <u>1213</u>.1 to include the entries for changes in classification.

Table 1<u>3</u>2.4: The other changes in the volume of assets <u>and liabilities</u> account - changes in assets due to changes in classifications

Table <u>132.4</u> (cont): The other changes in the volume of assets <u>and liabilities</u> account - changes in liabilities and net worth due to changes in classifications

#### Changes in sector classification and structure

- 13.6513.69 Reclassifying an institutional unit from one sector to another transfers its entire balance sheet. For example, if an unincorporated enterprise becomes more financially distinct from its owner and takes on the characteristics of a quasi-corporation, it and its balance sheet move from the household sector to the non-financial corporations sector; or if a financial corporation is newly authorized to take deposits, it may be reclassified from "other financial intermediaries" to "deposit-taking corporations except the central bank".
- 13.6613.70 If a household moves from one economy to another, taking its possessions (including financial assets) with it, they are also recorded under changes in classifications and structures. As there is no change in ownership of the possessions, there can be no transaction in them.
- 13.6713.71 Chapter 2428 discusses the flows to be recorded when there is corporate restructuring, either when two corporations merge, when one is taken over by another group or when one corporation is split into two or more units. Most of the resulting financial consequences are recorded as transactions but some may be recorded as other volume changes. Chapter 2428 also discusses the implications of nationalization and privatization, describing when the consequences are treated as transactions and when as other volume changes including reclassification by sector.
- 13.6813.72 In the case of from-whom-to-whom tables (see chapter 37), Rreclassification is needed as a result of trading in securities. When unit A sells a security to unit B, A has a liability and B an asset. If B now sells the same asset to unit C, the transaction between B and C is recorded in the financial account as the sale of a security. Although A is not involved in the sale and purchase of the security between B and C, A's balance sheet is affected as the liability originally owed to B is now owed to C. This reclassification is shown in the other changes in the volume of assets and liabilities account.

#### Changes in classification of assets and liabilities

13.6913.73 An asset may appear under one heading in the opening balance sheet and under another in the closing balance sheet. Since transactions in assets must be registered as an increase in holding by one party and a decrease in the holding of the same asset by another, the process of change of classification must be recorded in the other changes in the volume of assets and liabilities account. The asset may be first recorded as a transaction under the original classification and then recorded as changing its classification in the balance sheet of the new owner. Alternatively, it may be shown first as a reclassification by the first owner and then as a transaction under its new classification. If the change in classification leads to a change in value, it is treated as a quality change, and thus a change in volume, as described earlier under the discussion on economic appearance and disappearance. The choice between whether to reclassify and then record transactions or vice versa depends on the nature of the transactors and the question of whether the original or new owner benefits from the change in price. Some examples of reclassifications are described below.

# Sale and reclassification of land and buildings

- 13.70 Unit A sells farm land to unit B, which uses it to build houses on. If A acquires planning permission before selling the land it should be registered as a change in classification in A's accounts (with a probable gain in value to be recorded as an other volume change also in A's accounts), and then a sale of building land to B. If B acquires planning permission after the sale is complete, then it is farm land that is sold and B records a change of classification (and possibly an other volume change) in its books.
- <u>13.71</u><u>13.75</u> Similar considerations apply to buildings if they are converted from a dwelling to commercial premises or vice versa in response to official designation about the allowed purpose of a building in that location. A conversion resulting solely from new investment in a previous building is not an other change in the volume of the asset but the result of gross fixed capital formation.

#### Changes of classification involving inventories

13.7213.76 In all instances, work-in-progress needs to be reclassified to finished goods <u>once completedprior to</u> sale. Some animals treated as fixed capital because they are kept as dairy stock or for their fleece may be slaughtered for meat at the end of their productive lives. In this case, they should in principle be reclassified from fixed capital to inventories when they cease to yield repeat products. If this is not practicable, or deemed too fastidious, then some of the source of meat should be accounted for by a reduction in fixed capital rather than a withdrawal from inventories. In principle, reclassification from one type of inventory to another or from fixed capital to inventories, should not involve a change in value. If at the time of conversion the previous valuation is different from the appropriate new valuation, an entry in the other changes in the volume of assets and liabilities account is recorded under economic appearance or disappearance as appropriate. If this is found to be happening systematically, the valuation techniques for inventories should be re-examined.

# 5. Summarizing other volume changes

13.7313.77 Tables 1213.2 to 1213.4 show details of other volume changes for each type of change with details for each asset as a second level of classification. The information there can be aggregated by type of assets, regardless of the cause for the volume change, as shown in table 1213.5. This is the form in which information from the other change in the volume of assets account feeds into the reconciliation between opening and closing balance sheets.

Table 1<u>3</u>2.5: The other changes in the volume of assets <u>and liabilities</u> account - changes in asset by type of asset

Table 1<u>3</u>2.5 (cont): The other changes in the volume of assets <u>and liabilities</u> account - changes in liabilities and net worth by type of liability

# C. The revaluation account

#### 1. Different holding gains and losses concepts

13.74<u>13.78</u> The revaluation account, shown in table <u>1213</u>.6, records the holding gains or losses accruing during the accounting period to the owners of <u>non-financial</u> and <u>non-financial</u> assets and liabilities. The first entries relate to nominal holding gains and losses which are then decomposed into neutral holding gains and real holding gains. Holding gains or losses on assets are recorded on the left-hand side of the account and those on liabilities on the right-hand side.

#### Table 132.6: The revaluation account - changes in assets

Table 132.6 (cont): The revaluation account - changes in liabilities and net worth

- 13.7513.79 The nominal holding gain on a non-financial asset is the value of the benefit accruing to the owner of that asset as a result of a change in its price over a period of time. The nominal holding gain on a financial asset is the increase in value of the asset, other than transactions in the assets (including the accrual of interest over a period of time) and other changes in the volume of assets and liabilities. The nominal holding gain on a liability is the decrease in value of the liability, other than by transactions or by other volume changes. A nominal holding gain that is negative is referred to as a holding loss. A positive holding gain, whether due to an increase in the value of a given asset or a reduction in the value of a given liability, increases the net worth of the unit in question. Conversely, a holding loss reduces the net worth of the unit in question, whether due to a reduction in the value of a given asset or an increase in the value of a given liability.
- As well as the absolute change in value of an asset, it is interesting to know how the change in value compares with a general measure of inflation. When the value of an asset rises over a given period of time by more than the general price level, the asset can be exchanged for a greater volume of the goods, services and assets covered by the general price index at the end of the period than at the beginning. The increase that preserves exactly the same volume of goods and services is called a neutral holding gain. A neutral holding gain (loss) over a period is the increase (decrease) in the value of an asset that would be required, in the absence of transactions and other changes in the volume of assets and liabilities, to maintain command over the same amount of goods and services as at the beginning of the period.
- 13.7713.81 The difference between the nominal holding gain or loss and the neutral holding gain or loss for the same asset over the same time period is called the real holding gain or loss. If the value of the asset increases faster than the neutral holding gain, then there is a real holding gain. If the value of the asset does not increase as fast as the overall increase in prices, or does not increase at all, the owner of the asset registers a real holding loss. A real holding gain (loss) is the amount by which the value of an asset increases (decreases) over the neutral holding gain for the period, in the absence of transactions and other changes in the volume of assets and liabilities. Nominal, neutral and real holding gains, and the interrelationships between them are explained more fully in the following sections.
- 13.7813.82 The balancing item in the revaluation account is described as changes in net worth due to nominal holding gains or losses. It is defined as the algebraic sum of the positive or negative nominal holding gains on all the assets and liabilities of an institutional unit. Just as nominal holding gains are decomposed into neutral and real holding gains, so changes in net worth due to nominal holding gains may be decomposed into changes in net worth due to neutral holding gains or losses. The latter is an item of considerable analytic interest.
- 13.7913.83 In order to simplify the terminology and exposition, holding losses will not usually be referred to explicitly unless the context requires it. The term "holding gains" is used to cover both holding gains and losses on the clear understanding that holding gains may be negative as well as positive. Similarly, the term "assets" is used collectively to cover both assets and liabilities, unless the context requires liabilities to be referred to specifically.
- 13.8013.84 Holding gains are sometimes described as "capital gains". The term "holding gain" is widely used in business accounting and is preferred here because it emphasizes the fact that holding gains accrue purely as a result of holding assets over time without transforming them in any way. Holding gains include not only gains on "capital" such as fixed assets, land and financial assets but also gains on inventories of all kinds of goods held by producers, including work-in-progress, often described as "stock appreciation". For most financial assets, a holding gain experienced by one unit is matched, in whole or in part, by a holding loss for the unit holding the counterpart liability. This is not so for non-financial assets as there are no non-financial liabilities.
- 13.8113.85 When an asset whose value has increased because of a nominal holding gain is sold or otherwise disposed of, the holding gain is said to be realized. If the asset is retained by the existing owner, the holding gain is unrealized. In common usage, a realized gain is usually understood as the gain realized over the entire period over which the asset is owned or liability is outstanding whether this period coincides with the accounting period or not. Within the SNA, however, all holding gains and losses are measured only from the start of the accounting period. A holding gain (loss) is realized when an asset that has increased (decreased)

in value due to holding gains (losses) since the beginning of the accounting period is sold, redeemed, used or otherwise disposed of, or a liability incorporating a holding gain or loss is repaid. An unrealized holding gain is one accruing on an asset that is still owned or a liability that is still outstanding at the end of the accounting period. It follows that the nominal holding gain or loss on an asset is the sum of the realized and unrealized holding gain or loss for the period in question.

#### Nominal holding gains

13.8213.86 It is useful to distinguish four different situations giving rise to nominal gains and the methods of valuation to be employed in each case. For clarity of exposition, it is assumed for the moment that there are neither transactions nor other changes in volume intervening between the two dates mentioned.

- a. An asset held throughout the accounting period: the nominal holding gain accruing during the accounting period is equal to the closing balance sheet value minus the opening balance sheet value. These values are the estimated values of the assets if they were acquired at the times the balance sheets are drawn up. The nominal gain is unrealized.
- b. An asset held at the beginning of the period that is sold during the period: the nominal holding gain accruing is equal to the actual or estimated disposal value minus the opening balance sheet value. The nominal gain is realized.
- c. An asset acquired during the period and still held at the end of the period: the nominal holding gain accruing is equal to the closing balance sheet value minus the actual, or estimated, acquisition value of the asset. The nominal gain is unrealized.
- d. An asset acquired and disposed of during the accounting period: the nominal holding gain accruing is equal to the <del>actual, or estimated,</del> disposal value minus the actual, or estimated, acquisition value. The nominal gain is realized.

<u>13.83</u><u>13.87</u> The basic identity linking balance sheets, transactions, other volume changes and nominal holding gains may be expressed as follows:

the value of the stock of the asset in the opening balance sheet valued at the date of the opening balance sheet,

*plus* the value of the asset acquired, or disposed of, in transactions valued at the dates the transactions took place,

*plus* the value of other changes in the volume of the asset valued at the dates the other volume changes are recorded as taking place,

plus the value of the nominal holding gains on the asset,

*equals* the value of the stock of the asset in the closing balance sheet, valued at the date of the closing balance sheet.

The values of the assets and liabilities in the closing balance sheet incorporate the unrealized holding gains or losses. The value of transactions includes the value of realized holding gains or losses. It therefore follows that the correct value of the revaluation item must cover both realized and unrealized holding gains, in other words to be the full value of the nominal holding gains or losses.

- 13.84<u>13.88</u> Because the total nominal holding gains accruing on a particular category of asset over a given period of time include those accruing on assets acquired or disposed of during the accounting period as well as on assets that figure in the opening or closing balance sheets, it is not possible to calculate total holding gains from balance sheet data on their own. This can be demonstrated by means of a simple example.
- 13.8513.89 Suppose a corporation owns 100 units of a stock (inventories or shares, for instance) at the beginning of the period and these are worth 20 each or 2 000 in total. At some point in the period, when the price per unit has risen to 22, another 15 units are bought; a cost of 330. At the end of the period, when the price has risen to 25, some 15 units are sold for a value of 375. The value of the stock in the closing balance sheet represents 100 units valued at 25 each or 2 500. The increase in the balance sheet of 500 represents unrealized

holding gain on the stock of 100 units. The value of the transactions represents a decrease in the balance sheet since the value of the stock added to the balance sheet (330) is less than the value of stock sold (375). The difference, -45, is a reduction in net worth brought about by realizing some holding gains. The total nominal holding gain is thus 545 which satisfies the identity that the opening stock (2 000) plus the transactions (-45) plus the nominal holding gains (545) plus the other changes in the volume of assets and liabilities (0) equals the value in the closing balance sheet (2 500).

- 13.8613.90 In order to calculate total holding gains directly, therefore, it is necessary to keep records of all the assets acquired and disposed during the accounting period and the prices at which they were acquired and disposed of, as well as the prices and quantities of assets held at the beginning and end of the period. This sort of recording is more common for financial assets and liabilities than for non-financial assets.
- 13.8713.91 Each of the five elements that make up the identity in paragraph 13.8712.82 explaining the changes in the balance sheet can be calculated directly and independently of the other four elements. Thus, each element has the same status, none of them being defined residually as a balancing item. Nevertheless, it follows that if any four out of the five elements are calculated directly, the fifth can be estimated residually. For this reason, the identity can be exploited to estimate nominal holding gains from the other four elements, but without this implying that nominal holding gains are a balancing item in the SNA.

#### Neutral holding gains

- 13.8813.92 In order to calculate the neutral holding gain on an asset, it is desirable to select a comprehensive price index covering as wide a range of goods, services and assets as possible. In practice, the price index for final expenditures is an acceptable choice for most countries, although other comprehensive indices could be used depending upon the availability of data. A comprehensive index of this kind, however, may be available only once a year, or at best quarterly, and after a significant lapse of time. As holding gains may accrue on assets held for only short periods of time, it may also be necessary to make use of an index that measures changes in prices monthly and that becomes available without too much delay. The consumer price index (CPI) usually meets these requirements and an acceptable procedure would be to use the CPI to interpolate and extrapolate movements in a more broadly based index in order to calculate neutral holding gains.
- 13.8913.93 The neutral holding gain on an asset over a given period of time is equal to the value of the asset at the beginning of the period multiplied by the proportionate change in some comprehensive price index selected to measure the change in the general price level. Neutral holding gains can, therefore, easily be calculated for assets held throughout the accounting period that appear in both the opening and closing balance sheets. It is more difficult, however, to keep track of the neutral holding gains on assets that are acquired or disposed of during the accounting period unless the times at which the various acquisitions and disposals took place are known.

## **Real holding gains**

- 13.9013.94 The real holding gain on an asset is defined as the difference between the nominal and the neutral holding gain on that asset. The values of the real holding gains on assets thus depend on the movements of their prices over the period in question, relative to movements of other prices, on average, as measured by the general price index. An increase in the relative price of an asset leads to a positive real holding gain and a decrease in the relative price of an asset leads to a negative real gain, whether the general price level is rising, falling or stationary.
- 13.9113.95 The nominal holding gains on domestic currency, deposits and loans denominated in domestic currency are always zero. During inflation, the neutral gains on such assets and liabilities must be positive and hence the real holding gains must be negative and equal in absolute value to the neutral gains. In other words, the real value of these assets declines both for the creditor and the debtor as a result of inflation. From the point of view of the debtor a reduction in the real value of a liability represents an increase in net worth expressed in real terms. In effect, there is an implicit transfer of real purchasing power from the creditor to the debtor equal in value to the negative real holding gain on the asset or liability. When such transfers are anticipated by creditors, correspondingly higher nominal rates of interest may be demanded on loans and offered on deposits to compensate for the expected transfers, or loans with fixed monetary values may be replaced by indexed loans.

- As changes in relative prices may be either positive or negative, the owners of some assets benefit from real holding gains while the owners of other assets experience real holding losses. Real holding gains may lead to a significant redistribution of real net worth among institutional units, sectors and even countries, the extent of which depends on the amount of variation in the relative price changes taking place. While such variations may occur even when there is no general inflation, there are systematic effects that are associated with the general rate of inflation as a result of the decline in the real values of monetary assets and liabilities when the general price level is rising.
- As real holding gains increase or decrease the purchasing power of the owners of assets, they exert an influence on their economic behaviour. Real holding gains are important economic variables in their own right as well as for purposes of analysing consumption or capital formation. It can be argued that real holding gains ought to be assimilated with income as defined in the <u>integrated framework of national accountsSNA</u> to obtain a more comprehensive measure of income, but there is no consensus on this. Apart from the practical difficulty of estimating real holding gains and losses, it is likely that their impact on economic behaviour is not the same as that of income received in cash or in kind. Nevertheless, it is clear that information on real holding gains needs to be made available to users, analysts and policymakers.
- 13.9413.98 As real holding gains may be obtained residually by subtracting neutral from nominal holding gains, the feasibility of calculating real holding gains depends on the feasibility of calculating nominal and neutral gains.

# 2. Holding gains and losses on specific assets

#### **Fixed assets**

- 13.95<u>13.99</u> Nominal holding gains are calculated with reference to assets or liabilities that themselves remain qualitatively and quantitatively unchanged during the period over which the holding gain is measured. Thus, changes in the value of physical assets such as structures, equipment or inventories held by producers that are attributable to some physical or economic transformation of those assets over time, whether improvement or deterioration, are not counted as holding gains. In particular, the decline in the value of the fixed assets owned by producers due to their physical deterioration or normal rates of obsolescence or accidental damage is recorded as <u>consumption of fixed capitaldepreciation</u> and not as a negative holding gain.
- 13.9613.100 Consumption of fixed capitalDepreciation should be calculated by valuing the opening and closing stock at the average price of the period precisely in order to ensure it excludes any holding gains. Often the price at the mid-point of the period is taken as the average price of the period. Under moderate rates of inflation this may be an acceptable approximation but is less so the higher the rate of inflation and under severe inflation is very misleading.
- 13.9713.101 Nominal holding gains may occur on existing fixed assets either because of general inflation or because the price of the asset itself changes over time. When assets of the same kind are still being produced and sold on the market, an existing asset should be valued in the opening or closing balance sheet at the current purchaser's price of a newly produced asset less the accumulated consumption of fixed capitaldepreciation up to that time also calculated on the basis of the prices prevailing at the time the balance sheet is drawn up. When new assets of the same type are no longer being produced, the valuation of existing assets may pose difficult conceptual and practical problems. If broadly similar kinds of assets are still being produced, even though their characteristics may differ significantly from those of existing assets were still being produced, their prices would have moved in the same way as those of new assets. However, such an assumption becomes questionable when the characteristics of new assets are much improved by technical progress. There is further discussion on this topic in the OECD Manual on Measuring Capital. Second edition.

#### Inventories

13.9813.102 The estimation of nominal holding gains on inventories may be difficult because of lack of data on transactions or other volume changes in inventories. As explained in chapter 67, transactions in inventories of work-in-progress and finished goods may not be adequately recorded because they are internal

transactions. Goods entering inventories can be regarded as being acquired by the owner of an enterprise from itself as producer, while goods leaving inventories can be regarded as being disposed of by the owner to the producer for use in production or for sale. These internal transactions should be valued at the prices prevailing at the times they take place. The value of withdrawals thus includes any holding gains on the inventories when stored and this ensures that the value of the holding gain is not included in output. However, as explained in paragraphs 6.142-7.142 to 6.145-7.145, when the storage of goods is essentially an extension of the process of production, the increase in the value of the goods that is due to this production is not to be counted as a nominal holding gain. In the case of goods for resale, the value of the goods when withdrawn from inventory should include the value of any holding gain or loss that has occurred while they were in store but not the value of any margin to be realized by the wholesaler or retailer. That is to say, goods withdrawn from inventories are valued at the prices prevailing at the time of withdrawal for goods in the same state as when the goods entered inventories (except for the storage case).

- 13.9913.103 Other volume changes are likely to consist of inventories of goods destroyed as a result of exceptional events such as natural disasters (floods, earthquakes, etc.) or major fires. Recurrent losses of goods from inventories, such as losses due to regular wastage or pilfering, are treated in the same way as deliberate withdrawals. Nominal holding gains on inventories thus relate only to the level of inventories once both exceptional and recurrent losses on inventories have been taken into account.
- 13.104 Unless records are kept of the quantities of goods entering and leaving inventories and their prices at those times, it is not possible to measure the value of changes in inventories directly. As such records may not be available, it becomes necessary to try to deduce the value of changes in inventories from the value and quantities of the opening and closing inventories using methods that attempt to partition the difference between the values of the opening and closing stocks of assets into transactions and nominal holding gains. Such methods are only as good as the assumptions on which they are based. Estimating holding gains and losses based only on period end data involves two problematical assumptions. The first is that prices increase linearly throughout the period; the second is that the changes in volume of inventories increase or decrease linearly between opening and closing balance sheets. Both assumptions are improbable, especially in the case of seasonal products. It should also be noted that this is not only a problem for the accumulation accounts as the values of changes in inventories of inputs and outputs are needed in order to measure intermediate consumption, output and value added and hence all the balancing items of the SNA. In general, if these sorts of assumptions need to be made in order to derive holding gains and losses, they should be made over as short a period as possible. In particular, the aggregation of quarterly estimates of this type will be preferable to an annual estimate of the same type.

#### Natural resources

13.10013.105 Natural resources, such as mineral and energy resources and biological resources yielding once-only products are typically estimated using the net present value of future resource rents. Any price change in the expected resource rents as a result of changes in expected future commodity prices or changes in the prices of the extraction costs should be recorded as revaluations. The same holds for the stranding of these assets; see paragraph 13.27.

#### Valuables

13.101<u>13.106</u> The nature of valuables is that they are held as a store of value in the expectation that their value will increase over time. Any increase in value of an individual valuable is treated as a nominal holding gain. This may be partitioned into a neutral and a real holding gain in the standard way.

#### Financial assets and liabilities

13.10213.107 Because it is not always appropriate to describe financial assets and liabilities as having a price, holding gains and losses appear to be treated differently for different categories though the same basic principles apply to all categories. Other changes in the volume of financial assets and liabilities are possible, as described in section B, but are generally ignored in what follows.

13.10313.108 Except for monetary gold and SDRs, the discussion is first in terms of assets denomination in domestic currency and then of the effects when they are denominated in foreign currency.

#### Monetary gold and SDRs

13.10413.109 Because the price of gold is usually quoted in dollars, monetary gold is subject to nominal and real holding gains and losses because of changes in the exchange rate as well as in the price of gold itself.

<u>13.105</u> Since the value of the SDR is based on the market exchange rates of a basket of majorfour key currencies, the value of SDRs is always subject to nominal and real holding gains and losses. From time to time, new allocations of SDRs may be made; when this occurs the allocation is recorded as a transaction.

#### Currency

13.10613.111 Domestic currency is not subject to any nominal holding gains or losses. It can be thought of as a fixed "quantity" of currency units (for example, one dollar) with a price that is always unity. However, although the nominal holding gains are zero, the neutral holding gains on currency are not. Under inflation, neutral holding gains are positive and so the associated real holding gains are negative and of an equal size.

# Deposits and loans

13.10713.112 Deposits and loans denominated in domestic currency also do not register nominal holding gains and losses for the same reasons as currency. There may be increases in the values of a loan or a deposit during an accounting period but this must be due to transactions including the addition of interest to the previous level of principal. As with currency, deposits and loans denominated in domestic currency register real holding losses of the same magnitude as their neutral holding gains.

#### Debt securities

- <u>13.10813.113</u> Debt securities typically have market values and these market values change over time. However, not all of the changes in value are treated as holding gains and losses.
- 13.10913.114 A bond is a security that gives the holder the unconditional right to a fixed money income or contractually determined variable money income over a specified period of time and (except in the case of perpetual bonds) the right also to a fixed sum as repayment of principal on a specified date or dates. Bonds are usually traded on markets and the holder of a bond may change several times during the life of the bond. The issuer of such a bond may sometimes be able to repay the principal outstanding at any time by purchasing it back in advance of the date on which it matures.
- 13.11013.115 As explained in part 4-of-chapter 1725, when a bond is issued at a discount, including deep discounted and zero coupon bonds, the difference between its issue price and its face or redemption value when it matures measures interest that the issuer is obliged to pay over the life of the bond. Such interest is recorded as property income payable by the issuer of the bond and receivable by the holder of the bond. In principle, the interest accruing is treated as being simultaneously reinvested in the bond by the holder of the bond. In principle, the gradual increase in the market price of a bond that is attributable to the accumulation of accrued, reinvested interest reflects a growth in the principal outstanding. It is essentially a quantum or volume increase and not a price increase. It does not generate any holding gain for the holder of the bond or holding loss for the issuer of the bond. The increases in value due to the accrual of interest are recorded in the distribution of primaryearned income account and the financial account.
- 13.11113.116 The prices of fixed-rate marketable bonds also change, however, when the market rates of interest change, the prices varying inversely with the interest rate movements. The impact of a given interest rate

change on the price of an individual bond is less, the closer the bond is to maturity. Changes in bond prices that are attributable to changes in market rates of interest constitute price and not quantum changes. They therefore generate nominal holding gains or losses for both the issuers and the holders of the bonds. An increase in interest rates generates a nominal holding gain for the issuer of the bond and an equal nominal holding loss for the holder of the bond, and vice versa in the case of a fall in interest rates. Whenever the interest rate changes, the market value of the bond changes; this change in value is recorded as a revaluation. Within the SNA, the interest recorded due to the fact that the redemption date is nearer is calculated on the basis of the interest rate at the issue date. Over the whole of the life of the bond, therefore, the holding gains and losses are offsetting and total interest recorded is the difference between issue price and redemption price.

- 13.11213.117 Prices of bonds may also change because of a change in the creditworthiness (up as well as down) of the issuer or guarantor. Such changes give rise to the same sorts of entries as changes in the interest rate. This is because the market price of the bond changes to reflect the market's view of the creditworthiness of the issuer. It does not imply that impairments to loans and deposits should be treated as revaluations. The appropriate treatment for impaired loans is discussed in paragraphs 13.66-14.66 to 13.68.14.68.
- <u>13.11313.118</u> Nominal holding gains or losses may accrue on bills in the same way as for bonds. However, as bills are short-term securities with much shorter times to maturity, the holding gains generated by interest rate changes are generally much smaller than on bonds with the same face values.

#### Equity and investment fund shares

- 13.114<u>13.119</u> For corporations that are foreign direct investment enterprises and investment funds, any undistributed earnings are shown as reinvested earnings in the <u>distribution of primaryearned</u> income account and as reinvestment of earnings in the financial account. Reinvestment of earnings increases the value of equity and investment fund shares. For listed shares and investment fund shares and units, market prices exist and changes in the value other than via reinvested earnings are treated as holding gains and losses exactly as for inventories with no storage component or valuables.
- 13.115<u>13.120</u> For other forms of equity, holding gains are calculated in a manner similar to the way in which the value of the equity is calculated. For example, for a quasi-corporation where the value of other equity is derived as the balance of assets less liabilities, all changes in the value of equity which are not due to transactions and other changes in the volume of assets and liabilities are to be recorded as holding gains are and lossescalculated as the sum of holding gains on assets less the holding gains on liabilities. In the case that negative values of equity are zeroed out, the relevant changes in the value of equity should also be recorded as holding gains and losses.

#### Insurance, pension and standardized guarantee schemes

- 13.11613.121 When the reserves for insurance and standardized guarantee schemes are denominated in domestic currency, there are generally no nominal holding gains and losses just as there are none for currency or deposits and loans. Exceptionally, if a figure for a claim outstanding has been agreed and it has been agreed to be indexed pending payment, then there may be a nominal holding gain or loss recorded for it.
- <u>13.122</u> As far as <u>defined benefit</u> pension entitlements are concerned, increases in the value of entitlements due to <u>the</u> <u>unwinding of the entitlementsindexation</u> are recorded via reinvestment of investment income payable to the beneficiaries (<u>similar to accrued interest</u>) and not in the revaluation account. The entitlements may also change due to other factors, such as changes in pension entitlements related to current and past service, changes in the formula used to determine benefits, demographic assumptions about life length, etc. For the recording of these changes, either as transactions, as other changes in the volume of assets and liabilities, or as revaluations, see paragraphs 13.66 and 24.177 24.186.
- 13.11713.123 In the case of a defined benefit pension scheme, the pension fund may also have a claim on the pension manager (i.e., the sponsor of the scheme), to cover any shortfalls on the value of accumulated assets compared to pension entitlements. This claim is directly affected by holding gains on the accumulated assets of the pension fund. The impact of these holding gains have to be reflected in the revaluation of the claim between the pension fund and the pension manager.

13.11813.124 The assets the financial institutions use to meet their commitments under these defined contribution pension schemes do indeed benefit from holding gains, for example investments in equity and investment funds. These holding gains directly affect the pension entitlements, and the resulting change in entitlements should also be treated as revaluations., but the liabilities towards the policyholders and beneficiaries change only as a result of transactions and other changes in the volume of assets.

#### Financial derivatives and employee stock options

13.11913.125 Unless it concerns over-the-counter derivatives, Ffinancial derivatives have quoted prices and thus register nominal holding gains and losses, similar to as for listed shares and investment fund shares and units. As explained in part 6 of chapter 1725, employee stock options may also register nominal holding gains and losses.

#### Other accounts receivable or payable

13.12013.126 Other accounts receivable or payable denominated in domestic currency do not register nominal holding gains and losses. All changes in value between the start and end of the accounting period are due to transactions, possibly including accrued interest, and possibly other changes in the volume of assets and liabilities. As with currency, there may be real holding gains equal in magnitude to the neutral holding losses under inflation.

#### Assets denominated in foreign currency

- 13.121<u>13.127</u> Residents may hold assets denominated in foreign currency just as non-residents may hold assets denominated in domestic currency. For balance sheet purposes, the value of an asset denominated in foreign currency is measured by its current value in foreign currency converted into the currency of the country in which its owner is resident at the mid-point of the bid and offer rate of the exchange rate on the balance sheet date. Nominal holding gains may therefore occur not only because the price of the asset in local currency changes but also because the exchange rate changes.
- 13.12213.128 Neutral holding gains are calculated in the same way as for any other type of asset by calculating what the holding gains would have been if the prices of the assets, expressed in the domestic currency, had moved in the same way as the general internal price level. Real holding gains, again expressed in the domestic currency, can then be derived residually by subtracting the neutral from the nominal gains. If, in addition to the asset being denominated in foreign currency, either the creditor or debtor is non-resident, the real holding gains (losses) of the creditor need not be equal to the real holding losses (gains) of the debtor when the general rates of inflation are different in the two countries.

# Chapter 14: Balance sheet

# (OLD Chapter 13: The balance sheet)

Please note that the order of this chapter in the 2008 SNA has been slightly changed, mainly because of the revised classification of non-financial assets, from distinguishing between produced and non-produced non-financial assets to having a breakdown into (i) produced non-financial assets (excluding natural capital); (ii) non-produced non-financial assets (excluding natural capital); and (iii) natural capital. This affects the order in Section C, where these re-allocations have not been shown in the form of track changes.

# A. Introduction

14.1 This chapter is concerned with measuring the stocks of assets, both non-financial and financial, and liabilities. Assets and liabilities can be aggregated across all types so as to show the total value of assets less liabilities, or net worth, of an institutional unit<u>or a sector</u>. Alternatively, the total value of a given type of asset across all units in the economy can be derived. Tables depicting the first sort of aggregation are called balance sheets; those depicting the second sort are called asset accounts. For both balance sheets and asset accounts, it is also important to show how the transactions and other flows recorded during the course of an accounting period explain the changes in value of the stock in question between the start and end of the period. The value of the stock at the start of the period is referred to as the opening stock and the value at the end of the period is referred to as the closing stock. Sometimes a stock level is referred to as a position, especially in the <u>case of financial assets and liabilities</u> balance of payments context.

# 1. Balance sheets

- 14.2 A balance sheet is a statement, drawn up in respect of a particular point in time, of the values of assets owned and of the liabilities owed by an institutional unit or group of unitssector and of liabilities incurred by this institutional unit or sector. A balance sheet may be drawn up for institutional units, institutional sectors and the total economy. A similar account is drawn up showing the stock levels of assets and liabilities originating in the total economy held by non-residents and of <u>foreignexternal</u> assets and liabilities held by residents. In BPM<u>76</u> this account is called the international investment position (IIP) but is drawn up from the point of view of residents whereas in the SNA it is drawn up from the point of view of the rest of the world with the rest of the world being treated in the same way as domestic sectors.
- 14.3 Assets appear in the balance sheet of the unit that is the economic owner of the asset. In many cases this unit will also be the legal owner but in the case of a financial lease, the leased asset appears on the balance sheet of the lessee, while the lessor has a financial asset of similar amount and a corresponding claim against the lessee. On the other handFurthermore, when a natural resource is the subject of a resource lease, the asset is recorded in the accounts of the legal owner, often government, and the extractor, in line with the estimated appropriation of future resource rents; as such the economic ownership of the natural resource is split between the original owner and the extractor continues to appear in the balance sheet of the lessee. A fuller description of the treatment of leases is given in part 5 of chapter 1727 and of the distinction between legal and economic owner is given in chapter 34.
- 14.4 The financial and non-financial resources at the disposal of an institutional unit or sector shown in the balance sheet provide an indicator of economic status. These resources are summarized in the balancing item, net worth. Net worth is defined as the value of all the assets owned by an institutional unit or sector less the value of all its outstanding liabilities (including shares and other equity). For the economy as a whole, the balance sheet shows the sum of non-financial assets and net <u>financial</u> claims on the rest of the world. This sum is often referred to as national wealth<u>or national net worth</u>.
- 14.5 The balance sheet completes the sequence of <u>economic</u> accounts, showing the ultimate result of the entries in the production, distribution and use of income, and accumulation accounts.
- 14.6 The existence of a set of balance sheets integrated with the flow accounts encourages analysts to look more

broadly when monitoring and assessing economic and financial conditions and behaviour. Balance sheets provide information necessary for analysing a number of topics. For example, in studies of the factors determining household behaviour, consumption and saving functions often include wealth variables to capture the effects of such factors as price fluctuations in corporate securities or the deterioration and obsolescence of stocks of durable consumer goods on households' purchasing patterns. Further, balance sheets for groups of households are needed in order to assess the distribution of wealth and liquidity.

14.7 Balance sheets allow economists to assess the financial status of a sector and permit risk analyses by a central bank, for example. For corporations, balance sheets permit the computation of widely used ratios that involve data on the level of the different items on the balance sheet. Banks and other financial institutions, for example, are required to maintain specific reserve ratios that can be monitored via a balance sheet. Non-financial corporations check certain ratios such as current assets in relation to current liabilities and the market value of corporate shares in relation to the adjusted book value. Data on the stocks of fixed assets owned by corporations, as well as by other institutional units, are useful in studies of their investment behaviour and needs for financing. Balance sheet information on financial assets held by, and liabilities owed to, non-residents are of considerable interest as indicators of the economic resources of an economy nation and for assessing the external debtor or creditor position of a country. For more details on analysing financial risks and vulnerabilities, see chapter 37.

# 2. Asset accounts

14.8 As well as drawing up a balance sheet showing the values of all assets <u>(and liabilities)</u> held by an institutional unit, it is possible to draw up a similar account for the value of a single type of asset (or liability) held by all institutional units in the economy. This is called an asset account. A basic accounting identity links the opening balance sheet and the closing balance sheet for a given asset <u>or liability</u>):

The value of the stock of a specific type of asset in the opening balance sheet;

*plus* the total value of the same type of asset acquired, less the total value of the same type of asset disposed of, in transactions that take place within the accounting period: transactions in non-financial assets are recorded in the capital account (including consumption of fixed capitaldepreciation and depletion) and transactions in financial assets are recorded in the financial account;

*plus* the value of other positive or negative changes in the volume of these assets held, for example, as a result of the <u>discoverycoming into existence</u> of a subsoil asset or the destruction of an asset (as a result of war or a natural disaster): these changes are recorded in the other changes in the volume of assets account;

*plus* the value of the positive or negative nominal holding gains accruing during the period resulting from a change in the price of the asset: these changes are shown in the revaluation account;

equals the value of the stock of the asset in the closing balance sheet.

14.9 Although balance sheets are more familiar to those used to working with commercial accounts, asset accounts are particularly useful for some types of analyses. One example is in connection with environmental accounting where the asset account provides a particularly revealing picture of whether an asset is being used sustainably or not. Another example is in connection with the development of capital stock series for fixed assets. Many financial statistics describe the evolution of an individual financial asset, for example showing how the level of lending has changed over the period.

# **3.** Structure of the balance sheet

14.10 The balance sheet records assets on the left-hand side and liabilities and net worth on the right-hand side, as do the accumulation accounts for changes in these items. In table 143.1, only a limited number of classes of assets are shown, though in principle the table can include all the detailed non-financial assets described and

defined in chapter <u>1011</u> and the full set of financial assets and liabilities described and defined in chapter <u>1112</u>. A balance sheet relates to the values of assets and liabilities at a particular point in time. The SNA provides for balance sheets to be compiled at the beginning of the accounting period (with the same values as at the end of the preceding period) and at its end. The SNA then provides for a complete recording of the changes in the values of the various items in the balance sheet between the beginning and end of the accounting period to which the flow accounts of the SNA relate. The balancing item in the balance sheet is net worth, which, as noted earlier, is defined as the value of all the assets owned by an institutional unit or sector less the value of all its outstanding liabilities. Changes in net worth can thus be explained fully only by examining the changes in all the other items that make up the balance sheet.

#### Table 143.1: Opening and closing balance sheets with changes in assets

Table 143.1 (cont): Opening and closing balance sheets with changes in liabilities and net worth

- 14.11 Table 143.1 consists of three sections. The first shows the opening balance sheet and net worth for each institutional sector and the total economy. For the rest of the world, the only relevant entries are for contracts, leases and licences, financial assets and liabilities, and net worth. In addition, changes in the ownership between residents and non-residents of non-produced non-financial assets are recorded in the capital accounts, albeit that changes in ownership of natural resources typically do not give rise to an international transaction, because notional resident units are generally identified as the owners of these immovable assets.
- 14.12 The second part of table 143.1 consists of a summary of the entries in the capital, financial, other changes in volume of assets and revaluation accounts grouped by type of asset. The entries for fixed assets, for example, show the totals of the entries for fixed assets in each of the capital account, the other changes in volume of assets account and the revaluation account. Under these entries there is a breakdown showing how much of the change in net worth is due to saving and capital transfers, other changes in the volume of assets and holding gains. There is no entry carried forward from the financial account because the changes in net worth due to saving and capital transfers are completely exhausted by changes in transactions in financial and non-financial assets.
- 14.13 The third section of table 143.1 shows the closing balance sheet which is numerically equal, cell by cell, to the sum of the corresponding cells in the first two parts of the table. In practice, though, these figures will be determined independently and a reconciliation exercise needed to ensure the identities inherent in the table are satisfied.

## 4. Structure of asset accounts

14.14 An example of a set of asset accounts is given in table 143.2. The same data for the stock levels in the opening and closing balance sheets are given for the same range of assets, but instead of the breakdown by sectors, the columns show the entries for each type of asset coming from the capital and financial account, the other changes in the volume of assets account and the revaluation account.

#### Table 134.2: Asset accounts for the total economy

14.15 Unlike table 143.1, table 143.2 does not include any entries for assets held by or due to the rest of the world because it focuses on the holding by resident units of particular assets and liabilities. However, by comparing the figures for financial assets and liabilities of the same instrument, it is possible to derive the balance with the rest of the world. For example, in the opening balance sheet figures, the value of financial assets for currency and deposits is 1 482 and of liabilities is 1 471. This implies that the rest of the world has a net liability with the national economy of 11. Table 143.1 shows that the asset position of the rest of the world is 105 and the liability position 116.
# **B.** General principles of valuation

- 14.16 For the balance sheets to be consistent with the accumulation accounts of the SNA, every item in the balance sheet should be valued as if it were being acquired on the date to which the balance sheet relates. This implies that when they are exchanged on a market, assets and liabilities are to be valued using a set of prices that are current on the date to which the balance sheet relates and that refer to specific assets. In the case of non-financial assets, other than land, the value includes any associated costs of ownership transfer. Financial claims that are not traded on organized financial markets are valued at the amount the debtor must pay to the creditor to extinguish the claim. This section contains a concise overview of the main principles and methodologies for valuing assets and liabilities; more details are provided in the annex to chapter 4.
- 14.17 The prices at which assets may be bought or sold on markets are the basis of decisions by investors, producers, consumers and other economic agents. For example, investors in financial assets (such as securities) and natural resources (such as land) make decisions in respect of acquisitions and disposals of these assets in the light of their values in the market. Producers make decisions about how much of a particular commodity to produce and about where to sell their output by reference to prices on markets. For a given asset, there is a clear relationship between the price paid by the purchaser and the price received by the seller. For non-financial assets other than land, the price paid by the purchaser exceeds that received by the seller by the costs of ownership transfer. In the case of financial assets, the value is the same for creditor and debtor because the costs of transferring financial assets and liabilities are treated as consumption rather than accumulation.
- 14.18 Ideally, observable market prices should be used to value all assets and liabilities in a balance sheet. However, in estimating the current market price for balance sheet valuation, a price averaged over all transactions in a market can be used if the market is one on which the items in question are regularly, actively and freely traded. When there are no observable prices because the items in question have not been purchased or sold on the market in the recent past, an attempt has to be made to estimate what the prices would be were the assets to be acquired on the market on the date to which the balance sheet relates.

### 14.19

14.20 In addition to values observed in markets or estimated from observed prices, values may be approximated for balance sheet valuation in two other ways. In some cases, values may be approximated by accumulating and revaluing acquisitions less disposals of the type of asset in question over its lifetime and adjusted for changes such as depreciation; this generally is the most practical and also the preferred method for fixed assets, but it can be applied to other assets as well. In other cases, values may be approximated by the present, or discounted, value of future economic benefits expected from a given asset; this is the case for a number of financial assets, natural resources and even for fixed assets. With good information and efficient markets, the values of the assets obtained by accumulating and revaluing transactions should equal, or at least approximate, both the present, or discounted, value of the remaining future benefits to be derived from them and their market values when active second hand markets exist. These three price bases are discussed below in general terms.

### 14.21

14.18 Ideally, observable market prices should be used to value all assets and liabilities in a balance sheet. It is important though to make a distinction between the initial recognition of assets, and the subsequent valuation of assets. Regarding the initial recognition, i.e., the time at which the asset (or liability) enters the balance sheet, the relevant transaction value, in the case of financial assets adjusted for commissions and fees, should generally be used. For subsequent valuation, if there are no observable market or near-market prices because the items in question have not been purchased or sold on the market in the recent past, alternative valuation methods need to be applied to estimate what the prices would be were the assets to be acquired on the market on the date to which the balance sheet relates. This is likely to be the case for most non-financial assets, particularly when considering the second-hand nature and the partial depreciation of these assets, and also for certain financial instruments.

- 14.19 For valuing non-financial assets, two basic approaches can be distinguished, the first one based on the market prices for similar (second-hand) assets, and the second one based on the contribution of capital services, including depreciation, to the production process in the remaining service life of the asset. The latter approach is usually approximated by accumulating and revaluing acquisitions less disposals over its lifetime and adjusted for changes such as depreciation. Similar valuation issues may exist in the case of, for example, natural resources, the stocks of which are generally not traded in the market, so any values derived from occasionally traded stocks cannot be used for the valuation of similar assets, also because of the heterogeneity of the resources in question. In these cases, the value on the balance sheet can be approximated by the net present value of future benefits derived from these resources, which represent an alternative way of estimating the capital services to the production process.
- 14.20 Many financial assets are traded in markets on a regular basis and therefore can be valued by directly using the price quotations from these markets. Valuation according to market-value equivalent is needed for valuing financial assets and liabilities that are not traded in financial markets or are traded only infrequently. For these assets and liabilities, it will be necessary to estimate fair values that, in effect, approximate market prices. The present value of future cash flows can also be used as an approximation to market prices, provided an appropriate discount rate is used.
- 14.21Non-tradable financial assets, particularly those with a face value applicable at some point in the future (e.g.,<br/>loans, deposits, and other accounts receivable and payable) are valued at valued at nominal value (i.e., the<br/>amount the debtor must pay to the creditor to extinguish the claim, including any accrued interest). For a<br/>restricted group of financial instruments, however, the above valuation methods cannot be applied. Examples<br/>relate to unlisted equity and defined benefit pension entitlements. While for the latter the present value of<br/>future pension benefits is the generally accepted method for valuation, various approaches can be considered<br/>in the case of unlisted equity (see paragraphs 14.81 to 14.86).
- 14.22 Below, three basic methods for valuing stocks of assets and liabilities are described. These are (i) values observed in markets, (ii) values obtained by accumulating and revaluing transactions, and (iii) values obtained by applying the net present value of future benefits. More detailed information on the valuation of assets and liabilities, including methods such as the valuation at nominal value, can be found in the annex to chapter 4.

# 1. Value observed in markets

- 14.2214.23 The ideal source of price observations for valuing balance sheet items is a market, like the stock exchange, in which each asset traded is completely homogeneous, is often traded in considerable volume and has its market price listed at regular intervals. Such markets yield data on prices that can be multiplied by indicators of quantity in order to compute the total market value of different classes of assets held by sectors and of different classes of their liabilities. These prices are available for nearly allnegotiable financial assetselaims, regularly traded in active market with price quotations, existing transportation equipment, crops, and livestock as well as for newly produced fixed assets and inventories.
- 14.23 For securities quoted on a stock exchange, for example, it is feasible to gather the prices of individual assets and of broad classes of assets and, in addition, to determine the global valuation of all the existing securities of a given type. In some countries, another example of a market in which assets may be traded in sufficient numbers to provide useful price information is the market for existing dwellings.
- 14.25 In addition to providing direct observations on the prices of assets actually traded there, information from such markets may also be used to price similar assets that are not traded. For example, information from the stock exchange also may be used to price unlisted shares by analogy with similar, listed shares, making some allowance for the inferior marketability of the unlisted shares. Similarly, <u>expert estimates such as</u> appraisals of assets for insurance or other purposes generally are based on observed prices for items that are close substitutes, although not identical, and this approach can be used for balance sheet valuation. For a discussion of the special valuation problems associated with direct investment enterprises, see chapters 24.30 and 26.33.

# 2. Values obtained by accumulating and revaluing transactions

- 14.26 Most non-financial assets change in value year by year reflecting changes in market prices. At the same time, initial acquisition costs are reduced by <u>consumption of fixed capitaldepreciation</u> (in the case of fixed assets) or other forms of <u>depreciation\_deterioration</u> over the asset's expected life. The value of such an asset at a given point in its life is given by the current acquisition price of an equivalent new asset less the accumulated depreciation. This valuation is sometimes referred to as the "written-down replacement cost". When reliable, directly observed prices for used assets are not available, this procedure gives a reasonable approximation of what the market price would be were the asset to be offered for sale.
- 14.2414.27 For the purpose of valuing assets using this method, the perpetual inventory method is usually applied. The method can be considered superior to market(-equivalent) prices, if the market prices for second-hand assets cannot be considered as representative for the future capital services, which can be derived from the continued use of the asset in production. A problem in the application of this method relates to the information needed for the application of this estimation method. Most importantly, apart from long time series on past expenditures on the purchases, including price developments, of the assets in question, information is needed on the service life; the age-price or the age-efficiency profile; and discard patterns. More detailed guidance is provided in the OECD Manual on Measuring Capital (2009, 2<sup>nd</sup> edition).

# 3. Present value of future <u>benefitsreturns</u>

- 14.28 In the case of assets for which the returns either are delayed (as with forests) or are spread over a lengthy period (as with subsoil assets), although market prices are used to value the ultimate output, a rate of discount must, in addition, be used to compute the present value of the expected future returns. For some assets, mainly relating but not necessarily confined to natural resources, the most suitable method for valuation is the net present value of future benefits associated with the use of the relevant asset. This method can only be used if there is a direct link between the future benefits and the asset in question, in the sense that one can assume that there are no other assets which may have generated the benefits. Furthermore, it is also important to acknowledge that, because it may be difficult to determine the future earnings with the appropriate degree of certainty, and given that assumptions are also needed about the asset's life length and the discount factor to be applied, other possible sources of valuation should be exhausted before resorting to this method.
- 14.25 14.29 When estimating the future benefits related to natural resources, the residual value method, i.e., the output generated with the exploitation of the resources minus all costs associated with the exploitation, is typically used. Exploitation rights are often provided by government for a series of rent payments. The (present value of) actual rent payments may not account for the full value of benefits, or resource rents, that can be derived from these assets, and the asset in question may clearly generate a future stream of resource rents, going well beyond the payments of rent to the legal owner. The unit having the rights to exploit the resources thus appropriates part of the resource rents, reflecting the future capital services derived from these assets by the unit having the exploitation rights. In these cases, the value of the resources in question is split between the legal owner and the unit exploiting the resources.

# 4. Assets denominated in foreign currencies

14.2614.30 Assets and liabilities denominated in foreign currencies should be converted into the domestic currency at the market exchange rate prevailing on the date to which the balance sheet relates. This rate should be the mid-point between the buying and selling spot rates for currency transactions.

# C. The entries in the balance sheet

14.2714.31 Definitions of the assets in the balance sheet at the most detailed level of the classification of assets are given in chapter 1011 for non-financial assets and in chapter 112 for financial assets. Definitions are repeated in this section only to the extent needed to provide the context for information on valuation specific to particular assets and other specialized topics. More details on the principles and methodologies for valuing assets are provided in the annex of chapter 4.

# 1. Produced <u>non-financial assets (excluding natural capital)</u>

# **Fixed assets**

- 14.2814.32 In principle, fixed assets should be valued at the prices prevailing in the market for assets in the same condition as regards technical specifications and age. In practice, this sort of information is not available in the detail required and recourse must be had to valuation by another method, most commonly the value derived by adding the revaluation element that applied to the asset during the period covered by the balance sheet to the opening balance sheet value (or the time since acquisition for newly acquired assets) and deducting the consumption of fixed capitaldepreciation estimated for the period as well as any other volume changes and the value of disposals. In the case of anticipated terminal costs, the value of these costs should be added to the value of the relevant assets, with a corresponding entry under provisions; see also the section on supplementary items below. In calculating the value of eonsumption of fixed capitaldepreciation, assumptions have to be made about the decline in price of the asset and even where full market information is not available, partial information should be used to check that the assumptions made are consistent with this.
- 14.2914.33 Estimates of consumption of fixed capitaldepreciation must include the decline in value of the purchasers' costs of ownership transfer on acquisition and disposal associated with these assets. These are to be written off over the period the purchaser expects to own the asset. In many cases, this period may coincide with the expected life length of the asset but for some types of asset, particularly vehicles, the purchaser may intend to sell them after a certain period, for example, in order to acquire a newer model with a higher level of specification and lower maintenance costs. Installation costs should be treated in a similar manner. Where possible, the estimates of consumption of fixed capitaldepreciation should also allow for anticipated terminal costs such as decommissioning or rehabilitation. Further explanation of these adjustments can be found in chapters 4011 and 4917. More detail on the application of a perpetual inventory method (PIM) of estimating the value of capital stock of fixed assets can be found in the OECD Manual on Measuring Capital (2009, 2nd edition).
- **14.30**<u>14.34</u> For dwellings, there may be adequate information available from the sale of both new and existing buildings to assist in making balance sheet estimates of the total value of dwellings. However house prices depend to a considerable extent on location and the geographical pattern of sales in the period may not cover all areas adequately, in which case a technique such as a PIM will have to be used. This technique will probably also apply to many other buildings and structures since their characteristics are often specific to the structure concerned.
- 14.31<u>14.35</u> The value of land improvements is shown as the written down value of the improvements as originally carried out, suitably revalued. This will always be equal to the difference in value between the land concerned in an unimproved or natural state, and its value after the improvements have been effected, though both the land and the land improvements will be subject to price changes over time.
- 14.36 Markets for existing automobiles, aircraft, and other transportation equipment may be sufficiently representative to yield useful price observations for valuation of these stocks or at least to use in conjunction with a set of PIM assumptions. In the case of existing industrial plant and equipment, however, observed prices on markets may not be suitable for determining values for use in the balance sheets, either because many of the transactions involve assets that for some reason are not typical, or because they embody specialized characteristics, or because they are obsolete or because they are being disposed of under financial duress.
- 14.32Military weapons systems comprising vehicles and other equipment such as warships, submarines,<br/>military aircraft, tanks, missile carriers and launchers, etc. can be valued by accumulating and revaluing<br/>transactions. Depreciation is typically based on its use in providing deterrence in periods of peacetime.<br/>Destruction in war times and other decreases beyond expectation, which should be recorded as other changes<br/>in the volume of assets, may significantly affect the value of weapons systems.
- 14.33
   Research and development expenditure carried out on contract is valued at the contract price. If carried out on own account, it is valued as cumulated costs. If it is carried out by a market producer, the costs, which should include a return to capital. BothThe valuation estimates need to be increased for changes in prices and reduced because of consumption of fixed capitaldepreciation over the life of the asset.

- 14.34<u>14.39</u> Even though costs of ownership transfer on non-produced assets (other than land) are shown separately in the capital account, and treated as gross fixed capital formation, in the balance sheets these costs are incorporated in the value of the asset to which they relate even though the asset is non-produced. Thus there are no costs of ownership transfer shown separately in the balance sheets. The costs of ownership transfer on financial assets are treated as intermediate consumption when the assets are acquired by corporations or government, final consumption when the assets are acquired by households and exports of services when the assets are acquired by non-residents.
- 14.3514.40 Mineral exploration and evaluation should be valued either on the basis of the amounts paid under contracts awarded to other institutional units for the purpose or on the basis of the costs incurred for exploration undertaken on own account. These costs should include a return to the fixed capital used in the exploration activity. That part of exploration undertaken in the past that has not yet been fully written off should be revalued at the prices and costs of the current period.
- 14.3614.41 Originals of intellectual property products, such as computer software (including artificial intelligence), data and databases, and entertainment, literary or artistic originals should be entered at the written down value of their initial cost, revalued to the prices of the current period. Since these products will have often been produced on own account, the initial cost may be estimated by the sum of costs incurred including a return to capital on the fixed assets used in production. If value cannot be established in this way, it may be appropriate to estimate the present value of future returnsbenefits arising from the use of the original in production.
- 14.3714.42 Subsequent copies may appear as assets (i) if the original owner has subcontracted the duties of reproducing and providing support to users of the copies, or (ii) if a copy is being used under a contract that is effectively a financial lease. In these cases, market prices should be available to use for valuation.

# Inventories

- 14.3814.43 Inventories should be valued at the prices prevailing on the date to which the balance sheet relates, and not at the prices at which the products were valued when they entered inventory. In the balance sheets, figures for inventories frequently have to be estimated by adjusting figures of book values of inventories in business accounts, as described in chapter 67.
- 14.3914.44 As is the case elsewhere in the SNA, inventories of materials and supplies are valued at purchasers' prices, and inventories of finished goods and work-in-progress are valued at basic prices. Inventories of goods intended for resale without further processing by wholesalers and retailers are valued at prices paid for them, excluding any transportation costs that have been separately invoiced to the wholesalers or retailers and included in their intermediate consumption.
- **14.40**<u>14.45</u> For inventories of work-in-progress, the value for the closing balance sheet should be consistent with the value of the opening balance sheet, plus any work put in place during the current period, less any work completed and reclassified as finished goods. In addition, an allowance for any necessary revaluation for changes in prices in the period must be included. As explained in chapter <u>67</u> and chapter <u>1917</u>, the time series of the value of work-in-progress put in place over a period of time should reflect the increase in value of work put in place earlier as the delivery date approaches.

# Valuables

- 14.4114.46 Given their primary role as stores of value, it is especially important to value works of art, antiques, jewellery, precious stones and metals at current prices. To the extent that well-organized markets exist for these items, they should be valued at the actual or estimated prices that would be paid for them to the owner were they sold on the market, excluding any agents' fees or commissions payable by the seller, on the date to which the balance sheet relates. On acquisition they are valued at the price paid by the purchaser including any agents' fees or commissions.
- 14.4214.47 An approach in the absence of organized markets is to value these items using data on the values at which they are insured against fire, theft, etc., to the extent information is available.

# 2. Non-produced non-financial assets (excluding natural capital)

# **Contracts, leases and licences**

14.48 Contracts, leases and licences may be marketable operating leases, licences to use <u>certain</u> natural resources, permits to undertake specific activities and entitlement to future goods and services on an exclusive basis. <u>Non-fungible tokens that grant limited commercial rights are also included</u>. As explained in <u>part 5 of</u> chapter 4727, these sorts of contracts are regarded as assets only if the existence of the legal agreement confers benefits on the holder in excess of the price paid to the lessor, <u>owner of the natural resource</u> or permit issuer and the holder can realize these benefits legally and practically. It is recommended that such assets be recorded only when the value of the asset is significant and is realized, in which case a suitable market price necessarily exists. The asset does not exist beyond the length of the contract agreement and its value must be reduced accordingly as the remaining contract period shortens.

# Crypto assets without a corresponding liability designed to act as a medium of exchange

14.4314.49 Crypto assets without a corresponding liability designed to act as a medium of exchange are completely homogeneous assets which are often traded in considerable volume and have their market prices listed at regular intervals. Such markets yield data on prices that can be multiplied by indicators of quantity in order to compute the total market value of different classes of assets held.

# **Purchased G**goodwill and marketing assets

14.44<u>14.50</u> The balance sheet entry for <u>purchased</u> goodwill and marketing assets is the written-down value of the entry that appears in the financial account when an enterprise is taken over or when a marketing asset is sold. These entries are not revalued.

# 2.3. <u>Non-produced assetsNatural resources</u>

# Land

- 14.4514.51 In principle, the value of land to be shown under natural resources in the balance sheet is the value of land excluding the value of improvements, which is shown separately under fixed assets, and excluding the value of buildings on the land which is also to be shown separately under fixed assets, and also excluding the value of any other natural resources above or below it. Land is valued at its current price paid by a new owner, excluding the costs of ownership transfer which are treated, by convention, as gross fixed capital formation and part of land improvements and are subject to consumption of fixed capital/depreciation.
- 14.4614.52 Because the current market value of land can vary considerably according to its location and the uses for which it is suitable or sanctioned, it is essential to identify the location and use of a specific piece or tract of land and to price it accordingly.
- 14.47<u>14.53</u> For land underlying buildings, the market will, in some instances, furnish data directly on the value of the land. More typically, however, such data are not available and a more usual method is to calculate ratios of the value of the site to the value of the structure from valuation appraisals and to deduce the value of land from the replacement cost of the buildings or from the value on the market of the combined land and buildings. When the value of land cannot be separated from the building, structure, or <u>natural resourceplantation</u>, vineyard, etc., above <u>or below</u> it, the composite asset should be classified in the category representing the greater part of its value. Similarly, if the value of the land improvements (which include site clearance, preparation for the erection of buildings or planting of crops and costs of ownership transfer) cannot be separated from the value of land in its natural state, the value of the land may be allocated to one category or the other depending on which is assumed to represent the greater part of the value.

- 14.4814.54 It is usually much easier to make a division between land and buildings for the total economy than for individual sectors or subsectors. Separate figures are needed for studies of national wealth and environmental problems. Fortunately, combined figures are often suitable for purposes of analysing the behaviour of institutional units and sectors.
- 14.4914.55 Land appears on the balance sheet of the legal owner except when it is subject to a financial lease as may most often occur in connection with a financial lease over a building or plantation on the land. By convention, an exception is made for cases where the legal owner of a building is not the legal owner of the land on which the building stands but the purchase price of the building includes an upfront payment of rent on the land beneath without any prospect of further payments being due in future. In such a case, land is recorded on the balance sheet of the owner of the building on the land.

# Mineral and energy resources

- 14.50As the ownership of non-renewable mineral and energy resources does not change frequently on<br/>markets, it may be difficult to obtain appropriate prices that can be used for valuation purposes. Therefore,<br/>the value of subsoil-non-renewable mineral and energy resources is usually determined by the present value<br/>of the expected net returnsbenefits, or the residual value, resulting from the commercial exploitation of those<br/>resources, although such valuations are subject to uncertainty and revision. As the ownership of mineral and<br/>energy resources does not change frequently on markets, it may be difficult to obtain appropriate prices that<br/>ean be used for valuation purposes. In practice, it may be necessary to use the valuations that the owners of<br/>the assets place on them in their own accounts.
- 14.57 It is frequently the case that the enterprise extracting a resource is different from the legal owner of the resource. In many countries, for example, oil resources are the property of governmentthe state. However, it is the extractor who determines how fast the resource will be depleted and since the resource is not renewable on a human time-scale, it appears as if there has been a change of economic ownership to the extractor even if this is not the legal position. Nor is it necessarily the case that the extractor maywill have the right to extract until the resource is exhausted. Whatever the case, as the lessor often does not appropriate the full resource rent which can be derived from the exploitation of mineral and energy resources, the asset should be allocated to the lessor and the extractor in line with the estimated appropriation of future resource rents. As such, the economic ownership is split between the original (legal) owner and the extractor. More details on the recording of this split-asset approach are provided in chapter 27.Because there is no wholly satisfactory way in which to show the value of the asset split between the legal owner and the extractor, the whole of the resource is shown on the balance sheet of the legal owner and the payments by the extractor to the owner shown as rent. (This is therefore an extension of the concept of a resource rent applied in this case to a depletable asset.)
- 14.5114.58 For renewable energy resources, the recording and valuation is similar to that recommended for non-renewable mineral and energy resources. However, there are two additional issues to take into consideration. Firstly, where the residual value method is inappropriate due to subsidisation or other market distortions, an alternative approach, known as the "least-cost alternative" method could be applied. This latter approach attempts to identify resource rents by comparing the cost of electricity generation with and without renewable resources. Secondly, the possibility of double-counting needs to be acknowledged. Especially in the case of privately owned land, the market value of land may already capture the additional value related to a permission to exploit for example wind energy. On the other hand, the double-counting problem does not exist in cases where the relevant land is not valued, or no land is involved (e.g., wind turbines on open seas).

# Non-cultivated bBiological resources, water resources and other natural resources

14.5214.59 For biological resources, a distinction can be made between resources yielding repeat products and resources yielding once-only products. Regarding the first category, For balance sheet purposes, livestock that continue to be used in production year after year should be valued on the basis of the current purchasers' prices for animals of the same age. For valuing work-in-progress, for example relating to animals yielding repeat products that are not yet mature, market prices may also be available. Such information is less likely

to be available for trees (including shrubs) cultivated for products they yield year after year; in this case they should then be recorded at the current written-down value of the cumulated capital formation. Such capital formation, including work-in-progress, may have to be valued using the sum-of-costs method when produced on own account. However, the net present value of future benefits from exploiting these resources may be an alternative and more appropriate method for approximating the value of these resources.

- 14.60 Regarding biological resources yielding once-only products, a distinction can be made between cultivated resources, mainly consisting of livestock raised for slaughter, agricultural crops and resources such as trees for timber production, and non-cultivated resources, mainly consisting of resources such as fish in open seas.
- 14.61 Regarding livestock raised for slaughter and agricultural crops, the asset only consists of work-in-progress, and can usually be valued by reference to the prices of such products on markets.
- 14.5314.62 In the case of trees for timber production and similar cultivated resources, Standing single-use crops (including timber) cultivated by human activity and livestock being raised for slaughter are also counted as inventories in work in progress. The conventional way of valuing these resourcesstanding timber is to discount the future proceeds of selling the timber at current prices after deducting the expenses of bringing the timber to maturity, felling, etc. For the most part, other crops and livestock can be valued by reference to the prices of such products on markets. However, this value will typically include two types of assets, which need to be recorded separately under the relevant asset categories: (i) the work-in-progress representing the growth of trees to maturity; and (ii) the resource rent captured by the underlying asset, i.e., the forest land which is typically not separately valued, and thus not included in the value of land.
- 14.5414.63 Non-cultivated biological resources, water and other natural resources are included in the balance sheet to the extent that they have been recognized as having economic value that is not included in the value of the associated land. An example relates to fish in open seas, which are subject to some form of quota regime. As observed prices are not likely to be available, they are usually valued by the present value of the future benefitsreturns expected from them.

# 3.4. Financial assets and liabilities

14.5514.64 In line with the general valuation principles described above, whenever financial assets and liabilities are regularly traded on organized financial markets, they should be valued at current prices. Financial claims that are not traded on organized financial markets should be valued by the amount that a debtor must pay to the creditor to extinguish the claim. Financial claims should be assigned the same value in the balance sheets whether they appear as assets or liabilities. The prices should exclude service charges, fees, commissions and similar payments for services provided in carrying out the transactions. There is more detailed discussion on the definition of financial assets and their recording in chapters 12 and 2511 and part 4 of chapter 17.

### Monetary gold and SDRs

- <u>14.5614.65</u> Monetary gold is to be valued at the price established in organized markets<u>or in bilateral</u> arrangements between central banks.
- 14.5714.66 The value of the SDR is determined daily by the IMF on the basis of a basket of currencies. Rates against domestic currencies are obtainable from the prices in foreign exchange markets; both the basket and the weights are revised from time to time.

# **Currency and deposits**

14.5814.67 For currency, the valuation is the nominal or face value of the currency. For deposits, the values to be recorded in the balance sheets of both creditors and debtors are the amounts of principal that the debtors are contractually obliged to repay the creditors under the terms of the deposits when the deposits are liquidated. The amount of principal outstanding includes any interest and service charge implicit financial services on loans and deposits due but not paid. Currency and deposits in foreign currency are converted to

domestic currency at the mid-point of the bid and offer spot exchange rates prevailing on the date of the balance sheet. Repayable margin payments in cash related to financial derivatives contracts are included in other deposits.

# **Debt securities**

- 14.5914.68 Short-term securities, and the corresponding liabilities, are to be valued at their current market values. Such a valuation is particularly important under conditions of high inflation or high nominal interest rates.
- 14.6014.69 Long-term securities should always be valued at their current prices on markets, whether they are bonds on which regular payments of interest are paid or deep-discounted or zero-coupon bonds on which little or no interest is paid. The price should always be that including accrued interest (the so-called "dirty" price, which is considered suitable for valuation of items in the balance sheet). In contrast, the market price of a debt security excluding the accrued interest not yet payable is called the "clean price" and requires accrued interest not yet paid to be added for use in the balance sheet. Although the nominal liability of the issuer of a long-term security may be fixed in money terms, the market prices at which fixed interest securities are traded may vary considerably in response to variations in general market rates of interest. As the issuer of a long-term security usually has the opportunity to refinance the debt by repurchasing the security on the market, valuation at market prices is generally appropriate for both issuers and holders of long-term securities, especially financial transactors who actively manage their assets or liabilities.
- 14.61<u>14.70</u> An index-linked debt security is also valued at its market price in the balance sheet whatever the nature of the index to which the security is linked.
- <u>14.62</u><u>14.71</u> If both the principal and coupons of a debt instrument are indexed to a foreign currency, the security should be treated as if it is denominated in that foreign currency with conversion to domestic currency at the mid-point of the rates prevailing on the date of the balance sheet.
- 14.6314.72 For analytical purposes, it is encouraged to compile, as supplementary items, statistics on the nominal value of liability positions in debt securities.

### Loans

- 14.64<u>14.73</u> The values of loans to be recorded in the balance sheets of both creditors and debtors are the amounts of principal outstanding, i.e., the nominal value. This amount should include any <u>accrued</u> interest that has been earned but not been paid. It should also include any amount of <u>indirectly measured service</u> chargeimplicit financial services on loans and deposits (the difference between bank interest and SNA interest) due on the loan that has accrued and not been paid. In some instances, accrued interest may be shown under accounts receivable or payable but inclusion in loans is to be preferred if possible. In addition to specific transactions, such as debt forgiveness or restructuring, the value of loans may be affected by value resets recognized by the creditor, such as in cases of bankruptcy, liquidation, or other factors. The other factors should be restricted to re-assessments in view of a formal, publicly known process.
- <u>14.65</u><u>14.74</u> The value of a loan does not reflect the consequences of any interest payments due after the date of the balance sheet, even if these were specified in the original loan agreement.
- 14.6614.75 If there is evidence of a secondary market for a loan, and frequent market quotations are available, the loan is reclassified as a security. A loan that is traded once only and for which there is no evidence of a continuing market is not reclassified but continues to be treated as a loan. The valuation rules for debt securities and loans then apply.
- 14.67<u>14.76</u> Loans where the principal is index-linked, or both principal and interest are indexed to a foreign currency, should be treated in the manner described above for debt securities with these characteristics.

# Non-performing loans

- 14.6814.77 Despite the fact that loans are to be recorded in the balance sheets at nominal values, certain loans that have not been serviced for some time should be identified and <u>memorandumsupplementary</u> items concerning them should be included in the balance sheet of the creditor. These loans are termed non-performing loans. A common definition of such a loan is as follows. A loan is non-performing when payments of interest or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons (such as a debtor filing for bankruptcy) to doubt that payments will be made in full. This definition of a non-performing loan is to be interpreted flexibly, taking into account national conventions on when a loan is deemed to be non-performing. Once a loan is classified as non-performing, it (or any replacement loans) should remain classified as such until payments are received or the principal is written off on this or subsequent loans that replace the original.
- 14.6914.78 Two memorandum supplementary items are recommended relating to non-performing loans. The first is the nominal value of the loans so designated, including any accrued interest and service charge. The second is the market equivalent value of these loans. The closest approximation to market equivalent value is fair value, which is "the value that approximates the value that would arise from a market transaction between two parties". Fair value can be established using transactions in comparable instruments, or using the discounted present value of cash flows, or may sometimes be available from the balance sheets of the creditor. In the absence of fair value data, the memorandum supplementary item will have to use a second best approach and show nominal value less expected loan losses.
- 14.79 These memorandum supplementary items should be standard for both the government sector and the financial corporations sector. If they are significant for other sectors, or for loans with the rest of the world, they should be shown as supplementary items.

# Equity and investment funds shares/units

Equity

- 14.71<u>14.80</u> Listed shares are regularly traded on stock exchanges or other organized financial markets. They should be valued in the balance sheets at their current prices.
- 14.7214.81 For unlisted shares, there may be no observable market prices for positions in equity not listed on a stock exchange. This situation often arises for direct investment enterprises, private equity, equity in unlisted and delisted companies, listed but illiquid companies, joint ventures, and unincorporated enterprises.
- 14.7314.82 When actual market values are not available, an estimate is required for measuring the equity of unlisted corporations at market-equivalent prices. The following methods for approximating market values are preferred, as also illustrated in figure 14.1: Alternative methods of approximating market value of shareholders' equity in a direct investment enterprise follow. These are not ranked according to preference, and each would need to be assessed according to the circumstances and the plausibility of results.
  - a. *Own funds at book value.* This method for valuing equity uses the value of the enterprise recorded in the books of the direct investment enterprise, as the sum of (i) paid-up capital (excluding any shares on issue that the enterprise holds in itself and including share premium accounts); (ii) all types of reserves identified as equity in the enterprise's balance sheet (including investment grants when accounting guidelines consider them company reserves); (iii) cumulated reinvested earnings; and (iv) holding gains or losses included in own funds in the accounts, whether as revaluation reserves or profits or losses. The more frequent the revaluation of assets and liabilities (at least, on an annual basis), the closer the approximation to market values. Data that are not revalued for several years may be a poor reflection of market values.
  - b. *Recent transaction price.* Unlisted instruments may trade from time to time, and recent prices, within the past year, at which they were traded may be used. Recent prices are a good indicator of current market values to the extent that conditions are unchanged. This method can be used as long as there has been no material change in the corporation's position since the transaction date. Recent transaction prices become increasingly misleading as time passes and conditions change.

c. <u>Market capitalisation or Price to book Value (P/B) method.</u> Book values reported by enterprises with macrolevel adjustments by the statistical compiler. For untraded equity, information on "own funds at book value" can be collected from enterprises, then adjusted with ratios based on suitable price indicators, such as prices of listed shares to book value in the same economy with similar operations. Alternately, assets that enterprises carry at cost (such as land, plant, equipment, and inventories) can be revalued to current period prices using suitable asset price indices.

# 14.7414.83 In the case the above methods cannot be applied, for example due to the unavailability of relevant source data, the following methods could be used as an alternative:

- a. Net asset value. Appraisals of untraded equity may be conducted by knowledgeable management or directors of the enterprise, or provided by independent auditors to obtain total assets at current value less total liabilities (excluding equity) at market value. Valuations should be recent (within the past year).
- b. *Present value/price to earnings ratios.* The present value of unlisted equity can be estimated by discounting the forecast future profits. At its simplest, this method can be approximated by applying a market or industry price-to-earnings ratio to the (smoothed) recent past earnings of the unlisted enterprise to calculate a price. This method is most appropriate where there is a paucity of balance sheet information but earnings data are more readily available.
- c. Apportioning global value. The current market value of a global enterprise group can be based on the market price of its shares on the exchange on which its equity is traded, if it is a listed company. Where an appropriate indicator may be identified (for example, sales, net income, assets, or employment), the global value may be apportioned to each economy in which it has direct investment enterprises, on the basis of that indicator, by making the assumption that the ratio of net market value to sales, net income, assets, or employment is a constant throughout the transnational enterprise group. (Each indicator could yield significantly different results from the others.)

Figure 14.1: Decision tree for valuing unlisted equity



- 14.7514.84 In cases where none of the above methods is feasible, less suitable data may need to be used. For example, cumulated flows or a previous balance sheet adjusted by subsequent flows may be the only sources available. Since these sources use the prices of previous periods, they should be adjusted for subsequent price developments, for example by using aggregate share price or asset price indices, and taking into account exchange rate movements, where relevant. The use of unadjusted summing of past transactions is not a recommended practice. Equity represents owners' funds. The means through which equity can be generated may take various forms, such as share issues, equity injections without any commensurate issue of shares (sometimes called "contributed surplus" or "capital contributions"), share premiums, accumulated reinvested earnings, or revaluation. While these should be taken into account when cumulated flows need to be used as a starting point to measure the value of equity, the different categories are all components of equity and need not be identified separately in other cases.
- 14.76 If the current market price is not directly observable, the decision about the method to adopt should take into account the availability of information as well as judgments as to which available method best approximates market values. Different methods may be suitable for different circumstances and a standard ranking of the alternative methods is not proposed for valuing instruments when current market prices are not directly observable. Compilers should be transparent and should state clearly the method(s) used. Methods for valuation of direct investment equity positions are discussed in more detail in the OECD Benchmark Definition of Foreign Direct Investment, fourth edition (Organisation for Economic Co operation and Development, 2008) referred to as the BD.

14.77

<u>14.85</u> Other equity covers equity in any corporation or quasi-corporation that does not issue shares or units. Such corporations include public enterprises, the central bank, some special government units, partnerships, unlimited liability companies and quasi-corporations whenever they are institutional units without shares. Other equity should be valued as equal to the value of the unit's assets less the value of its liabilities.

Alternatively, equity in quasi-corporations may be valued using one of the three preferred methods for valuing unlisted equity mentioned above.

- 14.86 The valuation methods for unlisted equity recommended in the above can lead to negative values. This is in particular true for those methods which are based on the balance sheet items of the corporation in question. In the case of unlimited liability entities, it is recommended to always record the resulting negative equity positions. In the case of limited liability entities, however, it is recommended to record negative equity positions as the default option and only zeroing out negative positions in specific cases where the shareholder's and its affiliates' liability is strictly limited.
- 14.87 In respect of the latter, strictly limited liability is referring to a situation where the shareholder would not suffer any other direct economic losses than the existing equity investment in case of bankruptcy and would not be likely to take on any financial obligations in the absence of implicit guarantees or significant reputational risks. Examples of other direct economic losses would include loan losses and the realization of guarantees, while the willingness to assume new financial obligations could be related to reputational, societal, or other reasons.
- 14.78Generally, it can be assumed that implicit guarantees or significant reputational risks exist when a<br/>shareholder's ownership share is at least 10%. This implies that negative direct investment equity positions<br/>should not be zeroed out unless the direct investor has no legally binding economic obligations, except for<br/>the existing equity investment, and a history of not assuming any new financial obligations in the event of<br/>bankruptcy or termination of its direct investment enterprises. Following this recommendation, negative<br/>equity positions in public corporations including central banks should never be zeroed out.
- 14.7914.89 Countries are encouraged to show negative equity positions as supplementary "of which" items under the relevant equity assets and liabilities.

### Investment fund shares or units

14.8014.90 Shares (or units) in money market funds or in other investment funds should be valued in a manner similar to the proposals under equity. Listed shares should be valued using the market price of the share. Unlisted shares should be valued according to one of the methods described above for unlisted equity.

# Insurance, annuities, pension and standardized guarantee schemes

# Non-life insurance technical reserves

14.8114.91 The amount of the reserves for non-life insurance to be recorded in the balance sheet covers actual premiums paid but not earned at the date for which the balance sheet is drawn up plus the amount set aside to meet outstanding claims. This latter amount represents the present value of the amounts expected to be paid out in settlement of claims, including disputed claims, as well as allowances for claims for incidents which have taken place but have not yet been reported.

# Life insurance and annuityies entitlements

14.8214.92 The amount to be recorded under the stock values for life insurance and annuit<u>yies</u> entitlements is similar to that for non-life insurance technical reserves in that it represents reserves sufficient to meet all future claims. However, in the case of life insurance, the level of the reserves is considerable and represents the present value of all expected future claims. In the commercial accounts of insurance corporations, some of these will be described as provisions for bonuses and rebates. These are the result of the insurance industry's practice of smoothing benefits over time and possibly retaining some benefits until the policy matures.

# Pension entitlements

14.8314.93 The entitlements due under pension schemes comprise two elements; one when the formula determining the amount of the pension is agreed in advance (as under a defined benefit scheme) and one where the amount of the pension depends on the performance of financial-assets acquired with the future pensioner's contributions (a defined contribution scheme). For the former, an actuarial estimation of the liabilities of the pension provider is used; for the latter the value is the market-value of the financial-assets held by the pension fund on behalf of the future beneficiaries. The basis on which pension entitlement is calculated and the alternative means of representing these in the accounts of the SNA are described in detail in chapter 1724.

# Claims of pension funds on pension managers

14.94 When a pension manager is responsible for meeting the liabilities of a defined benefit pension fund, the pension fund has a claim on the pension manager equal to the shortfall of the assets accumulated in the pension fund as compared to the pension entitlements. In the case of a surplus, a claim with a negative value is recorded. In this way, the net worth of the pension fund remains equal to zero at all times.

# Provisions for calls under standardized guarantees

14.95 The value to be entered in the balance sheet for provisions for calls under standardized guarantees is the expected level of claims under current guarantees less any expected recoveries. Strictly speaking, these amounts will represent a degree of double counting in the assets of the units benefiting from the guarantees. For example, if financial institutions make 1 000 loans of 20 each that are covered by guarantees and 10 are expected to default, the value of the loans made is still shown as 20 000 and in addition the lenders have an asset of 200 in respect of the expected calls under the guarantee. However, the unit offering the guarantee has a liability of 200 with no matching asset so the net worth for the whole economy is not overstated.

# **Financial derivatives**

14.8414.96 The treatment of derivatives is discussed in chapter 1125. Financial derivatives should be included in the balance sheets at market value. If market value data are unavailable, other fair value methods to value derivatives, such as options models or present values, may be used.

# **Options**

14.8514.97 Options should be valued in the balance sheets as either the current value of the option, if this is available, or the amount of the premium payable. A liability should be entered in the sector of the writer of the option to represent either the current cost of buying out the rights of the option holder or the accrual of a holding gain. Depending on how margin systems operate, it may be appropriate to enter zero for the value of an option, as any profits (losses) will have been received (paid) daily by the holder. The counterpart of these asset entries should be entered as liabilities.

### Forwards

14.8614.98 A forward is recorded at market value. When payments are effected, the value of the asset and associated liability is amortized and subsequently reflected in the balance sheet value on the appropriate accounting date. The market value of a forward contract can switch between an asset position and a liability position between accounting dates depending on price movements in the underlying item(s). All price changes, including those that result in such switches, are treated as revaluations.

# Employee stock options

14.8714.99 Employee stock options (ESOs) should be valued by reference to the fair value of the equity instruments granted. The fair value of equity instruments should be measured at grant date using a market value of equivalent traded options (if available) or using an option pricing model (binomial or Black-Scholes) with suitable allowance for particular features of the options. The IASB gives detailed recommendations on how ESOs may be valued and their recommendations are likely to be followed by corporations using ESOs as a form of compensationremuneration for their employees. The value of the ESO alters between grant date and vesting date and then between the vesting date and exercise date as the value of the shares covered changes. Part 6 of eChapter 1725 covers ESOs in more detail.

### Other accounts receivable or payable

- 14.8814.100 Trade credit and advances and other items due to be received or paid (such as taxes, dividends, rent, wages and salaries, and social contributions) should be valued for both creditors and debtors at the <u>outstanding</u> amount of <u>principal</u> the debtors are contractually obliged to pay the creditors when the obligation is extinguished. Interest due <u>but not paid</u> on other accounts receivable or payable may be included here but, in general, interest due <u>but not paid</u> on deposits, debt securities <u>and loans</u> is recorded as increasing the value of the asset concerned. Interest accruing on deposits and loans may have to follow national practices and be classified here if it is not incorporated into the <u>principal-outstanding amount</u> of the relevant loan or deposit.
- 14.8914.101 Emission permits are treated as prepaid taxes on production. As such, they are also recorded as part of other accounts receivable and payable. They should be valued at their nominal value, despite the fact that they may be tradable and have a market price which is different from the prepaid taxes on production at issuance prices.

# 4.<u>5.</u> Net worth

- 14.9014.102 Net worth is the difference between the value of all financial and non-financial assets and all liabilities (including shares and other equity) at a particular point in time. For this calculation, each asset and each liability is to be identified and valued separately. As the balancing item, net worth is calculated for institutional units and sectors and for the total economy.
- 14.9114.103 For government, households and NPISHs, the value of net worth is clearly the worth of the unit to its owners. In the case of quasi-corporations, net worth is zero, because the value of the owners' equity is assumed to be equal to its assets less its liabilities. For other corporations, the situation is less clear-cut.
- 14.9214.104 In the SNA, net worth of corporations is calculated in exactly the same way as for other sectors, as the sum of all assets less the sum of all liabilities. In doing so, the value of shares and other equity, which are liabilities of corporations, are included in the value of liabilities. Shares are included at their market price on the balance sheet date. Thus, even though a corporation is wholly owned by its shareholders collectively, it is seen to have a net worth (which could be positive or negative) in addition to the value of the shareholders' equity.
- 14.9314.105 An alternative calculation is similar to the treatment of quasi-corporations. This calculates the value of the shareholders' equity in such a way that net worth is zero. This calculation of shareholders' equity is called own funds and is calculated as the sum of its assets less the sum of its liabilities other than shares.
- 14.9414.106 A non-zero value of own funds comes about through a number of factors. One reason is the existence of "assets" that are not recognized as such in the SNA such as <u>purchased</u> goodwill and marketing assets. Another is that the view in the SNA that the value of some financial assets, such as bonds and non-performing loans, may not coincide with a fair value approach. Some or all of these items may be available from the balance sheet of the corporation and it may be useful to compare the sum of these with the amount derived as the difference between net worth and the value of owner's equity. (For unlisted shares, indeed, this may be one way to value these shares.) Further, the market value of shares reflects market sentiment about future income streams which may fluctuate with much more volatility than the underlying value of the corporation.

- 14.9514.107 Own funds include accumulation over time of retained and reinvested earnings. Once current transfers receivable are added to entrepreneurial income and current transfers payable (and the pension entitlement adjustment) are deducted, what remains is available for distribution in the form of dividends. Retained earnings are the amount of a corporation's income available for distribution as dividends that is not so distributed. This amount may be negative on occasion, representing a withdrawal from own funds. In the case of a direct investment enterprise a proportion of retained earnings is treated as reinvested earnings, the proportion depending on the extent of the direct investor's ownership of the corporation. These earnings are recorded in the financial account as being reinvested in the corporation and form part of own funds at that time.
- 14.9614.108 From time to time, some of own funds may be assigned to (or withdrawn from) either general or special reserves. They may be augmented by an injection of capital by the owners or by the receipt of investment grants.

# **5.6.** <u>MemorandumSupplementary</u> items

14.97<u>14.109</u> In addition to the <u>memorandum supplementary</u> items on non-performing loans, the SNA allows for twoencourage the compilation of <u>memorandum supplementary</u> items to the balance sheets in order to show items not separately identified as assets in the <u>central frameworksequence of economic accounts</u> that are of more specialized analytic interest for particular institutional sectors. These <u>twoerelate to</u> are consumer durables, <u>concessional lending</u>, <u>and</u> foreign direct investment, <u>and provisions</u>.

# **Consumer durables**

- 14.9814.110 Households acquire durable goods such as cars and electrical goods. However, these are not treated as being used in a production process giving rise to household services. They therefore do not constitute fixed assets and are not shown as such in the balance sheet. Nevertheless, it is useful to have data on these goods and so consumer durables are included in the balance sheets as a <u>memorandumsupplementary</u> item. The stocks of consumer durables held by households are to be valued at current prices, both gross and net of accumulated depreciation equivalent to <u>consumptiondepreciation</u> of fixed <u>assetseapital</u>. The figures shown as <u>memorandumsupplementary</u> items in the balance sheet should be net of these accumulated charges.
- 14.9914.111 Durable goods held by owners of unincorporated enterprises may be used partly by the enterprise for production and partly by members of the household for final consumption. The same holds for durable goods such as vehicles which are partly used by self-employed to offer taxi services to third parties. The values shown in the balance sheet for the enterprise, or self-employed, should reflect the proportion of the use that is attributable to the enterprise, but this may not always be known in practice.

# **Concessional lending**

- 14.112 Institutional units may lend to other units under conditions in which the contractual interest rate is intentionally set below the market interest rate that would otherwise apply. The degree of "concessionality" can be enhanced with grace periods, frequencies of payments and a maturity period favourable to the debtor. Since the terms of a concessional loan are more favourable to the debtor than market conditions would otherwise permit, concessional loans effectively include a transfer from the creditor to the debtor. In the sequence of economic accounts, adjustments are only made for concessional loans provided by employers to employees, whereby the difference between the market interest rate and the concessional rate is recorded as remuneration of employees.
- 14.113 In view of its importance for various analytical purposes, it is encouraged to compile, as supplementary items, statistics on concessional loans provided by governments and international organisations. The supplementary items consist of the nominal value of such loans in the sequence of economic accounts, as well as the adjusted nominal value of these loans. The latter value is to be calculated by adjusting the original nominal value with the net present value of the future concessional elements. Alternatively, the adjusted nominal value could be estimated by the net present value of future payments discounted with the market interest rate. The difference

between the two nominal values is considered to be a capital transfer at inception. The latter is recommended, because the decision to provide a lower interest rate for a certain period of time at the start of the loan, or the decision to change the conditions of a loan, is an explicit policy decision at the time of inception or at the time of changing the conditions.

# **Foreign direct investment**

<u>14.114</u> Just as flows of foreign direct investment are shown in the financial account, so it is interesting to have similar items in the balance sheets showing the stock of assets and liabilities invested in the country by non-residents and invested abroad by residents. All sectors may have <u>foreign direct</u> investment abroad; only financial and non-financial corporations (excluding non-profit institutions within them) may receive <u>foreign direct</u> investment from abroad.

# Accounting for provisions

- 14.115 To arrive at a better understanding of (potential) financial vulnerabilities, it is encouraged to compile supplementary items for (changes in) three types of provisions, as follows:
  - a. *Financial assets related provisions.* This category concerns provisions which have a clear relationship with financial assets. They include provisions for losses on loans and other financial assets. Provisions for calls under standardized guarantees are not included, as these provisions are recognised as liabilities in the sequence of economic accounts.
  - b. Non-financial assets related provisions. This category concerns provisions which have a clear relationship with non-financial assets such as mineral and energy resources. They include but are not necessarily confined to anticipated terminal costs (e.g., future obligations to remove offshore oilrigs and to restore sea beds), and potential compensation payments for damages caused by process of extracting natural resources (e.g., damages caused by oil spills or damages to neighbouring dwellings and other structures resulting from mining activities).
  - **a.c.** *Provisions unrelated to asset ownership.* This category includes, for example, provisions made in respect of warranties, customer refunds, and the like. Provisions for major compensation payments related to, for example, health damages caused by produced goods and services, are also included.



# National Statistician's Committee for Advice on Standards for Economic Statistics

NSCASE October 2024 – Chapter 14 NSCASE Meeting Minutes

# System of National Accounts 2025 – Chapter 14: Balance Sheet

- 1. Ian and Robert led the discussion on this paper.
- Richard provided an overview of the chapter noting that the chapter had not previously been circulated. He explained that the ONS's comments on the chapter were light touch and broadly in line with those submitted by other countries. These included generating negative recourse resource rent values for wind power and comments around repair and maintenance. He also noted issues of phraseology of natural capital.
- Ian noted the lack of cross-referencing between stock information in this chapter, and the flows in chapter 7 and elsewhere. He felt the explanations in the chapter were insufficient, necessitating backtracking for critical information. He suggested adding more of this information to avoid duplication. He highlighted paragraphs 14.5, 14.6, and 14.13 as good examples of where cross referencing would be beneficial.
- 4. Robert raised that in paragraph 14.3, the treatment of ownership of a resource lease had changed from the legal owner to a split between the economic owner and the legal owner based on the estimated appropriation of future resource rents.
- 5. Richard explained that this was to try to capture natural recourses that were held by a government but extracted by a private firm. The chapter tried to introduce a split asset where the ownership remained with the government, but the economic value was extracted by a company.
- 6. Robert believed that the increased move to splitting assets in this and other chapters, could create problems for compilers even if that made sense from an economical viewpoint.
- 7. Robert questioned the use of language in paragraph 14.11 and the sentence, "natural resources typically do not give rise to an international transaction if owned by non-residents because non notional resident units are generally identified." He could not think of why this would not always be the case.
- 8. Richard believed that this was to accommodate migrating assets.
- 9. Ian noted that in paragraph 14.32 there was little coverage on the measurement of business fixed assets, and he believed there should be more detail here about depreciation. Additionally, he could find no mention of the treatment of intangible assets.



- 10. Richard believed that the SNA tried to make headline guidance and that supporting manuals, such as the prices and volumes handbook did cover these areas in more detail. He noted that the document went into further detail on newer topics such as natural capital because the corresponding supplemental detail did not exist. This led to an inconsistency throughout the document between established and new topics.
- 11. Ian believed that this could have been mitigated by cross-referencing back to definitions in earlier chapters.
- 12. The Chair highlighted that the treatment of extraction rights in paragraphs 14.56 to 14.58 was not symmetric with emissions rights. He believed that emission was negative extraction and as such should be treated equally and symmetrically.
- 13. Ian raised that paragraph 14.82 described the first valuation method of unlisted corporations as the book value method. He believed listing this first seemed to suggest it was preferable to the other methods.
- 14. The Chair agreed and believed that the order should be changed and there should perhaps be a note suggesting book value only be used as a last resort.
- 15. Robert thought that the sequencing may have been based on the Balance of Payments Foreign Direct Investment Survey.
- 16. Perry believed that it had been as a pragmatic approach to measuring as a good approximation to the market value.
- 17. Robert raised a point on paragraph 14.101 on emission permits being valued at a nominal value rather than at the market value. The deviation from the market price principle is not justified in the text, nor an explanation provided as to how to record differences between the market value and the nominal value if the permit is traded.

# Chapter 15: Supply and use tables (revised title) (OLD Chapter 14: The supply and use tables and goods and services account)

### A. Introduction

15.1 The sequence of accounts described in chapters 6 to 13 portrays the working of the economy with particular emphasis on how income is generated, distributed, redistributed and used for consumption or the acquisition of assets and when assets are disposed of, or a liability is incurred, to acquire other assets or undertake more consumption than current income permits. An alternative view of the economy focuses less on income and more on the processes of production and consumption. Where do products come from and how are they used? The present chapter is concerned with this aspect of the accounts. It consists of a description of a product balance and the generalization of this to the goods and services account, as well as the practical and conceptual benefits of these accounts. It also shows how supply and use tables can be compiled for the economy and provides a link to input-output tables, which are described in chapter 28.

### 15.2

15.3 In this chapter, and elsewhere, the expressions "product balance" and "product flow" methods are used in preference to "commodity balance" and "commodity flow method" as reflecting more recent usage of the word product in place of commodity. The change in terminology does not indicate a change in methodology, however.

15.4

- 15.5 Supply and use tables are a powerful tool with which to compare and contrast data from various sources and improve the coherence of the economic information system. They permit an analysis of markets and industries and allow productivity to be studied at this level of disaggregation. When, as is usually the case, supply and use tables are built from establishment data, they provide a link to detailed economic statistics outside the scope of the SNA.
- 15.1 The supply and use tables are an integral part of the integrated framework of national accounts forming the detailed framework for the compilation of a single and coherent estimate of GDP, both in current prices and in volume terms. The supply and use tables provide a powerful framework to balance and integrate all the components of the production, income and expenditure approaches to measuring GDP, and provide key links to other parts of the SNA framework and beyond.
- 15.2 In their simplest form, the supply and use tables describe how products (goods and services) are brought into an economy (either as a result of domestic production or imports from other countries) in the supply table, and how those same products are used (as intermediate consumption; final consumption by households, nonprofit institutions serving households, and general government; gross capital formation; and exports) in the use table.
- 15.3 The supply and use tables also provide the link between components of output, inputs and GVA by industry. Although typically they show only the industry dimension, supply and use tables can also be formulated to show the role of different institutional sectors (for example, non-financial corporations, government, and others) providing an important linking mechanism to the sequence of economic account (goods and services account, production account, generation of earned income account and the capital account).
- 15.4 Primarily, the supply and use tables are compiled by many countries in the course of producing their key national accounts estimates, thereby improving the coherency and consistency of these estimates.
- 15.5 Importantly, and by design, these interlinkages facilitate data confrontation and the examination of the consistency of data on goods and services obtained from different statistical sources, such as business surveys, household surveys and administrative data within a single detailed framework. They also provide a powerful mechanism for feedback on the quality and coherency of primary data sources.
- 15.6 For a full understanding of international interdependencies and their impact on important policy areas, such as trade, competitiveness and sustainable development, there is an increasing need to view production and

**Commented [ED1]:** Consistency with the UN Handbook on Supply and Use Tables and Input-Output Table with Extensions and Applications has been applied with the aim of minimising changes to SNA, e.g., removal of obsolete terms.

Also a number simple edits for consistency or clarification.

**Commented [ED2]:** The introduction has been amended to reflect the significant evolution of SUTs to today. The SUTs role, usage and importance is very different since the 2008 SNA as well as links to various new developments by OECD, UN, European Commission, etc. consumption through a global value chain lens. In other words, multi-country supply and use tables and inputoutput tables have become essential tools to inform policy and policymakers. This has led to the creation of various multi-country databases to allow analyses not only of the national economy but also of the interlinkages between economies covered by the multi-country tables.

- 15.7 The supply and use tables (and input-output tables) inform several national and international policy issues, including:
  - Digitalisation, for example, digital supply and use tables (see chapter 22).
  - Multi-country supply and use tables and multi-country input-output tables (see chapter 36).
  - Globalisation, for example, extended supply and use tables (see chapter 23), global value chains (see chapter 23 and 36) and trade in value added (see chapter 23 and 36).
  - Climate change, for example, physical supply and use tables, environmentally-extended input-output tables.
  - Productivity, for example, KLEMS-type productivity measures (see chapter 18).
  - Well-being and sustainability, for example, various extended supply and use tables covering education, health and unpaid household service work (see chapter 34).
- 15.8 This chapter covers a concise overview of supply and use tables (section B); more details in the supply table (section C) and the use table (section D); further elaboration of the use table (section E); and a numerical example of a supply and use table (section F). Throughout this chapter, consistency has been ensured and more detail is available in the UN Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications (2018).

### **B. Overview**

### 2.1. Product balances

15.615.9 The amount of a product available for use within the economy must have been supplied either by domestic production or by imports. The same amount of the product entering an economy in an accounting period must be used for intermediate consumption, final consumption, capital formation (including changes in inventories) or exports. These two statements can be combined to give a statement of a product balance:

Output + imports = intermediate consumption + final consumption + capital formation + exports

- 15.7<u>15.10</u> The accounting rules from chapter <u>34</u> including the time of recording and the valuation rules from chapter <u>67</u> and elsewhere apply to each of the entries in this identity. Because the <u>The</u> uses of products are usually valued at purchasers' prices, <u>but</u> and the production at basic prices, <u>thus</u> it is necessary to add tradedistribution margins and transport margins, and taxes on products less subsidies on products the lefthand (or supply) side of the identity so both sides are expressed in purchasers' prices. Thus a fuller articulation of the product balance for any product recognizes that the sum of output at basic prices plus imports plus tradedistribution margins and transport margins plus taxes on products less subsidies on products is equal to the sum of intermediate consumption, final consumption and capital formation, all expressed at purchasers' prices, The valuation applied to imports and taxes is complex and is described at length in section <u>BC</u>. The valuation applied to imports and exports requires special consideration and is described in sections <u>BC</u> and <u>CD</u> below.
- 15.8<u>15.11</u> A product balance is an especially powerful tool for a compiler as is best illustrated by example. Typically the <u>domestic</u> production of tobacco products, mainly cigarettes, is well measured but consumption

of cigarettes is not, because of the reluctance of respondents to report accurately how much is spent on them in a household budget survey. Assuming that output, imports and exports are well <u>measured (allowing for exhaustiveness, in this case smuggling of tobacco)</u> then the identity of the product balance can be used to generate data for consumption that will be consistent with other items in the identity. The compiler can then use <u>expertise judgement</u> to reach a balance by adjusting the components as necessary.

- 15.915.12 It is not always final consumption that is the weakest component of the identity. In some cases, consumption data may be more reliable than output data. For example, in the case of taxi services where much may be supplied by unregulated and unmeasured activity, the estimate of how much households spend on taxis may help improve the estimates of output to include these aspects of the informal economynon-observed economy.
- 15.1015.13 Even for items where informal activity is not an issue, a product balance may be useful. Aircraft manufacture is a long process. Work in progress may be measured either by the amount the manufacturer claims to have completed or by the amounts the potential purchaser has paid for by means of stage payments. These two sources of data need to be reconciled with adjustments in the financial accounts for accounts receivable or payable as necessary.

### 3.2. The goods and services account

- 15.1115.14 If a product balance is drawn up for all goods and services in the economy (either individually or in groups of products) and these are aggregated, the totals for output, imports, intermediate consumption, final consumption, capital formation and exports must be equal to the corresponding items identified in the sequence of accounts elaborated in previous chapters. The tradedistribution margins and transport services embodied in margins represent products that may also be seen as being used for intermediate or final consumption, capital formation or exports. The fact that the value of the margins may be included with the value of the goods they apply to does not invalidate the identity. Thus when product balances are aggregated across all goods and services, these margins are necessarily included and do not need to be specified additionally.
- 15.1215.15 Since the figures for output and intermediate consumption correspond to the entries for output and intermediate consumption in the production account, the identity of the sum of all product balances may be rearranged to become *the goods and services account, which reads:*

 $\label{eq:output-intermediate} \textit{Output-intermediate consumption} + \textit{taxes on products} - \textit{subsidies on products} = \textit{final consumption} + \textit{capital formation} + \textit{exports} - \textit{imports}.$ 

As explained in chapter 6.7 (to check), the left-hand side of this identity is equivalent to GDP at market prices. The right-hand side is therefore also equal to GDP at market prices and is the well-known statement of GDP often described as the "expenditure approach". By contrast, the definition coming from the left-hand side of the identity is known as the "production approach" to GDP. The components of the "income\_approach" are also shown in the composition of GVA.

15.1315.16 The goods and services account is one of the most basic, if not the most basic, identity in the SNA. It captures the idea that all output from within the production boundary; plus imports; must be accounted for in one of the other two basic activities of the SNA, consumption of goods and services or accumulation of goods and services. Without the goods and services account, a supply and use table would not be fully articulated and exhaust all products available within the economy. The whole sequence of <u>economic</u> accounts can be viewed as built around the goods and services account by adding transactions relating to the generation, distribution and redistribution of income and saving. When these transactions are aggregated across all <u>institutional</u> sectors and the rest of the world, total resources are equal to total uses. If these were to be "consolidated" out of the sequence of <u>economic</u> accounts, only the goods and services account would be left.

15.1415.17 Every row of the supply and use tables is a reminder of the basic identity of the goods and services

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### 4.3. Supply and use tables

15.151.8 With a complete set of product balances, supply and use tables can be created. Supply and use tables exist in pairs with common valuation and level of detail as regards the products identified. The most common format of supply and use tables is at purchasers' prices. A use table at purchasers' prices consists of a set of product balances covering all products available in an economy arranged in the form of a rectangular matrixtable with the products, valued at purchasers' prices, appearing in the rows and the columns indicating the disposition of the products to various types of uses. A supply table at purchasers' prices consists of a rectangular matrixtable with the products to various types of uses. A supply table at purchasers' prices consists of a rectangular matrixtable with the rows corresponding to the same groups of products as the matching use tables and columns corresponding to the supply from domestic production valued at basic prices plus columns for imports and the valuation adjustments necessary to have total supply of each [group of] product[s] valued at purchasers' prices.

15.1615.19 Sections BC and CD below describe the supply and use tables respectively.

- 15.1715.20 Supply and use tables are a necessary first step in preparing input-output tables as described in chapter 2836 but have important uses on their own, both analytically and as quality control tools. When supply and use tables are first prepared, they are unlikely to balance and until they are brought into balance, GDP measured from the production approach will differ from the expenditure measure of GDP.approach and the income approach to measuring GDP. Only supply and use tables provide a sufficiently rigorous framework to eliminate discrepancies in the measured flows of goods and services throughout the economy to ensure the alternative measures of GDP converge to the same value.
- 15.1815.21 Some countries with less advanced statistical systems still have difficulty in deriving a detailed breakdown of household consumption expenditure from direct sources on a regular basis. Such a breakdown is necessarily available from within a set of supply and use tables. One benefit of this is that the proportionate distribution of expenditure on different product groups can be compared with the weights used in a consumer price index (CPI) as a means of checking both the CPI weights and the supply and use tables for plausibility and consistency.

### 5.4. The industry dimension

- 15.1915.22 It is conceptually possible to compile a set of supply and use tables with intermediate consumption treated in total only, with the use table showing how much of each product is used for intermediate consumption but with no further detail. Such a presentation has little value as either a compilation or analytical tool but from the earliest elaboration of supply and use tables and input-output tables onwards, further detail was introduced to relate the products used in the economy to the units producing them. The simplest case and the one most often elaborated in text bookstextbooks assumes that it is possible to establish a one-to-one correspondence between products and producing units. This indeed is the motivation for defining an establishment as a unit producing only one type of product. However, there is no necessary reason for the match to be one-to-one and many countries now work with tablesmatrices where many more groups of products are distinguished than groups of producing units. The most important reason for this is that most units produce very many products, for example, a footwear manufacturer may make sandals, sports shoes, uniform boots and fashion shoes, and it would be neither practicable nor interesting to try to create an establishment for each type of footwear.
- 15.2015.23 Once a set of producing units is determined, the <u>domestic</u> supply <u>matrixtable</u> is expanded to show exactly which products <u>that</u> each of the groups of producing units supplies and the use <u>matrixtable</u> is expanded to show intermediate demand for each of these groups of producing units. In addition, extra information relating to the producing units is appended below the demand for intermediate consumption, so that the columns corresponding to the producing units contain the components of value added as well as total output. In other words, the identity that

intermediate consumption + value added = output

is apparent for each group of producing units (industry) in addition to the aggregate product-based equivalent. Further

information relating to capital formation and number of employees, for instance, may also be added. These extensions are discussed in section  $\underline{\textbf{PE}}$ .

### 6.5. A numerical example

15.2115.24 \_\_\_\_\_Tables illustrating supply and use tables are shown in section EF with associated descriptive text. These tables contain all the features described in the chapter but at a high level of aggregation since they are intended for illustrative purposes only. In addition, some extracts from these tables are included in the text to illustrate the features being described.

### **B.<u>C.</u>** The supply table

15.2215.25 The main part of the supply matrixtable is a matrixsub-table of products (or commodities) by industry showing which what each industry supplies or "makes" which produces by type of product. For this reason, it used sometimes to be described as a "make matrix".

### 1. Products and producing units

- 15.2315.26 While it is possible to compile a supply table using enterprises as the basic building block, it is more common and generally recommended to work with establishments. As noted in the introduction, the idea of an establishment as a unit where only one type of product is produced derives from the idea of an input-output table where there is a one- to-one correspondence between the groups of products distinguished and the groups of producing units distinguished. All the conventions described in chapter 56 about when an establishment is identified apply in the context of using establishment data for a supply matrix;table, indeed although establishment-level data may be used in the context of short-term economic indicators, they are used in the SNA only in the context of the supply and use tables.
- 15.2415.27 The basis for grouping products (i.e., goods and services, including knowledge-capturing products that result from a process of production) is most commonly an aggregation of CPC and the resulting groups are described as "commodities" though modern usage would be "products". The basis for grouping producing units is most commonly ISIC and the resulting groups are often described as "industries".
- 15.2515.28 In the case where there are the same number of groups of producing units as there are products, there will be a large entry in one cell of the column representing the principal product of that group of producing unit, that is the product that gives rise to the largest proportion of value added. If the group of producing units contains only pure establishments, there will be no other entries in the column but most often there will be some secondary production showing as smaller entries in other cells in the column.
- 15.26<u>15.29</u> When there are the same <u>breakdown number</u> of groups of producing units as groups of products, the rows and columns are arranged so that the entries for the principal products fall on the diagonal of the resulting <u>matrixtable</u>.
- 15.2715.30 In practice, it is common for there to be more products than types of producing units. For example, it is interesting to specify different sorts of agricultural crops but less interesting or practical to distinguish farms specializing in each of the possible sorts of crop. For this reason, the supply table (make matrix)-may be rectangular with more rows than columns but arranged with similar products in adjacent rows so that an aggregation of the rows for similar products would again produce a square matrixtable.
- <u>15.28</u><u>15.31</u> The greater the amount of product detail that is used, the more there will be a scatter of entries around the entries for the principal products, for example when a farm produces more than one crop or a

**Commented [ED5]:** No reference is made to "make" matrix as it is an out of date term.

**Commented [ED6]:** Commodities is an out of date term, it is now products.

manufacturer of machinery produces different types of machines. At a level of detail such as "agricultural product" and "machinery" these off-diagonal elements will be merged in a larger diagonal element.

15.29<u>15.32</u> However, as well as similar products, many establishments produce some retail and wholesale services, some transport services and some construction <u>output</u>, the last sometimes being produced for own use as capital formation.

#### 2. Accounting rules

- $\frac{15.3015.33}{34}$  All the rules about time of recording, re-routing and partitioning of transactions described in chapter  $\frac{34}{34}$  apply to the entries in the supply and use tables.
- 15.3115.34 Although the supply and use tables do not record property income flows, the financial services associated with the payment of interest and with the acquisition and disposal of financial assets and liabilities are recorded in the supply and use tables. Chapter 1725 (to check) explains in detail what sorts of financial service flows are associated with transactions in financial assets and property income flows.

15.3215.35 The re-routing of flows associated with margins is described below under valuation.

### 3. Production

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- 15.3315.36 The principles for recording output in the supply and use tables are exactly the same as those for recording output in the production account, as described in chapter 62. It should be emphasized that all the concepts and definitions of the SNA elaborated in previous chapters describing the sequence of <u>economic</u> accounts apply equally and exactly to supply and use tables and input-output tables. The only difference is in the manner of presentation of the accounts, not in the underlying fundamentals of the SNA.
- 15.3415.37 As noted in the introductory section, the producing units to be identified in the supply and use tables are determined by reference to an industrial classification such as *ISIC*. However, it may also be useful to distinguish which producing units are market and which are non-market. This may be applied generally or to just those groups where significant production on both bases is common, for instance in health and education services. Similarly, production on own account may also be of special interest and can be distinguished within the *ISIC* categories, for instance for the construction industry. One could also make the distinction within the industry of the different types of product produced, for example, computer software and construction products.

#### Table 1415.1: Abbreviated version of the production part of the supply table

- 15.3515.38 In general, in keeping with the guidance on their treatment given in chapters 45 and 56, ancillary activities are not treated as giving rise to products that are recorded as output in the accounts. One exception is when some products are used both for own ancillary use and are supplied to another unit. Another exception is where it is appropriate to treat the unit producing the ancillary products as a separate establishment, for example because of its geographical location where it may be a source of significant employment.
- 15.3615.39 Bearing in mind the discussion about units, the production part of the supply matrixtable is a matrixtable with rows corresponding to product groups and columns corresponding to groups of producing units. The entries in this matrixtable show the value of output of each type of product by each group of producing unit. The goal of creating establishments is to partition horizontally and vertically integrated enterprises so that each row and column of the matrixtable is dominated by one entry with only a few non-zero entries, which are typically fairly small, elsewhere. There is more discussion on this sort of partitioning of enterprises in chapter 56.
- 15.3715.40
   Table 1415.1 shows columns 16, 20, 23 and 24 of the supply matrixtable shown in table 1415.12.

   In the full version it is clear that most entries in the sub-matrixtable for market production are zero. Even in the abbreviated table, this is obvious for production for own final use and for non-market production.

### 4. Imports

### Classification

15.3815.41 In order to add imports to domestic production to reach total supply, imports must be classified by products in a manner consistent with that used for domestic production. This is not always straightforward since imports (and exports) are classified not according to CPC but according to, for example, the HS\_\_or SITC\_or EBOPS. Finding a level of aggregation of the trade data that is sufficiently detailed but also consistent with domestic production may be a factor in determining the level of detail to be adopted in the supply and use tables.

### **Goods for processing**

- 15.3915.42 The traditional view of an input-output table or a supply and use table was that it portrayed the physical or technological process of production. The aim was to show which products were combined, and in what proportions, to make other products. One consequence of this, in combination with the idea of establishments, was that if one establishment of an enterprise was responsible for making steel and another for making steel products, the steel from the first establishment was shown as being delivered (or "sold") to the second. This meant the final customer for the steel products bought them entirely from the second establishment and the production account showed the value of the steel included in both intermediate inputs and output. A similar approach was taken for goods sent abroad for processing but then returned to the original economy.
- 15.4015.43 In terms of the SNA, this approach amounts to imputing a change of ownership when goods are delivered from the first unit to the second. For imports and exports, this is particularly inappropriate in the case of goods sent abroad for processing since to ensure consistency in the SNA, financial transactions that do not take place have to be imputed to match the imputed change in ownership of the goods. In reality, though, the unit processing (processor) the goods assumes no risk associated with the eventual marketing of the products; the risk remains with the legal owner (principal). The processor is not at risk from (and does not benefit from) any unexpected changes in prices of either the components or the final product. The only risk the processor accepts is limited to meeting the contractual commitment in the most cost-effective manner. The value of the output of the processor is the fee agreed for the product. When the processing of the product of the processing in the value of the goods and services processed, for example due to holding gains or losses or to the incorporation of R&D or the benefits of marketing assets accrue to the legal owner of the product. When the processing is carried out abroad, exports from the processing country consist only of the processing fee.
- 15.4115.44 With the increasing importance of outsourcing under globalization of markets, there is great interest in knowing where the returns to labour arise and how far operating surplus accrues to the processor and how far to the unit that contracts the processing.
- 15.4215.45 The pattern of inputs for an establishment processing goods on behalf of another unit is quite different from the pattern of inputs when the establishment is manufacturing similar goods on their own account. A simple illustration may be given by referring to crude petroleum. The unit refining on own account has intermediate consumption of crude oil and output of refined petroleum products; the unit processing (processor) on behalf of another unit (principal) has all the other similar inputs and uses the same sort of fixed capital but shows neither the crude petroleum nor the refined products in its production account. For similar amounts of crude oil processed, the value added and other inputs will be comparable and when the process is carried out for a non-resident, imports will exclude the crude oil and exports will exclude the refined products but include the processing fee. As a result, the current external balance will be unaffected by this treatment. The result of recording only the processing fee rather than the full value of the goods processed does, however, affect the ratios of imports and exports to GDP and gives a more realistic picture of the extent to which domestic financial resources are required to fund imports or benefit from exports.
- 15.4315.46 Similar consequences hold for processing by resident producers. There is discussion in chapter 67 about whether or not to record deliveries from one establishment to another in the same enterprise.

15.4415.47 Measuring goods for processing by the processing fee instead of by the full value of the processed

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goods changes the nature of input-output coefficients. They no longer represent the technological structures of an industrial process but an economic process. Changes in coefficients may result not from changes in technology but from changes in the proportion of oil (in this case) processed on own account and processed on behalf of another unit. More extensive discussion on the treatment of goods for processing (and the similar but distinct case of merchanted goods) is given in chapter 2633 but the consequences for supply and use tables and input-output tables are extremely significant and change many of the traditional perceptions about what information is conveyed in these tables.

- 15.48 Interpreting input-output coefficients as representing the technological structure of an industry does not recognize the role of other factors, such as whether fixed capital is rented or owned, the importance of ancillary activities or the consequences of a statistician balancing the tables. These factors still play an important part in determining input-output coefficients but where extensive processing of goods by third parties occurs, this may be the largest single factor contributing to change in the coefficients.
- 15.4515.49 More detail on processing is covered in Chapter 23, paragraphs 23.21-23.27 and figure 23.2 (to check)

### 5. Valuation

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- 15.4615.50 As explained in the introduction, in order to balance total supply with total use, both must be valued in the same way. The most usual way to achieve this is to raise total supply from basic prices to purchasers' prices and this is the approach described here. However, the alternative, of reducing total use to basic prices is also considered in section DE under discussion about deflating the supply and use tables to prices of another year.
- 15.4715.51 It is helpful to begin by recapitulating the distinction between the purchaser's, producer's and basic prices as explained in chapter 67 and, because of the complexity of VAT and similar deductible taxes, to itemize the difference between the three ways in which VAT is recorded.
  - Invoiced VAT is the VAT payable on the sales of a producer; it is shown separately on the invoice that the producer presents to the purchaser;
  - b. Deductible VAT is the VAT payable on purchases of goods or services intended for intermediate consumption, gross fixed capital formation or for resale that a producer is permitted to deduct from his own VAT liability to the government in respect of VAT invoiced to his customers; and
  - c. Non-deductible VAT is VAT payable by a purchaser that is not deductible from his own VAT liability, if any.

15.4815.52 Bearing these ways of recording VAT in mind, the price bases in the SNA are expressed as follows:

- a. The purchaser's price is the amount paid by the purchaser, excluding any deductible VAT or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place;
- b. The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer; and
- b.c. The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, on that unit as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.

15.4915.53 When an item is not sold directly by the producer but passes through the hands of one or more

wholesaler or retailer, it is necessary to consider the distribution margins these wholesalers and retailers add to the cost of the product. One possibility is to treat distribution margins as another element increasing the value of the purchaser's price over the producer's price. An alternative possibility is to treat the purchaser as undertaking two quite different transactions; one is the purchase of the item directly from the producer, the second is the purchase of the margins involved. A supply and use table at purchasers' prices assumes the former; a supply and use table at basic prices assumes the latter.

<del>15.50<u>15.54</u></del>

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θ<u>15.54</u> Whichever alternative for handling tradedistribution margins is chosen, the three price valuations can be linked schematically as follows:

### Purchasers' prices

minus wholesale and retail distribution margins (distribution trade margins),

minus transportation charges invoiced separately (transport margins),

minus non-deductible VAT,

equals producers' prices;

minus taxes on products resulting from production excluding invoiced VAT,

plus subsidies on products resulting from production,

equals basic prices.

<u>15.51</u> Thus the three factors that need to be considered in converting the values of output and imports to purchasers' prices are:

- a. TradeDistribution margins,
- b. Transport margins, including the CIF/FOB adjustment,
- c. Taxes less subsidies on products.

15.5215.56 Each of these is considered in turn below. TradeDistribution margins are typically more significant in size than transport margins but are conceptually more straightforward. Transport margins are complex because of the different ways in which the cost of transport can be recovered.

### TradeDistribution margins

15.5315.57 TradeDistribution margins may be significant and may apply to virtually all goods. When a supply and use table is compiled at purchasers' prices, the distribution margins need to be added to the rows for each group of products.

15.5415.58 In order to account for the use of wholesalers and retailers margins, an adjustment column is added to the supply part of the supply and use tables. This column shows the addition to the value of each group of goods to which the margins apply with an offsetting negative entry for the rows corresponding to the margins. Typical entries for transport margins are treated in the same manner. Table 1415.2 shows the adjustment column (2) from the full supply table 1415.12.

15.5515.59 TradeDistribution margins are usually produced within the economy but may apply to both domestic production and to imports. Transport margins, on the other hand, may be provided by both residents and non-residents and may be provided to both residents and non-residents. This aspect of transport margins is discussed in the following paragraphs.

Table 1415.2: An example of the entries to adjust supply to include tradedistribution

### margins and transport margins

### **Transport margins**

<u>15.56</u><u>15.60</u> It is helpful to consider the case of domestic transport charges first and see how they are included in the supply and use tables before turning to transport margins on imports.

### Domestic transport charges

- 15.61 As explained in paragraphs 6.65 to 6.66,7.65 to 7.66 (to check) if the producer agrees to deliver the product to the purchaser without explicit charge, the cost of delivery is included in the basic price. Only if the purchaser is explicitly invoiced for the delivery is there a specific transportation margin that is part of the purchaser's price.
- 15.62 The rationale behind the need for different recordings is that the point when change of ownership occurs is different under the different scenarios. If A agrees or is obliged to provide transport to B, even for a charge, then change of ownership takes place when the product is delivered to B's factory and therefore a transport margin is recorded, if the basic price does not include the cost of delivery. If B agrees or is obliged to arrange delivery itself, then change of ownership takes place when the product leaves A's factory.

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- 15.5815.63 Consider the situation where a unit, A, sells a product to unit B. For simplicity it is assumed they are both producers with factories some distance apart. If B collects the product from A, the price charged is 200. The cost of transport from A's factory to that of B is 10. Both A and B have delivery fleets that can transfer the product from A to B or either may use a third party, C, to make the transfer. Ten per cent tax (not VAT) is payable on both the cost of the product and the transport costs. Different values of the three possible prices result from the alternative means of moving the product from A to B as shown in table 1415.3.
- 15.5915.64 The entries in the use matrixtable will be quite different for each of these six cases, even though the total cost to B is similar throughout. Only when B collects the product itself is the purchaser's price for the product plus delivery less than 231. In this case it must be assumed that the internal costs of collection are 10, as before, so only the tax payable on this, 1, is a reduction in the total cost of taking delivery.
- 15.6015.65 When A or B undertake transport as an ancillary activity, the cost of petrol and other consumables will appear in intermediate consumption, the driver's wages in compensation of employees and there will be consumption of fixed capital recorded in respect of the vehicle used.
- 15.61<u>15.66</u> These entries will appear for A when it is undertaking a secondary activity but the cost of the secondary activity will appear as intermediate consumption of A's primary activity.
- 15.6215.67 When C acts as an agent for A, whether A charges B directly for C's services or not, the cost of C's services forms part of A's intermediate consumption. When C is hired directly by B, then the service cost is part of B's intermediate consumption.

15.63 The rationale behind these different recordings is that the point when change of ownership occurs is different under the different scenarios. If A agrees or is obliged to provide transport to B, even for a charge, then change of ownership takes place when the product is delivered to B's factory. If B agrees or is obliged to arrange delivery itself, then change of ownership takes place when the product seven the product leaves A's factory.

### International transport charges

15.6415.68 The information for allocating domestic transport charges is typically available to national accountants from survey information collected from domestic establishments. In the example above, information from A, B and C would, in principle, be available. For products delivered to establishments abroad, this is not the case. Either A or B is non-resident and possibly C also. The most common situation is where information coming from the administrative records compiled by customs authorities must be used. Increasingly, however, some products circulate without direct customs supervision and recording. This

|                 | applies                          | to services but services seldom if ever have transportation charges associated with their delivery.   |  |
|-----------------|----------------------------------|---|--|
| 1 <u>5.6515</u> | .69                              | _The following are examples of goods that may not be covered in customs statistics:   |  |
|                 | a.                               | Goods circulating within a single customs area that spans several economies;  |  |
|                 | b.                               | Goods delivered to offshore establishments such as oil platforms;   |  |
|                 | c.                               | Certain types of goods, such as diamonds and other precious goods of high value but small volume, that may be carried by persons; and   |  |
|                 | d.                               | Ships and aircraft, which, while hardly concealable in a physical sense, may be difficult to distinguish from the vehicles that belong to another economy and simply transit through the domestic economy.  |  |
|                 | It is the<br>internat<br>goods a | erefore appropriate to consider products subject to customs documentation separately from other ionally traded products. Separate consideration also must be given to transport related to merchanted nd goods sent abroad for processing.  |  |
|                 | Table                            | FOB adjustment in the supply and use tables has both the role of balancing detailed service flows erent valuations in the detailed supply and use tables and the role as a macro adjustment to total imports  |  |
|                 | CIF/F                            | OB adjustment   |  |
| 15.70           | The CI<br>on diffe               | E/FOB adjustment in the supply and use tables has both the role of balancing detailed service flows<br>rent valuations in the detailed supply and use tables and the role as a macro adjustment to total imports<br>and services. In brief terms:   |  |
|                 |                                  | (1) At the detailed product level, the supply and use of the individual services (freight transport and insurance) are adjusted so that they can be meaningfully balanced under the CIF valuation of goods; and   |  |
|                 |                                  | (2) At the macro level, the adjustment entries (the sum of which must be zero) that will make the separate totals for exports and imports of goods and of services equal to what is shown in the accounts for the rest of the world, where a FOB valuation of imports of goods is applied.          |  |
| 15.71           | The CI                           | F/FOB adjustment made to the services account for, on the one hand, the difference implied by the luations (FOB and CIF) of services imports where a non-resident has supplied the services (this used is negative) and on the other hand, the difference implied by the two valuations of services |  |
|                 | exports<br>is show               | where the service is supplied by a resident producer. In the supply and use tables, the latter adjustment<br>n as a negative import with the result that the difference between the imports of goods on a FOB basis   |  |
|                 | and the table.                   | imports of goods on a CIF basis, is offset with an adjustment to imports of services, also in the supply  |  |

- 15.72 In table 15.4, the total CIF-based imports are obtained as the sum of data in columns 1 and 4, whereas the FOB-based imports are obtained as the sum of data in columns 1 and 2. This implies that in the measures of the total imports according to the alternative valuations the CIF/FOB correction item will not appear.
- 15.73 Note that in the CIF to FOB adjustment in the balance of payments, the value of insurance premiums (incurred between the two frontiers) is deducted from the value of goods, whereas the corresponding adjustment in the balance of payments services account is to insurance services. As a result, there would generally be a difference between the total adjustment to goods and the corresponding adjustment to services. This difference is not very significant in the context of the balancing that is done in compiling the supply and use tables.

### Products not included in customs documentation

15.6615.74 In the absence of customs documentation, information must be obtained from surveys and other

**Commented [ED7]:** Under the 4th category, A charges B for delivery but uses C to deliver, remove 11 as it is not a margin. The numbers 200, 20, 220 should be replaced with 211, 20, 231.

**Commented [ED8]:** Role of CIF/FOB adjustment described and the link between supply and use tables and the balance of payments. sources and will typically record the prices at which transactions are actually undertaken. The analysis above for goods transported within the domestic economy is likely to apply to international transport also. When the supplier (exporter) commits to deliver goods to the importer, the value of the goods will include the transport costs. When the purchaser (importer) is responsible for transport, the value of the goods excludes the transport costs and these feature as a separate purchase. Whichever of the units takes responsibility for the transport, the values of the goods for both the exporter and importer are identical. This is an important distinction from the valuation used in customs merchandise trade statistics as discussed in the immediately following section.

- 15.6715.75 Following the example in the previous section, if A and B are resident in different economies, whenever A takes responsibility for delivery to B, the value of exports from A (and the corresponding value of imports to B) includes the transport element. If B takes responsibility for the transport from A, then neither the value of exports from A nor the value of imports into B includes the value of the transport.
- 15.6815.76 If the third party, C, is used to undertake the transport, the residence of C is important in determining the value of total imports and exports. If C is co-resident with A and provides services to A, this is a domestic transaction within A's economy. However, the value of the exports of goods from A will reflect the fact that they must cover the cost of services bought from C. If C is co-resident with A but provides services to B to transport the goods from A to B, then C also provides exports to B but these are shown as exports of transport services, not of goods.
- 15.6915.77 If C is co-resident with B and contracts with A to transport goods to B, there are imports of transport services from B's economy to A's which are then included in the value of exports from A to B. If C contracts with B to transport the goods, this is a domestic transaction for B's economy even though C is operating in foreign territory in collecting and moving the goods.
- 15.7015.78 If C is resident in an economy other than that of A and B, then the services provided to A constitute exports of services from C's economy to A's and the value of the goods exported from A to B are sufficient to cover this cost of imports just as previously they covered the cost of a domestic transaction. If C contracts with B to move the goods, the cost shows as an export of services from C's economy to B's.
- <u>15.71</u><u>15.79</u> As in the domestic case, the question of whether the value of goods covers the cost of transportation or not depends on whether the exporter or importer is responsible for transport. Again this is equivalent to whether change of ownership takes place after or before transportation from A to B.

### Products covered by customs documentation

- 15.7215.80 In most countries, most information on imports and exports of goods will come from customs declarations. These declarations are compiled for administrative purposes, namely the levy of import and export duties, and are therefore not necessarily ideal for use in the national accounts or balance of payments context but are used because of their general availability and consistency of valuation.
- 15.7315.81 Within customs declarations, imports are usually valued CIF (that is, they include cost, insurance and freight) at the point of entry into the importing economy. This valuation is standard, regardless of whether any of the CIF elements are provided by domestic enterprises because import duties are typically imposed on the CIF valuation. It also excludes the cost of transport from the border of the importing economy to the premises of the importer. This transport also may be provided by either a resident or non-resident carrier. Exports are valued FOB (free on board) at the point of exit from the exporter's economy. It includes the cost of transport from the exporter's economy. It includes the cost of transport from the exporter's premises to the border of the exporting economy. The CIF/FOB valuation principles arise from the common situation where goods are transported by ship from one country to another and it is not unreasonable to assume that transport to and from the ship would be undertaken by carriers resident in the relevant economy. This assumption may still hold in the main for goods transported by sea and air. It is much less satisfactory for goods transported overland where a single vehicle may transport goods from the exporter to importer without a break at national borders.
- 15.74<u>15.82</u> As noted already, if it is the exporter that contracts the delivery (whatever the nationality of the carrier), it is correct that the cost of transport is included in the value of the good imported, though describing this as CIF is not helpful in the context of the SNA since it is a legitimate part of the cost of the imported

good and should not be seen as a separate import of transport services. The delivery contractor provides services to the exporter and these are shown as an import of services to the exporting economy if the contractor is not co-resident with the exporter.

15.7515.83 If it is the importer that contracts the delivery and if the carrier is not co-resident with the importer, an import of services takes place and, ideally, for the SNA it would be desirable to separate the CIF value into the value of the good only and the value of the transport service. If the importer undertakes delivery itself or contracts with a unit resident in the same economy, there is in fact no import of services even though it will appear there when imports of goods are recorded CIF. To counteract this, a fictional export of the same amount of services must be shown to leave the current balance of goods and services correct.

15.84 For the 2025 SNA and BPM7, the FOB valuation for exports and imports has been maintained. However, it is generally acknowledged that the observed exchange values, which is closely aligned to invoice values, is conceptually preferred. Subject to further testing of the implementation in practice, it is intended to be introduced as the basic principle for valuing imports and exports in the next versions of SNA/BPM.

### Transport on merchanted goods

15.7615.85 Merchanting is a process whereby a unit in economy X purchases goods from economy Y for sale in economy Z. The goods legally change ownership but do not physically enter the economy where the owner is resident. By convention, the acquisition of the goods intended for resale is shown as negative exports. When the goods are sold, they are shown as [positive] exports. When acquisition and sale take place in the same period, the difference shows as an addition to exports. If only the acquisition takes place in an accounting period, the negative export is offset by an increase in inventories of goods for resale, even though those goods are held abroad. In a subsequent period when the goods are sold, the exports recorded for their sale are offset by a withdrawal from inventories. As normal, the withdrawals should be valued at the cost of the goods at the date of the withdrawal, any increase in value due to a change in the price of the goods being shown as a holding gain or loss.

45.77<u>15.86</u> The services provided to transport the goods from Y to Z may be paid for by any of the units in X, Y or Z and should be recorded consistently with the principles outlined above. (See chapter 2623 and 33 for more on merchanting and inverse merchanting.) Commented [ED9]: G.1 reference.

 
 Table 1415.4: An example of imports entries in the supply table with the global CIFto-FOB adjustment
 **Commented [ED10]:** The 2008 SNA Table 14.4 will not be used but the version below will form the new Table 15.4. Location of the table retained as replacing the old table.

|  | Imports of goods                                    | Imports of Services                                     |   |  | <u>Total</u><br>imports |
|--|---|---|---|--|-------------------------|
| Product<br>groups (CPC<br>sections) to be<br>updated | <u>CIF based</u><br><u>detailed</u><br><u>goods</u> | FOB based<br><u>detailed</u><br>services.<br>(BOP data) | <u>Adjustment</u><br>of services to<br><u>SUTs</u><br>basis | <u>CIF</u><br><u>based</u><br><u>detailed</u><br><u>services</u><br>(SUTs basis) |                         |

|                          | 1          | 2          | 2          | 4          | 5            |
|--------------------------|------------|------------|------------|------------|--------------|
|                          | <u>1</u>   | <u> </u>   | <u>2</u>   | 4          | <u>2</u>     |
| <u>1 Agriculture</u>     | <u>37</u>  |            |            |            |              |
| 2 Mining, etc.           | <u>61</u>  |            |            |            |              |
| 3 Manufacturing          | <u>284</u> |            |            |            |              |
| 4 Construction           |            |            |            |            |              |
| 5 Trade etc.             |            | <u>62</u>  | <u>-6</u>  | <u>56</u>  |              |
| 6 Finance and insurance  |            | <u>17</u>  | <u>-4</u>  | <u>13</u>  |              |
| 7 Real estate, etc.      |            |            |            |            |              |
| 8 Business, etc.         |            | <u>5</u>   |            | <u>5</u>   |              |
| 9 Community, etc.        |            |            |            |            |              |
| 10 Other services        |            |            |            |            |              |
| 11 Public administration |            |            |            |            |              |
| Total, CIF-based         | <u>382</u> | <u>84</u>  | <u>-10</u> | <u>74</u>  | <u>(1+4)</u> |
|                          |            |            |            |            | 1            |
|                          |            |            |            |            | <u>456</u>   |
| CIF/FOB adjustment       | <u>-10</u> |            |            | <u>+10</u> |              |
| Total, FOB-based         | <u>372</u> | <u>84</u>  |            | <u>84</u>  | <u>(1+2)</u> |
|                          |            |            |            |            | 456          |
| Purchases abroad by      | <u>20</u>  | <u>23</u>  |            | <u>23</u>  |              |
| residents                |            |            |            |            |              |
| Total                    | <u>392</u> | <u>107</u> |            | <u>107</u> |              |

### Transport on goods sent abroad for processing

15.7815.87 Goods sent abroad from economy X to economy Y for processing without changing ownership, after which they are returned to economy X, are not shown as either exports of goods from X to Y or subsequently as exports of goods from Y to X. As explained above, only the agreed processing fee is shown as an export of service from Y to X. However, there are costs of transporting the goods on both the journey from X to Y and then on the return journey from Y to X. The costs of these journeys, excluding the value of the goods themselves, must be shown as transportation services. If X is responsible for transport on either the outward or inward journey, the cost is an import to X's economy unless it is carried out by X or another unit co-resident with X. If Y is responsible for the transport, the cost is an import to Y unless it is carried out by Y or another unit co-resident with Y. When Y is responsible for transport costs (on either or both journeys) the costs will be covered by the agreed processing fee and hence in the value of the exports of services from Y to X.

### Recording transport margins in the supply and use tables

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- 15.7915.88 In the supply and use tables, either supply must be adjusted to be at purchasers' prices or use must be adjusted to be at basic prices since both sides of the balance must be expressed in the same prices. It is common to compile the use table, initially at least, in purchasers' prices. As shown in table 1415.3, this value will often be the same however the good is transported from the seller to the buyer. The only exception is when the buyer fetches the goods using its own resources. The way the transport service shows in the use table, however, depends critically on how the service is provided (using own resources or a third party contractor) and to whom (the buyer or seller). The different forms of recording in different circumstances are indicated in table 1415.3.
- <u>15.80</u> Imports of goods are to be recorded in the supply table at basic prices with taxes and margins added subsequently. There is no universally appropriate valuation for imports of goods at basic prices. The

### following recommendations should be noted.

- a. If the data come from other than customs documentation, it is to be assumed that actual transaction prices are used and it should be clear whether transport services are separately invoiced or not. If they are, the basic price excludes the value of transport; if not, the basic price value of goods includes transport costs. The purchaser's price will differ from the basic price only because of any taxes payable by the purchaser.
- b. If the data come from customs documentation and if it is the exporter of the goods who is responsible for meeting the transportation costs, the value of the goods at basic prices should include the transport costs. In this case a CIF valuation will approximate the basic price (approximate unless a domestic carrier assumes responsibility for transport from the border of the importing country). The purchaser's price will differ from the basic price only because of any taxes and subsidies payable by the purchaser.
- c. If the data come from customs documentation and if it is the importer of the goods who is responsible for meeting the transportation costs, the value of the goods at basic prices should exclude the transport costs. In this case an FOB valuation will approximate the basic price (approximate because the value of transport from the place of origin to the border of the exporting economy is included in the FOB valuation). The purchaser's price will differ from the basic price because of the transport costs incurred plus any taxes and subsidies payable by the purchaser.
- d. It may not be possible to determine from customs declarations which unit is responsible for the transport costs and, even when it is and conceptually the transport costs should be separated from the value of the goods themselves, there may be no information and no resources available to make the separation in practice. In such a case the CIF value of imports may be the only source with a disaggregation by type of good. If the disaggregated CIF figures are used for imports of goods, though, that part of the transport costs and insurance also included in imports of services would be double-counted. In order to avoid this, therefore, an adjustment column is inserted into the supply table. The adjustment column consists of a deduction from the services items for transport and insurance equal to the CIF-to-FOB adjustment for these items with an offsetting global adjustment made to imports of goods. Table <u>1415</u>.4 gives an example of such an adjustment.

### Taxes and subsidies on products

- 15.8115.90 The taxes and subsidies on products that add to the value of products available in the economy are exactly those described as taxes and subsidies on products in chapter 7.8 (to be checked). Other taxes on production are included in the basic price measurement of output and other subsidies on production are excluded so do not feature in the adjustment for taxes that intervenes between a valuation at basic prices and purchasers' prices.
- 15.8215.91 Value added type taxes in the SNA include VAT proper and taxes that are deductible in a way similar to VAT. The SNA recommends that output, even at producers' prices, is valued excluding VAT invoiced by the producer; imports also are valued excluding invoiced VAT. For intermediate and final uses, the purchases of goods and services are recorded including non-deductible VAT only.
- 15.8315.92 The general cases in which VAT is usually deductible, non-deductible or just not applicable are as follows:

#### Deductible VAT:

- · Most of intermediate consumption
- Most of gross fixed capital formation
  - Part of changes in inventories. Non-deductible VAT:
- · Most of final consumption expenditure

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- · Part of gross fixed capital formation
- · Part of changes in inventories
  - · Part of intermediate consumption. VAT not applicable:
- Exports
- · Any goods or services subject to a zero rate of VAT regardless of their use
- · Any producers exempted from VAT registration (small businesses or the like).
- 15.8415.93 When output is at basic prices, the taxes column contains total non-deductible VAT on products, taxes and duties on imports excluding VAT, export taxes and taxes on products excluding VAT, import and export taxes. When output is at producers' prices, the taxes column includes only taxes and duties on imports (excluding VAT), plus total non- deductible VAT on those products.
- 15.8515.94 Subsidies are recorded as if they were negative taxes on products or negative taxes on production. Only subsidies on products (if any) are entered into the column for the tax adjustment to the valuation of supply; they appear with a negative sign to indicate they reduce the value of purchasers' prices rather than increase it.
- <u>15.86</u><u>15.95</u> Table <u>1415</u>.5 shows columns 3 and 4 from the full supply <u>matrixtable</u> in table <u>1415</u>.12 that show the adjustments for taxes and subsidies on products.

# Table <u>1415</u>.5: An example of the entries to adjust supply to include taxes less subsidies on products

### C.D. The use table

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- <u>15.87]5.96</u> A use table can be viewed as a rectangular table with four quadrants, two in the upper part and two in the lower part. The upper left quadrant consists of a sub-<u>matrixtable</u> showing the use of different products by different groups of producing units. In other words, this quadrant contains intermediate consumption, disaggregated by product in the rows and by industries in the columns. The upper right quadrant consists of a sub-<u>matrixtable</u> showing the use of different products by final consumers, a sub-<u>matrixtable</u> showing the use of different products by final consumers, a sub-<u>matrixtable</u> showing the use of different products for capital formation. Together these three sub-<u>matrixestables</u> show the final demanduses. The lower left quadrant contains information on value added disaggregated to show the elements of the generation of income account, that is compensation of employees, gross operating surplus or gross mixed income and taxes less subsidies on production. Each of these five sub-<u>matricestables</u> is described below. The lower right quadrant is empty.
- 15.8815.97 The upper part of the use matrixtable (the intermediate and final demanduse quadrants) can be valued at purchasers' prices or at basic prices. In this section sub-matrices at purchasers' prices are discussed. The alternative valuation at basic prices is discussed in section <u>DE</u> along with considerations about expressing the use table in volume terms.
- 15.8915.98 Together the left-most quadrants (the intermediate consumption and value added quadrants) can be viewed as a set of columns, each relating to a group of producing units, containing information relating to the production and generation of income accounts plus other information that can be attributed to groups of producing units at a more disaggregated level than groups of enterprises. This other information most often includes capital formation and the number of employees for each group of producing units. These aspects are also discussed in section DE.

### 1. The use of products by producing units

15.9015.99 The sub-matrixtable showing the use of specific products by each type of producing unit (the upper

left quadrant of the table) has long been considered one of the more interesting aspects of supply and use tables and input-output tables. It gives a picture of how products are converted to more complex products either for yet further processing or for sale to final users or as exports. Unlike the supply table or make matrix, which also shows products by producing units, the sub-matrixtable of the use table (sometimes called the "absorption matrix") is densely rather than sparsely populated. The patterns of inputs for market, own final use and non-market producers of the same products are likely to bear a strong resemblance to one another but the variations give insights into how the characteristics of the three sorts of production vary.

15.9115.100 The definition of intermediate consumption and the borderlines with payments for the use of labour and capital are exactly as explained in chapter 67.

- 15.9215.101 Compiling the sub-matrixtable usually starts from information provided by establishments about their intermediate consumption. These may be classified according to the purpose they serve rather than the type of good. The classification of outlays of producers by purpose (COPP) consists of six main headings that apply to intermediate consumption of establishments, only one of which relates to current production techniques. The other five cover more general categories such as outlays on marketing and human resource development that are common to most establishments. Use of this detail in the form of a satellitethematic account is discussed in chapter 2938.
- 15.9315.102 When this is all the information available to the compiler, <u>hethey</u> must make a judgement of what type of products will be covered in each heading allowing for variations between producing units of different types.
- 15.9415.103 It is important to bear in mind the interpretation of data in this sub-matrixtable. The total across the rows show how much of a given product is used as intermediate consumption by all producing units. The total down a column shows the total of all types of products used as intermediate consumption inputs by a single type of producing unit. There is absolutely no reason why the relative size of these two entities should be related in any systematic manner but mistaking one concept for the other is a common error made by users not very familiar with the nature of a supply and use table.
- 15.04 Table 1415.6 shows columns 16, 20, 23 and 24 of the use matrixtable that include the intermediate consumption by each type of production. This contrasts with table 1415.1 which shows the same columns for the supply part of table 1415.12. Whereas table 1415.1 shows that most manufactured products are produced by the market producers in the manufacturing industry, table 1415.6 shows that all three types of producers use manufactured products and that only about half of manufactured products are used in manufacturing industries. While the proportion quoted depends on this example, the phenomenon is generally observed.

Table <u>1415</u>.6: Abbreviated version of the intermediate consumption part of the use table

### 2. The use of products for final consumption

- 15.9615.105 As explained in chapter 9:10 (check), there are threefour types of units that undertake final consumption; households, NPISHs and, general government: and the central bank. The manner of compiling the sub-matrixtable of the use table showing the use of products for final consumption is similar for each of the threefour types of consumer but starts from a different classification for each of them.
- 15.9715.106 Information on consumption by households usually starts from household surveys. In these, household expenditures are classified according to the classification of individual consumption by purpose (COICOP). COICOP classifies household expenditure into ten13 main categories, such as food, clothing and housing. This is useful for analysis of how much of household consumption goes on essentials, for instance, and is basic to the establishment of weights for the consumer price index but it is not in the necessary format for inclusion in the use table. For that a conversion table is necessary showing which of the designated products are purchased as food, which as clothing and so on. It should be noted that household surveys typically include expenditure by households abroad, for example on holidays, which must be separated from demand in the domestic economy in the supply and use tables.

Commented [ED11]: X.3 reference

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15.07 A similar approach is used for consumption expenditure by NPISHs but starting from the classification of the purposes of non-profit institutions serving households (COPNI). COPNI spells out the different sorts of NPISHs there may be by their objectives, for example, whether they undertake research and scientific services, education services or are religious associations. Given this knowledge, it should be possible to determine whether the NPISH is one with costs mainly limited to those associated with running an office with few paid employees or whether there are significant costs associated with acquiring goods and services to pass on to households, for instance.

- 15.9915.108 For general government consumption expenditure, the starting classification is the classification of functions of government (COFOG). This classification is consistent with that proposed in the GFSM2004GFSM2014 and shows a breakdown of government expenditure by standard functions associated with general public services, defence, law and order and so on. As with the classification for NPISHs, knowing the type of function gives a way to start to allocate the expenditure between intermediate consumption and other expenditure and to allocate intermediate consumption to specific product types.
- 15.100\_15.109 It may be useful if possible to split the columns for general government (and NPISHs if appropriate) to show individual consumption expenditure and collective consumption expenditure separately in order to calculate actual consumption rather than consumption expenditure as explained in chapter 910. The whole of non-market output by the central bank is considered as collective consumption expenditure.

#### Table 1415.7: The final consumption part of a use table

- 15.10115.110 When these entries are compiled at purchasers' prices, as assumed in this section, there are no entries for consumption of wholesale and retail services as these are included with the expenditure on the products to which they apply. Equally, taxes payable on products are included in the purchaser's value and do not show separately. (These statements apply equally to products used for intermediate consumption and for capital formation but are much more significant for final consumption.)
- 15.10215.111 Table 1415.7 illustrates the part of the use table for final consumption (columns 30, 31, 32 and 29 of table 1415.12). The entry for production for own final use by households includes the estimate for owner-occupied housing services. The item for expenditure on non-market production by households represents the partial payments made by households for items supplied at nominal prices by government and NPISHs-

<del>15.103</del>

#### 3. The use of products for gross capital formation

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 There are different three types of gross capital formation to be examined: acquisitions less disposals of produced assets (excluding produced natural capital), acquisitions less disposals of produced natural capital, ..., gross fixed capital formation, changes in inventories and acquisition less disposal of valuables. In the discussion below, the acquisitions less disposals of produced assets have been combined.

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#### Gross fixed capital formation

15.106\_15.113 Allocating gross fixed capital formation to products is the easiest part of the use table since the categories of fixed capital fall quite naturally into product groups. Further, they will often be exempt from taxes on products and not subject to tradedistribution margins. However, some assets are subject to costs of ownership transfer on acquisition and disposal and these costs need to be allocated to the appropriate product. This product may be distributiontrade or transport but may also be legal services or real estate services, for example, depending on the asset concerned.

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Commented [ED14]: X.52 reference.

depletion

production of services and there should be the recognition of an asset in the balance sheets in the national accounts. This is recorded as reduction in household final consumption and an increase in household gross fixed capital formation. If the asset is used partly for the households final consumption and partly for production purposes, the value of the asset recorded in the balance sheet should reflect the share of the asset's use in the production of services.

15.10715.115 One aspect that does need to be mentioned, though, is the treatment of existing goods that are resold to another unit. (This applies to consumption expenditure also but is described here because it is most common for fixed capital.)

#### Resale of existing goods

- 15.10915.117 When a building is sold, for example, the seller records negative fixed capital formation and the purchaser records positive fixed capital formation. These items frequently do not offset one another exactly as there may be costs of ownership transfer associated with the exchange. As explained in chapter 1401, costs of ownership transfer incurred by the seller should be written off during the period the seller has owned the asset, so that by the time the item is sold, all the costs of ownership transfer on acquisition should have been written off. For the purchaser, costs of ownership transfer on acquisition of the asset are recorded as part of gross fixed capital formation and, in turn, are written off over the period the purchaser expects to use the asset. In this way costs of ownership transfer of both disposal and acquisition are treated as new fixed capital formation.
- 15.11015.118 Fixed assets may not always be sold to other producers in the same economy. For example, it is common for aircraft to be sold abroad. In this case, the supply of the aircraft is still recorded as negative capital formation but the use is recorded as an export.
- 15.111.15.119 Even when an asset is no longer cost effective, it may have a residual value, for example as scrap. (It should be noted, though, that the margins of charged by scrap merchants are often very high compared to the prices paid by them to acquire the scrap.) In that case the supply is recorded as negative capital formation and the use as intermediate consumption of a producing unit processing the scrap. Chapter 1011 also explains why the total of consumption of fixed capitaldepreciation over the life of the asset is not necessarily the whole value of the asset on acquisition but the difference between the value of the asset on acquisition and its value on final disposal, in this case the scrap value. In cases where the scrap value does not coincide with the residual balance sheet value of the asset is not be made to the value of the asset via the other changes in the volume of assets account.
- 15.112<u>15.120</u> Second-hand assets may also become household consumption expenditure, as for example when a hire car company sells its cars to households for recreational purposes.
- 15.11315.121 If a unit disposes of more assets than it acquires in a period, it will have negative capital formation. It is possible, though not very common, for the figure of capital formation for a group of producing units also to be negative in such a case.
- 15.11415.122 As explained in chapter 910, it is assumed that a household consumes products at the moment they are acquired. In the case of consumer durables this is not strictly so and consumer durables may be sold or donated to other units at a later time (for example in response to requests for disaster relief). In this case also, the supply of the goods in question is treated as negative expenditure by the previous owner and positive use by the new owner (including households in the rest of the world). The way in which the income element of donations to other units is handled is via transfers, as explained in chapter 82 but for a supply and use table this aspect is not relevant since it is only the physical disposition of the product that is recorded.

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#### **Changes in inventories**

- 15.11515.123 While allocating fixed capital formation to product type is relatively straightforward, allocating changes in inventories to product type is challenging. Chapter 1011 explains how the types of inventories identified in the SNA are materials and supplies, work-in-progress, finished goods, and goods for resale. Work-in-progress and finished goods are straightforward to allocate since the products concerned must be those that the unit reporting the inventories produces. Materials and supplies are more complex. Some will be specific to the producing unit reporting them but virtually all producing units will hold some office supplies and cleaning materials, for example, though maybe not to a significant degree. For goods for resale, however, practically all types of goods may be included in inventories. Not only is the range of goods extensive, the pattern of goods held for resale is subject to a high degree of variation over time and even within an accounting period.
- 15.11615.124 In the exercise of balancing a supply and use table, this uncertainty over the composition of inventories, added to the fact that even the valuation of changes in inventories may be less robust than desired, means that inventories are often estimated indirectly and with the need to balance the supply and use table as one of the operating constraints.

#### Valuables

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15.11715.125 The range of products held as valuables is quite extensive and it is an area where existing productsgoods may feature. For example, antiques and old masters, by their very nature, are not output of the current period. The importance of the value of acquisition less disposals of valuables as an item of capital formation, though, tends to be limited and any major disposal, such as sales by a museum, are likely to be well known.

15.11815.126 Table 1415.8 illustrates the capital formation part of a use table.

#### Table 1415.8: The capital formation part of a use table

#### 4. Exports

- 15.11915.127 The allocation of exports by product requires the same conversion between SITC or HS or EBOPS codes as the allocation of imports does. The valuation of exports is easier, though, since in trade statistics exports are uniformly valued FOB. This valuation may not be in perfect accord with the recording in the SNA since the point of valuation is at the border, not necessarily where change of ownership takes place. As with the valuation of imports, ideally exports should be valued when and where they change ownership from a resident unit to a non-resident unit but, again as with imports, the assumption that this change of ownership takes place at the national border may be the only practical assumption given existing data sources.
- 15.128 The different components of package tours are recorded separately, i.e., the package is unbundled. Statistical producers need to distinguish the residency of the visitor, the end provider of the tourism service, the travel agency, the tour operator itself and if relevant, the use of a digital intermediate platform. The treatment of package tours should be recorded as a package of services split as a basket of at least three major services:
  - the services themselves, for example, transport, food, accommodation;
  - the services provided by the tour operator; and
  - the margin of the travel agency which is usually different from margin earned by the tour operator selling the tour.
- 15.129 The impact of recording the unbundling package tours should be consistently applied in estimating domestic output by product(s) using CPC and imports of services (travel account of the balance of payments) by product in the supply table, and again by product, entries for intermediate consumption, household final

Commented [ED15]: C.7 reference.

consumption expenditure and exports of services (travel account of the balance of payments) in the use table. More details are available in BPM 7 Chapter 11.

#### 5. Introducing value added

- 15.12015.131 The sum across the rows of the use table, encompassing intermediate consumption, final consumption, capital formation and exports, for each product type must be equal to the sum across the rows of the supply table (domestic production plus imports plus valuation adjustments to make the valuation in the supply table consistent with that in the use table) for the same product type. The sum down each column of the supply table shows the value of output for the relevant type of producing unit. The sum down the column of the use table for the same type of producing unit shows the amount of intermediate consumption of that type of producing unit. It is an obvious extension, therefore, to add two further lines to the use table for the column corresponding to producing units. The second of the value of output from the supply table, the first contains the difference between this total and the value of intermediate consumption just described and so represents value added for that type of producing unit.
- 15.12115.132 Introducing the entries for value added and output is key to one of the main purposes of the supply and use tables, that of using the structure to ensure the accounts are internally consistent. Returning to some of the examples quoted in the introductory section illustrates this point.
- 15.122[5.133 Suppose the data from a household survey for cigarette consumption is assumed to be accurate and suppose for simplicity there are no exports of cigarettes. This figure then virtually determines the total use of tobacco products and subtracting imports of cigarettes gives a figure for the output of the domestic cigarette factories. This may be much lower than the amounts reported by the cigarette manufacturers and the compiler may be inclined to think the output of cigarette manufacturers is overstated. However, the main intermediate input to cigarette manufacture will be tobacco leaf and there will be other figures for either production or imports of tobacco. Given there are few uses for tobacco other than input into tobacco products and exports, if the supply and use table compiler wishes to adhere to the household expenditure survey data, he is faced with assuming either that there are errors of overstatement of cigaretter, tobacco, production or imports or the household figures for tobacco consumption are understated.
- 15.12315.134 Consider the case of taxi services in a country where communal taxis are the main form of personal transport. As well as the value of taxi services reported by the taxi drivers, there may well be information about the number of cars and amount of petrol or diesel claimed as tax deductions because they are used for taxi services. A judgement can be made about whether these inputs are more consistent with the figure from the household expenditure survey than with the reported output figures.
- 15.124[5.135 More generally it should be noted that once the supply and use tables are balanced, any increase in final use for a particular good must be met from increased total supply or decreased intermediate consumption for the same good. If the increased supply comes from domestic production, then value added increases in final use; if the increased supply comes from increased imports, then both value added and GDP are unaffected (or only marginally if there are import taxes on the good in question). Similarly, any increase in intermediate consumption without an increase in domestic output must lead to a decrease in final use and also a decrease in value added.

#### Table 1415.9: The value added part of a use table

#### 6. Expanding value added at basic prices

15.136 Useful as it is to add value added at basic prices to the bottom of the use table, it is possible and even more helpful to disaggregate value added and show all the entries in the generation of income account (described in chapter 78). Table 1415.9 shows the entries for each type of production in rows 14 and 17 to 25 of the use

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| 127          | part of table $\frac{1415}{12}$ .12.   | and a data for an data and an an independent of the  |                                  |
|--------------|--|--|----------------------------------|
| 137          | The components of gross  | s valued added for market producers shown in the SUIs are as follows:  | Commented [ED17]: CM.4 reference |
|              | Gross value added equal  | s compensation of employees  |                                  |
|              |  | plus other taxes on production   |                                  |
|              |  | minus other subsidies on production  |                                  |
|              |  | plus gross operating surplus   |                                  |
|              |  | plus gross mixed income  |                                  |
| 138          | The relationship between   | n gross value added and net value added by producer, by industry or by institutional   |                                  |
|              | Gross value added  | minus depreciation of fixed assets   |                                  |
|              | Gross value added  | minus depletion of natural resources   |                                  |
|              |  | equals net value added   |                                  |
|              |  | equilib - net talue added  |                                  |
| 5.139        | The relationship between   | n gross operating surplus / gross mixed income with net operating surplus / net mixed  |                                  |
|              | income is:   |  |                                  |
|              | Cases an anting symplex  | ( anone mirror dimension and formation of formation of the   |                                  |
|              | Gross operating surplus  | / gross mixed income minus depreciation of fixed assets  |                                  |
|              | Gross operating surplus  | / gross mixed income minus depreciation of fixed assets<br>minus depletion of natural resources  |                                  |
|              | Gross operating surplus  | / gross mixed income minus depreciation of fixed assets<br>minus depletion of natural resources<br>equals net operating surplus / net mixed<br>income  |                                  |
| <u>5.140</u> | Gross value added by in<br>balanced within the sur<br>surplus (including gross<br>compensation of employ<br>applying the income app<br>can be derived from inco  | / gross mixed income minus depreciation of fixed assets<br>minus depletion of natural resources<br>equals net operating surplus / net mixed<br>income<br>dustry can be derived from the production approach and the income approach and<br>ply and use tables. Using the production approach, by industry, gross operating<br>mixed income) on a national accounts basis is estimated as a residual by deducting<br>yees, other taxes less subsidies on production from gross value added. Whereas,<br>roach, by industry, using administrative and tax based data, gross operating surplus<br>ome-based sources, in particular administrative data:   |                                  |
| 5.140        | Gross value added by in<br>balanced within the sup<br>surplus (including gross<br>compensation of emplo<br>applying the income app<br>can be derived from inco<br>Gross operating surplus                        | / gross mixed income minus depreciation of fixed assets<br>minus depletion of natural resources<br>equals net operating surplus / net mixed<br>income<br>dustry can be derived from the production approach and the income approach and<br>ply and use tables. Using the production approach, by industry, gross operating<br>mixed income) on a national accounts basis is estimated as a residual by deducting<br>yees, other taxes less subsidies on production from gross value added. Whereas,<br>proach, by industry, using administrative and tax based data, gross operating surplus<br>ome-based sources, in particular administrative data:<br>and   |                                  |
| <u>5.140</u> | Gross value added by in<br>balanced within the sur<br>surplus (including gross<br>compensation of employ<br>applying the income app<br>can be derived from inco<br>Gross operating surplus<br>gross mixed income | / gross mixed income minus depreciation of fixed assets<br>minus depletion of natural resources<br>equalsnet operating surplus / net mixed<br>income<br>dustry can be derived from the production approach and the income approach and<br>pply and use tables. Using the production approach, by industry, gross operating<br>mixed income) on a national accounts basis is estimated as a residual by deducting<br>yees, other taxes less subsidies on production from gross value added. Whereas,<br>roach, by industry, using administrative and tax based data, gross operating surplus<br>ome-based sources, in particular administrative data:<br>and<br>equals _self-employment income (mixed income)   |                                  |
| <u>5.140</u> | Gross value added by in<br>balanced within the sup<br>surplus (including gross<br>compensation of employ<br>applying the income app<br>can be derived from inco<br>Gross operating surplus<br>gross mixed income | / gross mixed income minus depreciation of fixed assets<br>minus depletion of natural resources<br>equalsnet operating surplus / net mixed<br>income<br>dustry can be derived from the production approach and the income approach and<br>ply and use tables. Using the production approach, by industry, gross operating<br>mixed income) on a national accounts basis is estimated as a residual by deducting<br>yees, other taxes less subsidies on production from gross value added. Whereas,<br>roach, by industry, using administrative and tax based data, gross operating surplus<br>ome-based sources, in particular administrative data:<br>and<br>equals _self-employment income (mixed income)<br>plusgross trading profits of corporations (including quasi-<br>corporations) before deductions for tax and extraordinary items  |                                  |
| 5.140        | Gross value added by in<br>balanced within the sur<br>surplus (including gross<br>compensation of employ<br>applying the income app<br>can be derived from inco<br>Gross operating surplus<br>gross mixed income | / gross mixed income minus depreciation of fixed assets<br>minus_depletion of natural resources<br>equals_net operating surplus / net mixed<br>income<br>dustry can be derived from the production approach and the income approach and<br>pply and use tables. Using the production approach, by industry, gross operating<br>mixed income) on a national accounts basis is estimated as a residual by deducting<br>yees, other taxes less subsidies on production from gross value added. Whereas,<br>roach, by industry, using administrative and tax based data, gross operating surplus<br>ome-based sources, in particular administrative data:<br>and<br>   |                                  |
| <u>5.140</u> | Gross value added by in<br>balanced within the sur<br>surplus (including gross<br>compensation of employ<br>applying the income app<br>can be derived from inco<br>Gross operating surplus<br>gross mixed income | / gross mixed income       minus       depreciation of fixed assets         minus       depletion of natural resources       equals       net operating surplus / net mixed         income       income       industry can be derived from the production approach and the income approach and uply and use tables. Using the production approach, by industry, gross operating mixed income) on a national accounts basis is estimated as a residual by deducting yees, other taxes less subsidies on production from gross value added. Whereas, roach, by industry, using administrative and tax based data, gross operating surplus ome-based sources, in particular administrative data:         and  |                                  |
| 5.140        | Gross value added by in<br>balanced within the sur<br>surplus (including gross<br>compensation of employ<br>applying the income app<br>can be derived from inco<br>Gross operating surplus<br>gross mixed income | / gross mixed income minus depreciation of fixed assets<br>minus depletion of natural resources<br>equalsnet operating surplus / net mixed<br>income<br>dustry can be derived from the production approach and the income approach and<br>oply and use tables. Using the production approach, by industry, gross operating<br>mixed income) on a national accounts basis is estimated as a residual by deducting<br>yees, other taxes less subsidies on production from gross value added. Whereas,<br>roach, by industry, using administrative and tax based data, gross operating surplus<br>ome-based sources, in particular administrative data:<br>and<br>equals _self-employment income (mixed income)<br>plusgross trading profits of corporations (including quasi-<br>corporations) before deductions for tax and extraordinary items<br>lessholding gains / losses on inventories<br>plusconceptual changes, (e.g., implicit financial services on loans<br>and deposits, insurance related transactions, own-account production,<br>etc.) |                                  |
|              | Gross value added by in<br>balanced within the sur<br>surplus (including gross<br>compensation of employ<br>applying the income app<br>can be derived from inco<br>Gross operating surplus<br>gross mixed income | / gross mixed income       minus       depreciation of fixed assets         minus       depletion of natural resources       equals       net operating surplus / net mixed         income       income       industry can be derived from the production approach and the income approach and uply and use tables. Using the production approach, by industry, gross operating mixed income) on a national accounts basis is estimated as a residual by deducting yees, other taxes less subsidies on production from gross value added. Whereas, roach, by industry, using administrative and tax based data, gross operating surplus ome-based sources, in particular administrative data:         and  |                                  |

Commented [ED18]: WS.4 reference.

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 As well as the entries for the generation of income account, it is possible to add memorandum items relating to other variables that are useful in a study of production at the establishment level. These are gross fixed capital formation by establishment and the number of employees. As discussed in chapter 19, it is preferable to show employment on a full time equivalent basis if this is availabledata on labour input. The labour market tables discussed in chapter 16 provide a framework for presenting more detailed data on labour input consistent with the use tables. These labour market tables include further breakdowns of labour input by, for example, sex or gender, level of educational attainment, etc., as well as provide links to variables such as jobs, vacancies and unemployment, which are highly relevant in analysing the labour market.

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#### **D.E.** Further elaboration of the use table

#### 1. Cross-classification by industry and institutional sectors

15.12715.142 It is possible to take each column of the use table relating to production units and allocate all the entries to one of the institutional sectors of the economy but often the columns have to be allocated to more than one institutional sector. The column for ISIC class covering K-(finance and insurance) is mainly allocated to financial corporations but some units may cover unincorporated enterprises which are allocated to households. The columns for non-market output are allocated to non-financial corporations but with those parts that represent unincorporated enterprises being allocated to non-financial corporations but with those parts that represent unincorporated enterprises being allocated to chouseholds. Such a table provides the link between the supply and use tables and the sequence of accounts since the totals by institutional sector correspond to the data in the production and generation of income accounts. Further discussion of this presentation and a numerical example is given in chapter 28.36 (to check).

#### 2. A use table at basic prices

- 15.12815.143 So far in this chapter, it has been assumed that both the supply and use tables have been expressed in purchasers' prices and this is done by adding to supply valuation terms that explain the differences between basic prices and purchasers' prices. It is also possible to bring the two tables to a common valuation basis by reducing the use table to basic prices, which is the subject of this section. One reason to undertake this more arduous task is to facilitate compiling a supply and use table in volume terms, as described below.
- <u>15.12915.144</u> In looking at any element of the use table at purchasers' prices it is clear that it may be made up of as many as six components:
  - a. domestic production at basic prices,
  - b. imports<del>,;</del>
  - c. tradedistribution margins;
  - d. transport margins;
  - e. taxes on products; and
  - f. subsidies on products.
- 15.13015.145 In order to reduce the use table at purchasers' prices to a domestic use table at basic prices, each element of the table must be decomposed into these six items. This can be seen as creating six similarly sized tables, each of which contains all the items for one of the components. This is much more resource intensive than bringing the supply table up to purchasers' prices where only six columns are needed, one for each of the six components.

#### **Trade**Distribution margins

15.13115.146 Margin services are an important kind of activity in the SNA. Many goods pass from the producer

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to the purchaser by means of a wholesaler or retailer. Indeed, some goods may pass through the hands of several wholesalers on the way to the retailer. Many services, on the other hand, are supplied directly by the producer to the purchaser. This is by no means universal, though. Travel agents and offices offering tickets for sports and entertainment events are examples of a kind of "retailing" for services. In addition, many financial instruments are offered for sale (and are repurchased) with a spread between the buying and selling price. The most obvious example is perhaps foreign exchange. These spreads also represent a margin service supplied to the customer. In the case of services, though, the margin is treated as one of the products of the relevant service industries. In the case of goods, a separate type of activity, wholesale and retail services, covers the margins on all goods Many of these are the output of wholesaler and retail traders but some are provided as secondary activity.

- 15.13215.147 As long as the use table is shown at purchasers' prices, there is no separate use of the tradedistribution margins provided by wholesalers and retailers. Table 1415.4 shows that the additions to the values of various goods are exactly offset by negative entries for the supply of tradedistribution margins so that in effect there is no remaining supply to be explained in the use table.
- 15.13315.148 As explained in chapters 34 and 67, the activity of wholesale and retail trade is one where the SNA imposes a partitioning of transactions. Considering the supply and use tables explains why this is desirable. Suppose all goods handled by wholesalers and retailers were shown as being delivered to the wholesaler or retailer and then supplied by them to the purchaser. The rows for goods in the supply and use tables would then be rather uninteresting. Virtually all goods would be used by wholesalers and retailers and almost none would be supplied to other producing units, households or government. The pattern of household consumption would show one large item for purchases from wholesalers and retailers and none from any manufacturing industry or agriculture. Even with grocers distinguished from furniture stores, it would no longer be possible to see exactly what types of food were being purchased and whether it was wooden or metal furniture being sold.
- 15.13415.149 The standard treatment in a supply and use table, therefore, follows the rules for partitioning transactions adopted for measuring the output of the wholesale and retail activity. Each acquisition of a product from a wholesaler or retailer is regarded as being the acquisition of two distinct products. One is the physical good, valued at <u>basicproducers</u><sup>2</sup> prices, the other is the <u>tradedistribution</u> margin. The purchase of the good is shown as a use of that good; the margin is shown as a use of services provided by wholesalers and retailers. As noted, though, portraying the activity of wholesalers and retailers in this way in a supply and use table is resource intensive since it is often the case that different proportionate margins are charged to different types of purchasers, for example households paying higher margins than enterprises. Indeed, even within households the margin on the same good in the same outlet may differ with larger quantities having a smaller proportionate margin than smaller quantities. The compiler has to apply a considerable amount of specialized knowledge and judgement to make this partition and make it at the detailed product level.

#### Transport margins

15.13515.150 As explained in reviewing the difference between purchasers', producers' and basic prices, transport margins only occur when transport services are separately invoiced. If they are separately invoiced, then no partitioning is necessary because the transport service is already treated as a separate product. The compiler's task is demanding because, for instance, suppliers may sometimes offer free transport for purchases over a certain value and charge for smaller deliveries.

#### Taxes on products

15.13615.151 The fact that VAT on the same product may be deductible for some users (typically producing units) and not deductible for others (households) is one reason why a supply and use table at purchasers' prices may be difficult to interpret. The apparent share of total use by households will be inflated by the element of non-deductible tax as compared with the proportion of use by producing units. After removing tradedistribution and transport margins from purchasers' prices estimates, the next step is therefore to remove non-deductible VAT. Removing non-deductible VAT is reasonably straightforward for final users but may be more complicated for intermediate consumption where most, but not all, VAT may be deductible. Once non-

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deductible VAT is subtracted, the entries in the use table are valued at producers' prices.

15.137<u>15.152</u> For some countries it may not be possible to go beyond this but if possible removing other taxes on products as well is desirable, leaving the entries in the use table at basic prices. When this is done, it is necessary to introduce a new row into the use table. This is a row that shows the taxes on products payable by the producing unit concerned. This row is part of the cost of intermediate consumption at purchaser's prices in the same way as the entries for tradedistribution and transport margins are. It will include some taxes on imports when imports that are part of intermediate consumption are subject to taxes on entry to the economy. This row of taxes within the intermediate consumption part of the use table should not be confused with the row that may appear in the value added part of the use table when output is valued at producers' prices. That row shows the amount of taxes on products payable on the products supplied by the unit, not the taxes on products payable by the unit on products used by them.

#### Subsidies on products

15.13815.153 If it is possible to remove taxes on products from the entries in the use table, then subsidies on products must be added back also. There is no counterpart to VAT within subsidies so the elimination of subsidies matches the elimination of taxes on products other than VAT.

#### Separating imports from domestic production

- 15.13915.154 A further refinement of the use table in basic prices is to separate imports from domestic production. In some cases, if the only source of a product is from the rest of the world, or if none of the product is imported, there is no problem in making the separation. When products are available from both domestic and foreign sources, making the separation is difficult. One solution may be to work at a more disaggregated level if that helps identify products that are always or never imported, but in general making the separation is a process involving considerable expert knowledge and informed judgement.
- 15.14015.155 Table 1415.15 shows the import content of table 1415.12. Table 1415.10 shows columns 24, 29 and 35 indicating the amount of imports going to each of intermediate consumption, final consumption and capital formation.

#### Table 1415.10: The imports content of the use matrixtable

#### 3. Expressing the use table in volume terms

- 15.14115.156 The supply and use framework not only constrains the current value estimates of supply and use to balance exactly, it also provides a way to ensure that the corresponding volume estimates, expressed in the prices of another year, are in balance and that the series of prices implied by the existence of one table in current prices and one in volume terms are strictly consistent. In general, the best way to ensure mutual consistency is to prepare the supply and use tables in current values and in volume terms at the same time.
- 15.14215.157 In most countries there are sets of price indices available for consumer prices, producer prices and import and export prices. Separate international manuals on the methodology and compilation of these exist. The general question of the development and use of appropriate prices to deflate national accounts is the subject of chapter 1518. What follows, therefore, anticipates that general discussion but is provided here to complete the discussion on supply and use tables. The section illustrates the problems that need to be addressed in expressing a supply and use table in volume terms rather than giving detailed compilation of supply and use tables are the prices to documents dedicated to the compilation of supply and use tables are the prices and input-Output Tables (Eurostat, 2008),both in current prices and in volume terms, such as the UN Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications (2018). The preferred approach is to

**Commented [ED19]:** In table 15.10 and table 15.12, the row "CIF/FOB adjustment" row should be called "Direct purchases abroad by residents".) Also, the fifth line reads: "transport services (6)", it should read: "Trade, accommodation, food & beverages; transport services (6)"

balance supply and use tables both in current prices and in volume terms, simultaneously at basic prices and at purchasers' prices. This may be resource and data intensive but provide various quality-related benefits improving consistency and coherency across the different domains.

#### Deflating which tables?

- 15.14315.158 The first decision to be made in compiling supply and use tables in volume terms is whether to work with tables in basic prices or in purchasers' prices. There are arguments for and against each choice, or as preferred both simultaneously. There are arguments for and against each choice depending upon resources, time available, source data, systems, etc. These are covered in detail in the UN Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications (2018) which brings all the various parts together into an integrated process.
- 15.144<u>15.159</u> When working with a basic price table, all the elements relating to tradedistribution and transport margins and to taxes less subsidies on products will have been separated from the value of goods and services at basic prices. Confusingly, the prices known as producer price indices (PPIs) correspond not to the concept of producer prices in the SNA but to basic prices. They exclude both tradedistribution and transport margins and the effect of taxes less subsidies on products. PPIs therefore seem well suited to deflating the rows of a basic price supply and use table on the grounds that the entries along a row of the use table are more homogeneous than in the case of a purchasers' price table. However, the claim that the resulting entries are sufficiently homogeneous to justify using a single price index for each of them must be qualified. In addition, the elements referring to margins and taxes must be deflated separately (using the volume change of the basic price and the rate of the margin or tax of the previous year applied to that volume change give the volume of the margin or tax) and this raises conceptual and practical issues also.
- 15.14515.160 When working with purchasers' prices, greater use is made of CPIs and fewer problems arise about the treatment of margins and taxes. However, although CPIs are generally held to be robust, their underlying assumptions might not always be entirely compatible with those in the supply and use tables.
- 15.146<u>15.161</u> Whether a purchasers' price table or a basic price table is being deflated, there are likely to be problems in deflating exports and imports.

#### Homogeneity

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- 15.147<u>15.162</u> The justification for using PPIs to deflate the rows of a supply and use table is that the elements of the rows are sufficiently homogeneous to use a single price throughput the row. There are two reasons why this may not be so.
- 15.14815.163 The elements of the rows at purchasers' prices are certainly not homogeneous as they include tradedistribution and transport margins on the one hand and taxes less subsidies on the other. As noted, these may not fall on the same product in the same proportion for different users. Eliminating these entries should reduce this cause of non-homogeneity but there will inevitably be a degree of approximation involved in the exercise so some residual non-homogeneity from this cause will persist.
- 15.149\_15.164 The other cause of non-homogeneity is due to aggregation. Even with a very large number of products distinguished in the supply and use tables, there is still a considerable degree of aggregation in each row. Even if screws were separated from other metal products, the price of screws varies according to the length, diameter, type of head and material they are intended to be used in. It is obviously impracticable to introduce a degree of disaggregation that would identify each of these types of screw separately and the thought of identifying screws separately from nails and other metal construction materials is already implausible. The problem of non-homogeneity is thus inevitable but may be reduced by considering the level of detail available in PPIs when determining the type of products to be identified in the supply and use tables.

#### The applicability of CPIs

15.15015.165 Consumer price indices (CPIs) are applicable for deflating household consumption at purchasers'

**Commented [ED20]:** Up to date practice and guidance in line with the UN Handbook on SUTs and IOT with Extensions and Applications.

**Commented [ED21]:** Up to date practice and guidance in line with the UN Handbook on SUTs and IOT with Extensions and Applications.

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prices but at a disaggregated level. The weights used to compile CPIs are usually not entirely consistent with the weights implicit in the column of expenditures for household consumption. This is because the weights may relate to another year and may exclude some categories of expenditure. The CPIs are likely to have been derived from a household survey. Household surveys often exclude the richest and poorest households, so the coverage is less comprehensive than the household consumption figures in the supply and use tables. As explained above, the act of balancing the table may cause some elements from the household survey to be amended. In the case of tobacco products, for instance, in principle similar adjustments to the CPI weights should also have been made but in some other cases matching adjustments to the CPI weights may not have been made.

#### Imports and exports

15.151\_15.166 Import price indices can be problematical. Many countries rely on unit value indices that do not take quality change into account adequately. Even when true import price indices are available, there is the problem of matching the degree of detail in the price indices with that of the products in the supply and use tables. Further, as mentioned in describing the correct valuation of imports, import price indices inevitably make different assumptions about how tradedistribution and transport margins are paid for than may be the case for individual purchasers. This can be seen clearly in the case of export prices. The difference between export prices and PPIs for an identical product is due to the assumption that export prices are valued at the border of the economy whereas PPIs are valued as the goods leave the factory.

#### TradeDistribution and transport margins

15.15215.167 TradeDistribution and transport margins also need to be expressed in volume terms. If the margin is the same proportion of the purchaser's price in the current year as in the base year, then the volume measure of the margin is simply that proportion of the volume of the expenditure in question; volume measure and price move in line with the product to which the margin applies. Often the rate of the margins charged or because of a change in the mix of products in a group. Further discussion of the way to derive estimates of margins in volume terms may be found in the manuals on CPIs and PPIs.

#### Taxes less subsidies on products

- 15.153<u>15.168</u> Different approaches to expressing taxes less subsidies in volume terms are required depending on the way in which the tax is levied.
- 15.154<u>15.169</u> If a tax is calculated as a percentage of the value of an item (an ad valorem tax) such as VAT, the volume measure is calculated in the same manner as that described for tradedistribution and transport margins.
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- 15.15815.170 Some taxes are levied according to the quantity of the item purchased. These are called specific taxes and excise duties typically are levied this way. For these taxes, the volume effect is strictly limited to changes in the quantity of the item purchased; any change in the rate of the specific tax is a price increase. The price increase of a specific tax may change in line with the general level of inflation but quite often it will move quite differently, for example if government wants to discourage spending on the item in question such as tobacco or alcohol.
- 15.15915.171 Changes in tax regimes mean that from one year to the next the range of taxes levied changes with one disappearing and another replacing it. Volume series imply using not just the prices of the base year but also the tax structure. Thus volume series for an item may include a tax element that does not exist in the

current values of the item and the tax element in the current value may not affect the volume series. In such a case a purchaser's price index is still valid but the concept of a "tax price index" is meaningless.

15.16015.172 Subsidies on products are less common than taxes but if they exist, volume measures should be calculated using the same principles.

#### Value added

- 15.16115.173 In the SNA, balancing items such as value added are regarded as not having price and volume dimensions. Nevertheless, it is possible to express them "in real terms" by using the balancing item approach to derive a figure from the volume estimates of the other items in the account.
- 15.16215.174 Given the existence of PPIs for the rows of the use table, these can be applied to the rows of the supply table also and the column sums then give a figure for output in volume terms. Deducting the figures for intermediate consumption in volume terms derived from the deflation exercise for the product rows in the use table permits the calculation of value added for each type of producing unit as a residual. It is this residual that is described as being "in real terms". It is also possible to derive an implied deflator for value added by dividing the current value by the value in real terms.
- 15.16315.175 Many analysts are interested in pursuing the question of deflating value added more explicitly. Calculating compensation of employees in volume terms is possible if enough information is available on wage rates and numbers employed by category of worker. Allowance must be made for changes in non-wage compensation and changes between full-time and part-time staff but there are few conceptual problems in deflating compensation.
- 15.16415.176 In order to deflate taxes less subsidies on production, it is necessary to consider the basis on which the tax is levied. In most cases, taxes on production relate to the numbers of some or all employees or the capital used in production. As with taxes on products, there may be both a price element and a quantity element involved in calculating changes in the volume measure.
- 15.16515.177 Deriving figures for operating surplus and mixed income in real terms is possible by subtracting compensation of employees and taxes less subsidies on production in volume terms from value added in real terms. However, the advocates of the capital services approach to measuring operating surplus suggest a more direct means of deriving operating surplus in real terms. This approach is not a standard part of the SNA but is described in chapter 2017.

#### **E.F.** Numerical example

#### 1. The full supply and use table

- 15.16615.178 Table 1415.12 shows a full supply and use table. The topmost part consists of the supply table. The first column shows total supply at purchasers' prices. This is followed by information first on tradedistribution and transport margins, as in table 1415.2, and then on taxes and subsidies on products, as in table 1415.5. Deducting the elements in all these columns from the corresponding elements in the column for total supply at purchasers' prices gives the next column, which is total supply at basic prices. This is followed by the largest part of the table, the supply of products by type of domestic producing units. This is an expanded form of table 1415.1. At the extreme right of the supply table is the information on imports, corresponding to table 1415.4.
- 15.179 The middle part of table <u>1415</u>.12 is the product part of the use table. The first column is total supply at purchasers' prices and corresponds exactly to the column above in the supply table. The next three columns are blank in the use table. Then the detailed information on use of products by type of producing unit is shown. This is the expanded version of table <u>1415</u>.6. The column for exports and columns for final consumption and capital formation follow. These correspond to tables <u>1415</u>.7 and <u>1415</u>.8.
- 15.16715.180 Below the product part of the use table is the value added part. In the columns for taxes and subsidies, information on taxes and subsidies on production is shown. Details of the generation of income account for each of the types of producing unit are shown under their use of products as intermediate

consumption. These entries correspond to the summary information in table <u>1415</u>.9. Information on capital formation by type of producing unit and <u>employment[abour input</u> are also shown. There are no entries under the columns for exports, final consumption or capital formation.

#### 2. Margins and taxes

- 15.168\_15.181 Within table 1415.12, row 3 shows that the value of manufactured products at basic prices is 1-998. To this value, subsidies of 5 are deducted, taxes of 94 and tradedistribution and transport margins of 74 are added to give a value at purchasers' prices of 2-161. Within the use part of table 1415.12, the whole of the value of 2-161 is accounted for. This means that the margins of 74 are accounted for in this way and not as demand on the trade and transport industry directly. In row 5 of the supply part of the table, therefore, these margins are shown as offsetting supply of tradedistribution and transport services (along with margins of 2 apply to each of agricultural products and ores and minerals) so the total of tradedistribution and transport margins at purchasers' prices shown in column 1 is less than the total at basic prices shown in column 5.
- 15.16915.182 The right-most part of the supply table shows the way the margins on imports are handled. It is assumed that imports of goods are only available on a CIF basis. Within the balance of payments figures for imports of services, however, the figures of 6 and 4 will be included in the imports of services of these products. Thus column 26 shows the necessary adjustments. The negative entries of 6 and 4 are offset within the column by an adjustment item of 10 in a special row for the CIF/FOB adjustment. This in turn is offset by a negative entry in the same row within the column for the import of goods (column 27).
- 15.17015.183 Instead of handling margins in this way, it is possible to reduce a supply and use table at purchasers' prices to basic prices by removing the margins and taxes from the purchasers' price estimates of all use elements. As explained in the last part of section DE, this is often done as a basis for deflation of the table to volume terms. Table 1415.13 shows the elements of tradedistribution and transport margins, taxes on products and subsidies on products included in table 1415.12. This table does not distinguish all the columns for each type of production but for ease of reference the column numbers in table 1415.13 (and indeed for tables 1415.14 and 1415.15) correspond exactly to those used in table 1415.12.

#### 3. A use table at basic prices

15.17115.184 Table 1415.14 is the use table expressed in basic prices. It is derived by deducting all the relevant elements of table 1415.13 from the corresponding elements of table 1415.12. For reasons of compactness, it is presented in the abbreviated form with no distinction between market production, production for own final use and non-market production but the column numbering corresponds to the full version for ease of reference.

#### 4. The imports matrixuse table

- 15.17215.185 As well as removing the margin and tax elements from table 1415.12, it is possible to also identify and remove that part of each element that represents supply from imports rather than from domestic production. In order to do this, a matrixtable similar to tables 1415.1 and 1415.14 must be compiled including imports only. Table 1415.15 is such a table. This may then be deducted, element by element from table 1415.14 to deduce a matrixtable showing the use of domestic production at basic prices only. (The imports matrixtable excludes margins and taxes applying to imports so must be deducted from the basic price table and not the purchasers' prices one.)
- 15.17315.186 Although a complete table showing domestic use only is not presented, table 1415.11 shows in summary form how the total value of supply at purchasers' prices is built up from domestic supply, imports, tradedistribution and transport margins, subsidies on products and taxes on products.

Table <u>1415.11</u>: Breakdown of use by producing units into the five elements making up purchasers' price valuation

 Table 1415.12: Supply and use tables at purchasers' prices

 Table 1415.12 (cont): Supply and use tables at purchasers' prices

 Table 1415.14: Supply and use table: Final and intermediate uses at basic prices, ISIC breakdown

 Table 1415.15: Imports used for intermediate consumption and final demanduses

**Commented [ED23]:** In table 14.10 and Table 14.12, the row "CIF/FOB adjustment" row should be called "Direct purchases abroad by residents".

## Chapter 16: Labour

## (Chapter 19 in the 2008 SNA, moved upwards, revised title and revised content)

## A. Introduction

- 16.1 There are many key policy questions that hinge on a better understanding of the labour market and its links and interactions with various aspects of the economy. One can think of the impact on the labour market and the changing nature of "work" from changes in production arrangements, including those caused by legislation (e.g., introduction of a minimum wage or a working hours directive), technological innovation (e.g., demand for new skills and new jobs), process and product innovation, globalisation (e.g., jobs moving to lower income countries), digitalisation (e.g., impact of more jobs becoming temporary, or done by independent workersof the GIG economy) and the move to environmental sustainability (e.g., the demand for labour in environmentally related activities). These issues can affect the numbers employed and how they are deployed. Wages and labour costs are another important dimension of labour as they represent both a large share of the production costs and often the main source of households' income.
- 16.2 Like various aspects of economic developments, understanding the changing landscape of the labour market is becoming more difficult. More integration of the statistical domains is an important aid to understanding these changes, including their interrelationships. The transformation of the labour market and skills and knowledge needs in turn affect employment, unemployment, education, and, more generally, living standards, quality of life, and retirement.
- 16.3 The use of labour is at the heart of production, forming an<u>primary</u> input alongside capital. The two categories of labour input in the national accounts, that is, labour provided by employees and self-employed, are based on the SNA residency and production conventions. These are recognised in the integrated framework of economic accounts through remuneration of employees and, albeit implicitly, mixed income as well as labour input by industry. Labour has a prominent role in the SNA given its importance in the production process and its linkages to other areas of interest such as the analysis of unit labour costs, hours worked, labour productivity, income inequalities, per capita estimates, etc. It is also important to have better insights into related aspects such as human capital, education and health care as well as wider links to skills demand and skills shortages. Furthermore, labour market data also provide insights into aspects of living conditions and well-being.
- 16.4 The concept of labour used in national accounts <u>matchesis closely linked to</u> the coverage of production in the SNA. This comprises multiple forms of work as defined in the international statistical standards (resolutions) on work and the labour force as endorsed by the International Conference of Labour Statisticians (ICLS) in particular resolution I of the 19<sup>th</sup> ICLS Resolution concerning statistics of work, employment and labour underutilization) a process hosted by the International Labour Organization (ILO). Section C contains a concise overview of the correspondence between the definitions applied in these ICLS Resolutions and the concepts used in national accounts.
- 16.5 This chapter on labour is structured as follows. Section B covers a brief overview of the SNA framework and its principles in relation to labour. Section C covers the types of labour and work in the SNA, including a comparison with the relevant ICLS Resolutions. Section D then follows with an overview of labour market tables, including their links to supply and use tables. Section E deals with some enhanced measures of labour inputs, while section F discusses some other specific issues.

## B. Brief overview of the SNA framework and principles in relation to labour

16.6 It is important to draw out some of the features and principles of the SNA in relation to labour, and its connection to the output recorded in the SNA, which are key in the analysis of production activities. This in turn has links with the ICLS Resolutions on recording labour, which will be referred to as appropriate in the chapter.

## 1. SNA production boundary

- 16.7 In the SNA, production is defined as an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital and goods and services to produce outputs of goods and services. As such, there is a direct link between the production of goods and services and the labour used in this production. More specifically, production includes the production of goods and services supplied, or intended to be supplied, to units other than their producers; the own-account production of goods retained by their producers for their own final consumption or gross capital formation; the own-account production of housing services by owner occupiers; and the production of domestic and personal services by employing paid domestic staff. More details on the production boundary are provided in chapter 7.
- 16.8 The integrated framework of the SNA strictly confines the concept of labour input to the input to the production activities within the SNA production boundary, although in the extended accounts on unpaid household service work a broader concept of production is applied (see section F). On the other hand, the various forms of work identified in the 19th ICLS Resolution concerning statistics of work, employment and labour underutilisation, as presented in figure 16.1, can be aligned to either the general production boundary, when all forms of work are included, or the SNA production boundary, when direct volunteer work providing services and the production of services by households for own final use are excluded (with the exception of owner-occupied housing services and the production of domestic and personal services by employing paid domestic staff). In this respect, it is worth noting that activities may move in and out the SNA production boundary. For example, due to digitalisation, one can observe changes from households buying services from travel agencies to arranging travel themselves, or using the services provided by supermarkets to using selfservice checkouts. On the other hand, one can observe a trend of purchasing services which were traditionally produced by households themselves (e.g., using the services of kindergartens instead of taking care of children at home, or eating outside instead of preparing and eating meals at home). Whatever the case, there is a clear link between what is defined as production in the SNA and the notion of labour.

# Figure 16.1 SNA production boundary links to the forms of work and employment framework

## Forms of work and employment framework

| Intended destination<br>of production | For ow<br>us                                      | n final<br>e            | For use by others                         |                           |                             |                |                         |                          |
|---------------------------------------|---|-------------------------|---|---------------------------|-----------------------------|----------------|-------------------------|--------------------------|
|                                       | Own use<br>production<br>work                     |                         | Employment<br>(work for pay<br>or profit) | Unpaid<br>trainee<br>work | Other<br>work<br>activities | Volunteer work |                         |                          |
| Forms of work                         |   |                         | -   |                           |                             | in market      | in households producing |                          |
|                                       | of of services goods                              |                         |   |                           |                             | market units   | goods                   | services                 |
|                                       | Activities within the SNA production boundary     |                         |   |                           |                             |                |                         |                          |
| Relation to SNA                       | Activities within the general production boundary |                         |   |                           |                             |                |                         |                          |
| Diagram ad                            | lapted from t<br>emplo                            | the 19 <sup>th</sup> IG | CLS Resolution con<br>nd labour under-uti | cerning stat              | tistics of work             | (, Me          | asuremen<br>round the   | t challenges<br>boundary |

## 2. Population, labour and residency

- 16.9 In monitoring labour, the residency of the population and the residency of the units producing goods and services are equally relevant. Details on both notions are fully described in chapter 5. *The total population of a country consists of all persons who are resident in the economic territory at a given point in time*. The labour force consists of resident persons who are actively prepared to make their labour available during any particular reference period for producing goods and services that are included within the production boundary of the SNA. The labour force is further divided into those who are <u>providing labour input and those who are seeking and available to do soemployed and those who are (unemployed)</u>. Thus, the population of the country can be sub-divided into three categories: employed, unemployed and not in the labour force. A person's status depends on their activity (or lack of it) during a particular reference period (usually a week).
- 16.10 The above definition of the labour force is slightly different from the one defined in the ICLS Resolutions, which limits employment to all resident persons who are actively prepared to make their labour available during any part of the reference period for producing goods and services in return for pay or profit. For SNA purposes, the concept of labour input is somewhat broader, as it also includes labour which is used as an input into the household production of goods for own final use, some types of volunteer work as well as unpaid trainee work. However, in practice the differences might be marginal.As a consequence, the breakdown of the labour force into employed persons and unemployed persons in the SNA is not mutually exclusive. While the definition of unemployed persons is similar, in the SNA some unemployed persons may also be part of labour input, such as those who are involved in the production of goods for own final use and also looking for work for pay or profit.
- 16.11 In monitoring labour input, the perspective of looking at the resident population is different from the focus of the national accounts: the labour input in domestic production, for which the residency of the units producing goods and services is the starting point. Employed persons providing labour input consist of two main groups: employees and self-employed. Self-employed persons provide labour input to production by resident institutional units by convention. This is not true for employees who do not have to be residents in the economy where they work. While labour input mainly consists of resident employees working for resident institutional units and self-employed persons, it also includes the following categories of persons employed by resident institutional units where there might be a question whether they are considered resident or not:
  - non-resident border workers (sometimes called frontier workers), including non-resident workers working from home;
  - non-resident seasonal workers, that is, persons who move into the economic territory and stay there
    for less than one year in order to work in industries which periodically require additional labour;
  - members of the country's armed forces stationed in the rest of the world;
  - nationals who are on the staff of national scientific bases established outside the geographic territory
    of the country;
  - nationals who are on the staff of diplomatic missions abroad;
  - members of the crews of fishing boats, other ships, aircraft and floating platforms operated by resident units;
  - employees of general government bodies situated outside the geographic territory, for example embassies; and
  - students undertaking work are included or not according to their classification as resident or non-resident.
- 16.12 On the other hand, the following residents, though employees, are excluded from labour input in resident institutional units and hence from measures of labour input as used in the context of the SNA:
  - residents who are border workers or seasonal workers, that is, who work as employees in another economic territory;

- nationals who are members of the crews of fishing boats, other ships, aircraft and floating platforms operated by non-resident units;
- residents who are employees of foreign government agencies located on the geographic territory of the country;
- the personnel of international civilian organizations located within the geographic territory of the country (including local employees directly recruited);
- members of the armed forces working with international military organisations located on the geographic territory of the country;
- nationals working in foreign scientific bases established in the economic territory.
- 16.13 In more general terms, the link between resident persons providing labour input, i.e., the labour force excluding unemployed persons, and persons providing labour input to domestic production can be described as follows:

Labour input to domestic production =

resident persons providing labour input

minus resident persons providing labour input to non-resident producer units

plus non-resident persons providing labour input to resident producer units

It is important to note<sub>5</sub> that this is a key difference between the SNA and social statistics. While for the latter the resident population would be the normal reference point for compiling labour statistics, the national accounts mainly focus on labour input to domestic production. Having said that, the labour market tables discussed in section D also provide a link with resident employed persons within the (national) labour force, by deducting non-resident employees working for resident producer units, and adding resident employees working for non-resident producer units.

16.14 The labour force also includes unemployed persons, defined as persons who are not employed but available for work and actively seeking for work for pay or profit. In the SNA, the concept of unemployment is not directly incorporated, only the population of employed persons contributing their labour input to economic activities within the production boundary of the SNA is directly relevant. As noted before, Fthe concept of unemployment typically applied in labour statistics alsodiffers slightly-deviates from the concept of labour input in the SNA, as the former only refers to work for pay or profit by referring to more formal types of work, thus excluding, for example, work related to household production of goods for own final use (see also paragraph 16.67). Whatever the case, knowing about the numbers of unemployed is analytically important in understanding, for example, labour market tightness or surplus labour within an economy at any point in time (e.g., by monitoring unemployment to vacancy ratios). Unemployment also has a direct impact on well-being of people and may also affect government finance by increasing benefit claims and decreasing the tax base.

## C. Types of labour and work in the SNA and links to the ICLS standards

16.15 As explained in the previous section, labour input, as defined in the SNA, consists of three groups of persons: residents who are employees of resident institutional units, <u>non-residents</u> who are employees of <u>non-resident</u> institutional units, and self-employed persons. (A self-employed person is necessarily associated with a resident household. If such a person provides goods and services abroad, these are recorded as exports.) In the SNA, labour input is defined as all persons, both employees and self-employed persons, engaged in some productive activity that falls within the production boundary of the SNA and that is undertaken by a resident institutional unit.

16.16 This section first explains the concepts of employees and self-employed persons as defined in the SNA in more detail. Subsequently, some boundary problems are covered such as labour in NPISHs and volunteer work. The section concludes with a concise summary of the similarities and the differences between the SNA and the ICLS Resolution in defining labour market related concepts.

## 1. Employees

- 16.17 *Employees are persons who, by agreement, work for a resident institutional unit and receive remuneration for their labour.* As mentioned before, a resident institutional unit may employ both resident and non-resident persons. Their remuneration is recorded in the SNA as remuneration of employees. The relationship of employer to employee exists when there is an agreement, which may be formal or informal (written or verbal), between the employer and a person, normally entered into voluntarily by both parties, whereby the person works for the employer in return for remuneration in cash or in kind. There is no requirement that the employer should declare the agreement to any official authority for the status of employee to apply. It should be noted that the term "employees" for SNA purposes is not synonymous with the category "employees" as defined in Resolution I of the 20<sup>th</sup> ICLS Resolution concerning statistics on work relationships, which includes persons with an agreement of employment only.
- 16.18 Employees include, but are not confined to the following categories:
  - a. persons (manual and non-manual workers, management personnel, domestic staff, people carrying out remunerated productive activity under employment programs, independent of disabilities, citizenship, etc.) engaged by an employer under a contract, or an agreement, of employment;
  - b. civil servants and other government employees whose terms and conditions of employment are laid down by public law;
  - c. the armed forces, consisting of those who have enlisted for both long and short engagements and conscripts (including conscripts working for civil purposes);
  - d. ministers of religion, if they are paid directly by general government or a non-profit institution;
  - e. owners of corporations and quasi-corporations, if they work in these enterprises and receive paid remuneration other than withdrawal of earnings from the quasi-corporation;
  - f. students who have a formal commitment whereby they contribute some of their own labour as an input into an enterprise's process of production in return for remuneration and (or) education services;
  - g. disabled workers, provided that the formal or informal relationship of employer to employee exists; and
  - h. persons employed by temporary employment agencies, who are to be included in the industry of the agency which employs them, and not in the industry of the enterprise for which they actually work.
- 16.19 Persons that have a commercial contract with an institutional unit for the provision of goods or services are not considered employees but as self-employed persons.
- 16.20 An outworker is a person who agrees to work for a particular enterprise or to supply a certain quantity of goods and services to a particular enterprise by prior arrangement or contract with that enterprise but whose place of work is not within it. An outworker is treated as an employee if there is an explicit agreement that the outworker is compensated based on the time worked, that is the amount of labour contributed as an input into some process of production. There is further discussion of the classification of outworkers in paragraphs 8.34 to 8.38.
- 16.21 Employers across a range of industries may use zero-hour contract workers. These contracts effectively mean that employers are not obliged to guarantee any working hours to a worker. Equally, the worker is not obliged to accept any work that is offered to them and they are also free to work for other employers. These workers provide labour input and are employees recorded under short-term and casual employees.

- 16.22 Persons temporarily not at work are also considered as employees if they have a job attachment. This attachment should be determined according to one or more of the following criteria:
  - a. the continued receipt of wage or salary.
  - b. an assurance of return to work following the end of the contingency or an agreement as to the date of return.
  - c. the elapsed duration of absence from the job which, wherever relevant, may be that duration for which workers can receive compensation benefits without obligations to accept other jobs.
- 16.23 Persons included in the above classification are those temporarily not at work because of illness or injury, holiday or vacation, strike or lockout, educational or training leave, parental leave, reduction in economic activity, temporary reorganisation or suspension of work due to such reasons as bad weather, mechanical or electrical breakdown, or shortage of raw materials or fuels, or other temporary absence with or without leave. This includes persons in receipt of a wage such as during the COVID-19 lockdown period(s), even when no output was produced. For some purposes, it may be useful to distinguish employees temporarily not at work if this is possible. Under the 19<sup>th</sup> ICLS Resolution, for certain types of absence, a person is still considered employed (for example, maternity/paternity leave, sick leave, shift work/nature of the work and vacation), whilst for other reasons (for example, career break or unpaid leave), the person is deemed not to be employed but may have a job attachment which would need to be assessed.
- 16.24 Managers of corporations are treated in the SNA as employees. Accordingly, owners of some unincorporated enterprises which in the SNA are classified as quasi-corporations are treated as employees, if they provide labour input and receive compensation in the form of remuneration of employees. According to the ICLS Resolutions, owners of quasi-corporations are treated as independent workers in employment for profit or dependent contractors.
- 16.25 Trainees who have a formal commitment to contribute labour as an input to an enterprise's process of production in return for remuneration in cash or in kind such as education are also treated as employees. As defined in the ICLS Resolutions, trainees receiving remuneration in cash would also be counted as employees. However, if the only "remuneration" is education, then they are not considered as employed and classified under "unpaid trainee work".

## 2. Self-employed persons

- 16.26 Self-employed persons are persons who are the sole proprietors or joint owners of the unincorporated enterprises in which they work, excluding those unincorporated enterprises that are classified as quasicorporations. Persons who work in unincorporated enterprises are classified as self-employed persons if they are not in paid employment that constitutes their principal source of income. If in paid employment, they are classified as employees. The compensation for self-employment is included in mixed income because it is not possible to observe separately the return to labour and the return to any capital used in production of goods and services by the unincorporated enterprise. In cases where a single person has multiple jobs and be both an employee and a self-employed person, the income earned as an employee should be shown as remuneration of employees and separate from the mixed income element. For some analytical purposes, however, it may be useful to estimate a breakdown of labour compensation for the self-employed and the return on capital (see paragraphs 16.83 – 16.86).
- 16.27 Within the SNA, self-employed persons also include the following categories:
  - contributing family workers working in unincorporated enterprises;
  - outworkers whose income is a function of the value of the outputs from some process of production for which they are responsible, however much or little work was put in (see also paragraphs 8.34 to 8.38);
  - workers engaged in production undertaken entirely for their own final consumption or own capital formation, either individually or collectively. (An example of thise last is communal construction.)

16.28 Contributing family workers are sometimes called unpaid workers but there are other forms of unpaid, or voluntary, workers. If family members contribute to the output of an unincorporated enterprise, the estimate of mixed income is assumed to include an element of compensation for them and thus they are all treated as being in the economically active population from an SNA point of view.

## 3. Boundary problems

#### Non-observed economy

- 16.29 National accountants are particularly concerned about ensuring that the whole of economic activity within the SNA production boundary is measured comprehensively. This is often referred to as the "exhaustiveness" of the coverage of the national accounts. In practice, it means ensuring that the value of production activities that are illegal or hidden (that is, the "underground economy" or the "hidden economy") as well as those that are simply described as informal is included in the accounts. Further details on the delineation of these activities are provided in chapters 7 and 39.
- 16.30 The various parts of the non-observed economy are linked and they are not mutually exclusive. The delineation with observed activities may also be slightly blurred. The value of output and the corresponding labour used, either in hours worked or full-time equivalents (see paragraphs 16.71 ff), will vary across the different non-observed economy domains; they will also change over time, in particular through periods of economic recession. Persons may also be involved in more than one domain. Whatever the case, in principle, for the SNA, the labour used in these activities; as well asineluding the compensation of all these workers; (should be included in either remuneration of employees or mixed income) should be included to compile exhaustive estimates. Therefore, when looking at comparisons between labour statistics and output, it is important to ensure that the persons providing labour inputs to non-observed activities are included in labour statistics.

## Labour in NPISHs

16.31 The output of NPISHs is supplied free or at prices that are not economically significant so it is valued by the costs of production including a mark-up for the services provided by capital used in production. One of these costs is remuneration of employees. It is important that these employees be recorded in the labour input measures used in deriving productivity changes. However, NPISHs often have volunteer workers so the treatment of these deserves special attention.

## Volunteer labour

- 16.32 A distinction can be made between those who have an agreement to provide labour for token remuneration or only income in kind, those for whom there is explicitly no remuneration and those where there is apparently no remuneration but the workers benefit directly from the output to which they contribute.
- 16.33 In the SNA, the remuneration of those working for token amounts or only income in kind is measured by these costs. No imputation for an additional element of remuneration is included. For example, if doctors or teachers work for only food and lodging, the value of this as income in kind is the only salary imputed to them. Such instances may arise in religious institutions or in the wake of natural disasters. If the unit employing these staff is responsible for whatever little remuneration is received, the staff are classified as employees.
- 16.34 If staff are purely voluntary, with no remuneration at all, not even in kind, but working within a recognised institutional unit, then these individuals are still regarded as providing labour input in SNA terms but there is no entry for remuneration of employees (or mixed income). Individuals providing services to groups of other individuals, such as coaching a children's football team, without any associated infrastructure are not regarded as providing labour input but rather engaging in a leisure pursuit, however worthy their efforts might be.
- 16.35 By convention, no labour services are attributed to the services provided by owner-occupied dwellings (see

paragraphs 24.50 to 24.58). In contrast, if a group of individuals agrees to construct a building or structure, for example a school or a well, these individuals are regarded as providing labour input and receive mixed income for their efforts. Due to the difficulty in valuing such projects, unless a direct comparison can be made with a similar building, the value of construction should be based on the sum of costs incurred including a mark-up for the services provided by capital used in the production. Labour is a significant input into construction projects, so its value must be included as part of the total costs using wage rates paid for similar kinds of work on local labour markets (see paragraphs 6.127 and 7.30). This income is then used to value the result of their efforts which may subsequently be handed over to a third party for maintenance. The latter action is recorded as a capital transfer in kind.

16.36 As defined in the ICLS Resolutions, the main criteria for defining volunteer work are that it is unpaid, noncompulsory in nature and the intended destination of the goods and services produced for others outside the volunteer's household or family. Here, unpaid implies they do not receive a remuneration in cash or in kind for the work done or hours worked. They may receive some small form of support or stipend in cash or in kind usually meant to enable their participation. In the ICLS Resolutions, these volunteers are not treated as being in employment and thus not considered as employees.

#### 4. Links between the SNA and the ICLS Resolutions

- 16.37 In the above, the most important elements of labour input in the national accounts have been covered. Some important differences with the ICLS Resolutions have also been mentioned. This sub-section covers the concepts and definitions of the ICLS Resolutions as well as the main differences with the concepts applied in the SNA.
- 16.38 The ICLS Resolutions provides a broad overarching definition of work, comprising five different forms of work, as shown in figure 16.2:
  - a. employment;
  - b. own-use production work comprising production of goods and services for own final use;
  - c. volunteer work comprising non-compulsory work performed for others without pay;
  - d. unpaid trainee work comprising of work performed for others without pay to acquire workplace experience or skills; and
  - e. Other work activities (not explicitly shown in figure 16.2).
- 16.39 Each of these forms of work are discussed in slightly more detail below, including the main similarities and differences with the SNA. As described in paragraph 16.8 above the forms of work from the 19<sup>th</sup> ICLS framework can be combined to align to either the general production boundary or the SNA production boundary with the key difference being that direct volunteer work providing services and the production of services by households for own final use are within the general production boundary, but with the exception of owner-occupied housing services and the production of domestic and personal services by employing paid domestic staff, outside the SNA production boundary, and thus not part of SNA labour input.

## Employment

- 16.40 As defined in the ICLS Resolutions, employment relates to work for pay or profit. As such, it is a narrower concept than the concept of labour input applied in national accounts. Households producing goods for own final use or for delivery to other households are excluded, as well as "volunteer work carried out through/for a non-household economic unit" (or "organisation based volunteer work") and "unpaid trainees".
- 16.41 Moreover, while in the SNA the distinction between employees and self-employed persons is highly relevant in view of the different types of compensation (remuneration of employees versus mixed income for selfemployed persons), the term self-employed is not used in the ICLS Resolutions. Instead, the concept of independent worker is used within the International Classification of Status in Employment (ICSE-18) as

adopted at the 20<sup>th</sup> ICLS, whereby dependent contractors and contributing family workers are included as distinct types of work relationships in the broader group of dependent workers. Employers and independent workers without employees are classified as independent workers. In addition, allowance is made for detailed categories based on their exposure to economic risk, thus creating a distinction between:

- workers in employment for profit, which includes dependent contractors, independent workers in household market enterprises, and contributing family workers; and
- workers in employment for pay, which includes employees and the owner-operators of corporations.
- 16.42 More generally, those in employment might also provide additional labour input by carrying out forms of work other than employment. For example, an employed person may also provide, on a voluntary basis, caring activities for the elderly in the same period. The ICLS Resolutions promote the measurement and reporting of participation in all forms of work alongside indicators of labour force status.

#### Production for own final use

- 16.43 As defined in the ICLS Resolutions, the production for own final use relates to the production of goods as well as the production of services. The production of goods for own final use (e.g., food produce, self-build dwellings, etc.) is captured within the SNA production boundary and the numbers of persons involved would be included in the national accounts as labour input, whereas the production of services for own final use (e.g., childcare, meal preparation, cleaning, etc.) is excluded from the SNA production boundary. The latter wouldshould be captured in an extended account on unpaid household service work, see chapter 34 for more details.
- 16.44 In the SNA, the labour input related to household's production of goods for own final use is always recorded as part of labour input. This is different from the approach taken to define different forms of work in the ICLS Resolutions, which relate to the main intended destination of the production. More specifically within the ICLS Resolutions, if the goods are mainly intended for the consumption of the producer or their household/family, it is classified as own-use production of goods, whereas in the case the production is mainly intended for sale, it is classified as part of employment.

## Volunteer work

- 16.45 Two types of volunteer work are distinguished in the ICLS Resolutions:
  - Direct volunteer work<sub>15</sub> this is work carried out directly by a household to help other people or another household directly (e.g., a neighbour); and
  - Organisation-based volunteer work<sup>1</sup><sub>27</sub> this is done through or for an organisation, community or group.

The distinction between the two types is that the work is done for different types of economic units with different types of dependency.

| SNA                    |              |               | Tune of worker   | 19 <sup>th</sup> ICLS<br>Resolution I | 20 <sup>th</sup> ICLS Resolution I              |  |
|------------------------|--------------|---------------|--|---------------------------------------|---|--|
|                        |              | DNA           | Type of worker   | Form of work                          | Category  |  |
| Outside the production |              |               | Households providing<br>(unpaid) services to<br>other households               | Volunteer work                        | Direct volunteers                               |  |
| boundary               |              | ındary        | Output for own final use<br>- services   | Own-use                               | Workers in own-use<br>provision of services     |  |
|                        | Labour input |               | Output for own final use<br>- goods  | production work                       | Workers in own-use<br>production of goods       |  |
|                        |              | Self-employed | Households providing<br>goods (without<br>compensation) to other<br>households | Volunteer work                        | Direct volunteers                               |  |
|                        |              |               | Contributing family<br>workers*  |                                       | Contributing family workers                     |  |
| indary                 |              |               | Owners of household<br>market enterprises                                      |                                       | Independent workers in<br>employment for profit |  |
| n pon                  |              |               |  |                                       | Dependent contractors                           |  |
| oductio                |              |               | Owners of quasi-<br>corporations**   | Employment                            | Independent workers in employment for profit    |  |
| Pr                     |              | Employees     | Owners of quasi-<br>corporations**   |                                       | Dependent contractors                           |  |
|                        |              |               | Owners of corporations   |                                       | Independent workers in employment for pay       |  |
|                        |              |               | Persons with an agreement of employment  |                                       | Employees                                       |  |
|                        |              |               | Contributing family<br>workers*  |                                       | Contributing family workers                     |  |

| Figure | 167    | Linka  | hotwoon | the CNA   | and the | 10th and | 20+h | ICI C | recolutions |
|--------|--------|--------|---------|-----------|---------|----------|------|-------|-------------|
| rigur  | C 10.2 | LIIIKS | Detween | LILE SINA | ани ше  | туш ано  | 2011 |       | resolutions |
|        |        |        |         |           |         |          |      |       |             |

| SNA | Type of worker   | 19 <sup>th</sup> ICLS<br>Resolution I | 20 <sup>th</sup> ICLS Resolution I   |  |
|-----|--|---------------------------------------|--------------------------------------|--|
|     |  | Form of work                          | Category                             |  |
|     | Volunteer work carried<br>out through / for a non<br>household economic unit | Volunteer work                        | Organisation based<br>volunteer work |  |
|     | Unpaid trainees  | Unpaid trainee<br>work                | Unpaid trainee workers               |  |
|     | Unpaid work by<br>prisoners, unpaid<br>military or civilian<br>service etc.  | Other work<br>activities              | Other unpaid workers                 |  |

**Note:** The figure shows the differences in the overlapping population between the 2025 SNA and the 19<sup>th</sup> ICLS Resolution I.

In addition, there will be differences across the categories whereby the 2025 SNA excludes resident employees being employed by non-resident enterprises and includes non-resident employees being employed by resident enterprises.

\* Contributing family workers may be regarded as self-employed or employees in the 2025 SNA depending on the type of remuneration of the owner(s) of the family business. In the 20th ICLS resolution, all contributing family workers are defined as workers in employment for profit within the detailed ICSE-18 category of contributing family workers.

\*\* Owners of quasi-corporations may be regarded as self-employed or employees in the 2025 SNA depending on their type of remuneration. In the 20th ICLS resolution, all owners of quasi-corporations are defined as workers in employment for profit and may, depending on the characteristics of their work relationship, be defined as either independent workers in employment for profit or dependent contractors.

- 16.46 As explained in the above, the treatment of volunteer work in the SNA differs from the treatment in the ICLS Resolution, as shown in figure 16.2. In the SNA, the following distinction can be made:
  - If the volunteer work relates to a contribution to the production of an institutional unit, then the person is considered an employee and any income in kind or other support received is recorded as remuneration of employees.
  - If the volunteer work concerns direct volunteering resulting in production of goods, then the person is considered to be self-employed and any income in kind or other support received is recorded as mixed income.
  - If the volunteer work concerns direct volunteering resulting in provision of services, for which the third-party criterion is applicable, the relevant labour input would fall outside the SNA production boundary, and thus not qualify as part of labour input.

## Unpaid trainee work

16.47 Unpaid trainee work refers to work performed for others without pay to acquire workplace experience or skills. It may also represent a traditional arrangement for gaining specific occupational skills in each trade or profession. In all instances, this form of work contributes to the production of goods and services and these trainees are treated as employees within the SNA, while the ICLS Resolutions identify it as a form of work

for separate measurement.

16.48 In contrast to paid apprenticeships, traineeships and other such programmes which constitute a type of employment contract, unpaid trainee work is carried out without pay in cash or in kind for work done or hours worked. Nevertheless, unpaid trainees may receive some form of support, such as transfers of education stipends or grants, or occasional in cash or in kind support (e.g., a meal, drinks). In the SNA, this is recorded as remuneration of employees.

#### Other work activities

16.49 For completeness, other work activities include unpaid compulsory work performed for others such as community service and unpaid work by prisoners, when ordered by a court or similar authority, and unpaid military or alternative civilian service, which may be treated as a distinct form of work for measurement (such as compulsory work performed without pay for others). Persons involved in these activities are excluded from SNA labour input unless the work is performed under instruction by or through an organisation in the same way people perform organisation-based volunteer work.

# D. Labour market tables framework and the links with supply and use tables

### 1. Introduction

- 16.50 There is a range of comprehensive labour market statistics produced by national statistical institutions to meet different user needs. However, the varying statistical outputs differ in source, scope, coverage and methodology. This can make comparisons and consolidation of the various datasets challenging. Different estimates may be available from a range of different sources, each with their own strengths and weaknesses<sub>15</sub> for example, household-based surveys often feed into the labour market data and business surveys feed into supply and use tables, thus the need for reconciliation.
- 16.51 The linking of supply and use tables with a labour market tables framework can help to integrate and confront numerous labour market statistics to provide time series estimates of labour input such as persons employed, jobs, hours worked and income earned for each industry in relation to the corresponding output produced into one coherent framework. The integration of this information can also provide a quality assurance feedback loop to the quality of the estimates of value added and output in the supply and use tables. Doing this at the time of compiling and balancing of supply and use tables will in turn improve the coherence and exhaustiveness of GDP/NDP, and its underlying components.
- 16.52 The supply and use tables provide a lot of detail on the supply and use of goods and services by product. They also contain detailed information by industry on the production process, by describing the inputs used to produce the goods and services: intermediat<u>cion</u> consumption by product, labour input, return to capital (operating surplus), and in the case of self-employed, mixed income. More information on supply and use tables is provided in chapter 15.
- 16.53 While the information on the inputs of intermediate goods and services used in production is usually quite detailed, the labour related information within the body of the use table only covers aggregate information on the remuneration of employees and mixed income, the latter being as mentioned before a mix of remuneration for labour input and return to capital, broken down by industry. For many kinds of analyses, there is a need to have much more detailed information on the volume and the value of labour input, which is consistent and coherent with the other information in supply and use tables.
- 16.54 Collecting the detailed information from the same resident unit in the same business survey(s) covering the outputs, intermediate inputs, labour as well as capital used for the same time period(s) would be preferential for consistency, coherency and comparability at source. However, such an approach may not be possible for a variety of reasons, and one will have to rely on the utilisation and combination of various data sources such as labour force surveys, household and establishment surveys, administrative data sources, population surveys and Census data, etc., to arrive at the preferred detail. In doing so, special care and attention will

need to be paid to possible differences between the concepts applied in the relevant source data and the concept of labour input for production activities according to the SNA.

16.55 The labour market tables framework shows labour input through four dimensions: jobs, employed persons (both employees and self-employed), volumes (i.e., hours worked), and payments. The four quadrants of the framework identityidentify specific relationships, which the aggregate statistics must satisfy, as shown in figure 16.3. Some relationships are direct, such as "employed persons in the total economy" being equal to "the number of main jobs", while other relationships are considered indirect or derived, in that the relationship is based on an average or ratio measure such as average hours worked per job or average labour income per employed person.

- 16.56 The labour market tables can be extended by also including elements that go beyond the boundaries of the SNA, such as hours spent on the production of household services for own final use, including estimates of their monetary value (see chapter 34). An even more far-reaching objective in this respect would be the full integration of data on time use surveys, thus arriving at a comprehensive overview of all time spent consistent with hours spent on paid and unpaid work-related activities.
- 16.57 The remainder of this section discusses each of the four quadrants in the labour market tables framework in turn and figure 16.3 provides an illustration of the main content of these quadrants.

## 2. Jobs

- 16.58 *A job reflects a contract between an employee and a resident institutional unit to provide labour in return for remuneration for a defined period or until further notice.* The concept of a job also applies to a selfemployed person. More generally, a job is defined as a set of tasks and duties performed (or meant to be performed) by one person for a single institutional unit in relation to activities defined as employment. Applying this definition in the SNA context, remuneration should be interpreted in a wide sense, including remuneration for employees and <u>part of mixed income for self-employed persons</u>. Given the scope of labour input in the SNA, any person who provides such labour input is considered to have a job.
- 16.59 Persons may have several jobs during a given reference period. The separation between multiple jobs carried out by the same person may cut across different types of work, different industries and different institutional units producing goods and services. In some cases, too, a single job may be shared by two persons. In addition, there is not always a one-to-one relationship between jobs and people because a job may be vacant. Therefore, the number of jobs in an economy will almost certainly be different to the number of employed persons.
- 16.60 The jobs quadrant also shows information on vacancies. An estimate of the total jobs available in an economy can be obtained by adding the number of vacancies and the number of filled jobs. By its nature, vacancies usually refer to jobs that are available to be filled by employers in the formal sector. As such, the number of vacancies may not be fully aligned with the concept of labour input according to the SNA production boundary, which includes labour input beyond the formal sector.
- 16.61 Different estimates of jobs can be produced. These estimates may be based on administrative data sources, business survey sources and/or household survey sources (e.g., labour force survey). These would need to be reconciled, generating a single balanced estimate by industry. The quality and coverage of the relative sources would need to be reflected, for example, in terms of the aggregate jobs picture and jobs by industry. Estimates of the numbers of filled jobs sourced from businesses may be considered more reliable in estimating the distribution of jobs across industries. The numbers of filled jobs reported by each business survey respondent are generally classified according to the industry classification of that business. This implies that the labour input is more correctly linked to the related output and employment related costs. On the other hand, jobs data by industry collected in household surveys are generally less consistent and accurate, albeit more comprehensive, particularly in settings where the informal economy is large and establishment surveys do not cover the informal sector. Furthermore, in household surveys, people may be inaccurate in self-classifying the industry in which they work, for example, a security guard may work in a government office but employed and paid by an agency, their industry of employment being that of the agency and not the government body. Finally, statistics on vacancies would typically be collected from business surveys.

16.62 The jobs quadrant shows time-series estimates of total and filled jobs; filled jobs by industry; job vacancies; and main and secondary jobs. Other variations like market and non-market producers could also be considered.

## 3. Employed persons

- 16.63 The size of the labour force is a measure of the total number of people who are willing and able to work for pay or profit. In this context, employed persons typically refer to persons resident in a country. However, the SNA focuses on resident and non-resident persons providing labour input in the domestic economy. A link between the two concepts can be established by adding information on resident persons providing labour input to non-resident producer units to, and deducting non-resident persons providing labour input to resident persons from, the SNA concept of employed persons, to provide a measure of the resident persons providing labour input.
- 16.64 A person who, in a certain reference period, spends more than one hour of labour input to the production of goods and services, as defined within the SNA, should be counted as providing labour input. It should be possible to link their activities to one or multiple jobs. This is essential from a statistical perspective because such an approach allows the categorisation of persons to different types of jobs and the main characteristics of those jobs (e.g., working hours, industry, occupation, whether the job is seasonal, formal or informal, etc.). In other words, the job is a reference unit which facilitates the grouping of different forms of labour input by their characteristics and provides a meaningful description of the structure of labour input in a country.
- 16.65 Where a person has multiple jobs that fall into different categories of employment, the person should be classified to the main job for which the worker usually works the most hours, and if this information is not available, then to the job from which they get most of the income.



## Figure 16.3 Labour market tables framework

- 16.66 The employed persons quadrant may include demographic breakdowns by sex or gender, age and educational attainment. Breaking the data by educational attainment would allow for an improved analysis of the quality of labour and would provide the starting point for deriving human capital estimates (see <u>belowsection E2 and E3</u>). More generally, it is worth noting that the international comparability of estimates may be affected by legislative differences in working age, retirement age, etc. across countries. International child labour standards, for example, set the minimum age for light work at 13 years and general employment at 15 years, albeit differences exist across countries. Similarly, differences exist for the retirement age or the limit for the working age.
- 16.67 The employed persons quadrant also provides information on unemployed persons and underemployed persons. <u>However, Aas noted before, unemployment relates to persons who are available for work and actively seeking work, or more precisely work for pay or profit. Thus, for example, a person involved in the production of goods for own final use or a volunteer who receives no renumeration or an unpaid family worker may be considered to be unemployed if they are available for work and actively seeking work for pay or profit, even though their labour input may be contributing to activities within the SNA production boundary. In practice, measurement generally focuses on search and availability for work for pay or profit. It is important to consider these differences when reconciling statistics on unemployment and the persons providing labour input to production according to the SNA, for example by making a distinction between labour input for pay or profit versus other categories of labour input, which may also be part of the population of unemployed persons.</u>
- 16.68 Statistics on unemployment are typically obtained from labour force surveys. They may also be obtained from administrative sources on persons claiming unemployment benefits although care needs to be taken if the basis for receiving such benefits is different to the statistical concept of unemployment. The number of people claiming unemployment benefits can be used as a proxy but only reflects those claiming benefits. Underemployment refers to persons who are employed but who would like to, and are available to, work additional hours. Statistics on underemployment are normally obtained from labour force surveys.
- 16.69 The employed persons quadrant shows time-series estimates of employed and unemployed persons; labour force (if data on resident persons employed by non-resident producer units are included); main job-holding; multiple job-holding and underemployed.

## 4. Volume

- 16.70 The volume part of the tables reflects the information on the volume of labour input, as typically measured using hours worked.
- 16.71 The volume quadrant describes the relationship between the hours of labour that are supplied by persons and the hours of labour that are used by enterprises. It quantifies the number of hours actually worked by persons in all jobs. Total hours (actually) worked is the preferred measure to be used in productivity estimates as this is the best, and closest, measure that relates to the labour time used as the input to produce the output measured, both by industry and the whole economy.
- 16.72 Measuring changes in the level of hours worked for different groups of employed persons (both employees and self-employed) is also important in order to monitor working and living conditions as well as analysing economic cycles. Information on hours worked enables various analytical insights such as: classification of employed persons into full-time and part-time status; the identification of under-employed persons; and the creation of high frequency (monthly or quarterly) aggregates on hours worked.
- 16.73 In practice, total hours actually worked and annual (full-time) hours actually worked may have to be estimated but substantial data on labour and output can be gathered from the same businesses to ensure consistency with the labour input to produce the output. In many countries, especially for monthly paid employee jobs, only normal hours or hours usually worked, any paid overtime, plus annual and holiday leave entitlements can be ascertained. An adjustment should be made to the total hours actually worked or annual (full-time) hours actually worked to account for the average level of absence from work due to illness. This difference will not affect full-time equivalent employment, as discussed further below, if sickness rates in part-time jobs are the same as in full-time jobs. However, if they are not, adjustments should be considered.

- 16.74 If the reference weeks used in the surveys have gaps in time coverage, as a consequence of which a complete period, say a year, is not fully covered, then the best available information (even indicative data) suitable for filling the gaps should be used to ensure any seasonal variations are incorporated to generate an estimate for the complete period.
- 16.75 For the purposes of the SNA, working time is defined as the time spent in undertaking activities that contribute to the production of goods and services within the SNA production boundary. Seven concepts of working time are defined in the ICLS Resolutions:
  - a. hours actually worked;
  - b. hours paid for;
  - c. normal hours of work;
  - d. contractual hours of work;
  - e. hours usually worked;
  - f. overtime hours of work; and
  - g. absence from work hours.
- 16.76 The concept of hours actually worked in the SNA covers:
  - a. direct hours, the time spent carrying out the tasks and duties of a job in any location regardless of the amount of time agreed contractually between employer and employee;
  - b. related hours, including time on call, travelling on work assignments, training and other tasks itemised in the resolution;
  - c. down time, covering periods when a person is available for work but cannot because of temporary interruptions of a technical, material or economic nature; and
  - d. resting time such as short periods of rest, for refreshment, etc.
- 16.77 However, hours worked exclude:
  - a. all types of leave (annual, public holidays, sick leave, parental leave, civic duty, etc.);
  - b. commuting time when no productive work is done;
  - c. separate educational time other than training; and
  - d. meal breaks and other longer periods of rest while travelling on business.
- 16.78 More exhaustive definitions of these criteria can be found in the relevant ICLS Resolutions.
- 16.79 For employee jobs, the calculation of hours worked being equal to hours paid less hours paid but not worked, plus hours worked but not paid, is a useful one, since many establishment surveys record hours paid, not hours worked, so that hours worked must be estimated for each job group, using whatever information is available about paid leave, etc.
- 16.80 For self-employed persons, <u>a</u> labour force survey covering all industries may be a source of information for the estimation of hours worked. The respondents whose main job is self-employed are asked about the hours they usually work and the hours they actually worked in the reference week. Those respondents who have a second job that is self-employed are also asked how many hours they worked in that job during the reference week. In the absence of a labour force survey, census information may contain relevant information that could be used as a benchmark, with the benchmarks extrapolated and interpolated using a suitable indicator (e.g., the estimated share of mixed income that goes to labour deflated by a labour price index).
- 16.81 In compiling the volume quadrant, adjustments will have to be made to reconcile the various data sources on

hours worked. Further reconciliation adjustments to the relevant estimates may also need to be made on the basis of confrontation with data from other quadrants of the labour market tables framework.

16.82 The volume quadrant shows time-series estimates of total hours actually worked (as well as hours worked per job or per employed person); hours paid for (ordinary time and overtime); hours not worked; and hours sought but not worked.

#### 5. Payments

- 16.83 The payments quadrant accounts for the remuneration of employees as well as other costs, less subsidies and other allowances, incurred by enterprises in employing this labour input. It also accounts for the (imputed) income from self-employment. It can be described as the total cost of labour and reflects the interactions between labour supply (persons in the resident labour force), labour demand (jobs and employed persons) and labour volume (hours worked). There are three key variables: (a) total labour costs; (b) labour costs of employees; and (c) imputed remuneration for self-employed.
- 16.84 The measure of total labour costs is based on the concept of labour as a cost to employers and includes wages and salaries, employers' social contributions and all other general employee costs borne by the employers, such as training costs, use of recruitment services, <u>taxes on payroll or workforcetaxes</u> and so on. These other costs would not include the costs which are already accounted for as remuneration of employees, as this would lead to a double counting. Any government subsidies, rebates or allowances for wage and salary payments should be deducted from employers' labour costs. It should be noted that part of the other labour costs paid by the employer are recorded as intermediate consumption, while other elements may be recorded as other taxes, less subsidies, on production. Caution is thus needed when interpreting the results as not all labour costs align to value added. For this reason, it is also recommended to keep separate track of both remuneration of employees and other costs less subsides and other allowances.
- 16.85 For some analytical purposes, it may be useful to estimate a breakdown of mixed income earned by selfemployed persons into a remuneration for labour input and gross operating surplus. This would not only enable the estimation of a more accurate return on labour and return on capital, it would also enable "cleaner" comparisons of compensation for labour and gross operating surplus over time and across countries, as it would adjust for differences in the composition of the employees and self-employed.
- 16.86 There are different ways to achieve the separation of mixed income between remuneration of the capital and remuneration of the labour. Taking the agriculture industry as an example, one may start with estimating the remuneration for the labour input of self-employed persons (including family members) working on the farm(s), after which the return to capital can be calculated as the difference between total mixed income for the agriculture industry and this estimate for labour compensation. The imputed compensation for the labour input of self-employed persons could be based on the hours worked by these persons and the average remuneration per hour worked for employees employed by incorporated businesses in similar activities.
- 16.87 Alternatively, one may estimate the return to capital and derive the return on labour as a residual. Using estimates of the stock of capital used by the unincorporated enterprises and average rates of return to capital in similar incorporated businesses would establish a return to capital, and deducting this estimate from mixed income would generate a rate of return on labour.
- 16.88 The first method is conceptually preferable and from a practical point of view probably more feasible. However, it should be noted that the residual operating surplus could become negative. Whether this is plausible and realistic or a reflection of the estimation method may require further investigation. For industries such as agriculture, the levels of mixed income may be very volatile, with one year of low, or even negative, levels of mixed income followed by a year with very high levels of mixed income. It seems more reasonable to reflect this volatility in the resulting operating surplus.
- 16.89 Like the persons quadrant, remuneration of employees and (imputed) labour income for self-employed could also be provided by age, sex or gender and educational attainment. Some of these may be derived from surveys and other sources, or they may require some methods of apportionment and disaggregation.
- 16.90 The payments quadrant shows time-series estimates of labour income (per person and per hour); labour costs (per job and per hour); remuneration of employees; other costs less subsidies and other allowances to

employers; and (imputed) labour income of self-employed persons.

## E. Other enhanced measures of labour inputs

16.91 This section covers some additional labour market measures. These labour input measures can be adjusted to provide various degrees of sophistication and quality, to cover for example, full-time equivalents and quality-adjusted labour inputs for use in productivity measurement and other analyses. More details on the measurement of (labour) productivity can be found in chapter 18.

#### 1. Labour input measured on a full-time equivalent basis

- 16.92 Full-time equivalent labour input is the number of full-time equivalent jobs, defined as total hours actually worked by all employed persons divided by the average number of hours actually worked in full-time jobs.
- 16.93 The definition does not necessarily describe how the concept is estimated. Since the length of a full-time job has changed through time and differs between industries, lower quality crude estimation methods should be avoided and more sophisticated ones are to be preferred, such as one that establishes the average proportion and average working time of less than full week, full-time jobs in each job group separately.
- 16.94 The SNA does not recommend full-time equivalent labour input as the preferred measure of labour inputs but actual hours worked. However, if the data are good enough to permit an estimation of total hours actually worked, full-time equivalent labour input should also be estimated and published. One reason is that this facilitates international comparisons with countries which can only estimate full-time equivalent labour input. Since total hours actually worked is the preferred measure of total labour input, the use of full-time equivalents is likely to be gradually phased out.

## 2. Quality-adjusted labour input

- 16.95 Using total hours actually worked as the input measure for calculating (labour) productivity changes over time implicitly assumes that each hour worked is of the same quality (that is, there are no differences in the qualifications and skill levels of the labour employed). In other words, each hour worked by a highly skilled person, such as a brain surgeon, is assumed to produce the same quantity and quality of output as each hour worked by an unskilled worker. It is possible to produce a quality-adjusted measure of the labour inputs that takes account of changes in the mix of workers over time by weighting together indicators of quality for different grades of workers. (The term quality-adjusted is used as being parallel to the idea of quality-adjusted price indices but it could also be seen as an adjustment for the change in the composition of the workers involved.)
- 16.96 The quality indicators used can relate to variables such as academic qualifications, trade qualifications, experience (typically based on <u>age of</u> the worker's <u>age</u>), industry of employment and so on. The various populations are weighted together using average hourly wages for a worker falling into each category. The premise behind this approach is that workers are hired only until their marginal price (that is, their wages, including on-costs) is less than the marginal revenue expected to result from their production. The index formula used can be a fixed-weight (Laspeyres) formula or a more sophisticated formula such as the Tornqvist, which takes account of changing weights by using weights from each of the periods in the analysis.
- 16.97 Calculating a quality-adjusted labour input measure using this approach may seem to be very data intensive but does not require more detailed data than that needed for the labour market tables framework.

#### 3. Labour input at constant remuneration

16.98 Total hours actually worked and full-time equivalent labour input are both physical measures of labour input. Output too can usually be measured in physical terms such as tonnes or cubic metres. However, this is not done in the national accounts because the basic value per tonne or cubic metre varies so much between products that these physical measures lack general economic significance. Also, the remuneration per hour or per full-time year of work varies enormously. Physical measures of labour input are only valid if the mix of different kinds of labour is much the same in the different countries or at the different times examined.

- 16.99 Since output is measured both at current prices and in volume terms using constant prices, it is natural to do the same with labour inputs using constant renumeration, as well as with intermediate inputs using constant prices. If, as recommended for the compilation of labour market tables, data on the (imputed) income for the labour input of self-employed persons are available, compensation for all labour input at constant remuneration could be estimated. If this is not the case, the labour input of employees only can be shown at constant remuneration. Whatever the case, both measures have their relevance for analysis.
- 16.100 The measurement of labour inputs at current prices and in volume terms is symmetrical with the measurement of output and subject to the following caveats:
  - a. Market prices and market compensation are assumed to measure the relative economic importance of different goods, services and jobs. The advantages and disadvantages of this assumption are the same for inputs as for outputs.
  - b. Although the volume measure and constant remuneration concepts are defined as revaluations of quantities at base period prices or remuneration levels, they can be estimated in practice as the sum, over all groups, of values at current prices or remuneration levels, each divided by an appropriate wage index.

These group indices are estimates, calculated for a representative sample of jobs or of goods or services, with weights reflecting the relative importance of each of the sub-groups represented by a selected and specified job, or by a selected and specified good or service. In other words, a remuneration index is constructed like a price index.

16.101 While the value of (employee) labour input at constant remuneration can be estimated by deflating current values, as mentioned above, the data may also permit the direct approach of multiplying the current number of jobs in each job group by the base-period average annual remuneration for jobs in that job group.

## F. Specific issues

## 1. Links to the Standard Occupational Classification

- 16.102 The occupation refers to the type of work done in the main job by the person employed irrespective of the industry in which the person's job is classified or the status in employment. Given the diverse nature of work done in the various economic activities, it is also recommended to have breakdowns by occupational group according to the International Standard Classification of Occupations (ISCO) for labour input by industry.
- 16.103 Data by occupation also create the building-blocks necessary to provide information on occupational demands. It also allows to assist areas of the country that have clusters of low-paid skills which, in turn, could help to target policy interventions.
- 16.104 Data on labour input with details on occupations are also important inputs to determining the value of the labour input in estimating the own-account production of various intangible assets such as R&D, computer software and data.

## 2. Paid and unpaid household services, and production for own final use

16.105 In contrast to the SNA production boundary, which is used for the integrated framework of the SNA and calculations of GDP/NDP, the general production boundary also includes own account production of unpaid services for own final use by households (e.g., childcare, meal preparation, cleaning, etc.). Including them in complementary measures to GDP/NDP and providing the number of hours worked on unpaid household work would complement the standard national accounts' measures with more inclusive measures of economic activity, material well-being and the labour inputs required.

- 16.106 The third-party criterion used when defining the scope of activities to be covered is broadly defined as unpaid work performed within the household sector, which could be contracted out to a market service provider under regular conditions. This corresponds to the concepts of "output for own final use services" and "households providing (unpaid) services to other households" in the ICLS Resolution; see figure 16.2.
- 16.107 More details on extended accounts on unpaid household service work can be found in chapter 34.

#### 3. Education, training and human capital

- 16.108 From a measurement perspective, well-being encompasses data about several elements, including health, education, income, employment, care, consumption and leisure, that collectively support assessment of the progress of people and communities and the extent to which the needs of current generations are satisfied.
- 16.109 The idea of viewing human knowledge and abilities as an asset as human capital and to estimate its value is not new, but has gained prominence in recent years, especially in the context of measuring sustainable development. Policymakers are calling for ways to understand and quantify human capital, in order to better understand what drives economic growth and the functioning of labour markets, to assess the long-term sustainability of a country's development path, and to measure the output and productivity performance of the education sector. The core connections and dependencies between human capital, education, labour and production are depicted in the figure 34.2.
- 16.110 From an SNA perspective, there has been a long-standing discussion on the potential to capitalise education and training expenditures within the integrated framework of economic accounts and recognise human capital as an economic asset on the balance sheet. Thus, although human capital has not been included in the integrated framework of economic accounts for the reasons mentioned in paragraphs 4.118 4.121, the discussion is of high relevance for extending and broadening the integrated framework of economic accounts. This has been done by way of recommending the compilation of extended accounts on human capital, education and training. These extended accounts are further elaborated in chapter 34.
- 16.111 The labour market tables provide important elements for monitoring human capital, education and training. Especially the breakdowns of labour input by educational attainment are relevant in this respect. They do not only show the impact of education and training on the labour market but also account for the developments in the demand for different types of labour. In addition, the data on remuneration of labour input by educational attainment would provide important building blocks for the measurement of human capital using an income-based approach, in which human capital is approximated by the net present value of future benefits from education in the form of remuneration of employees.

## Chapter 19: Summarizing, integrating and balancing the accounts (revised title and revised content)

## (OLD Chapter 16: Summarizing and integrating the accounts)

## A. Introduction

- 19.1 This chapter provides a synthesis of the sequence of <u>economic</u> accounts presented in chapters 67 to 1314 and shows how they relate to the tables in chapter 23. It shows how the most common aggregates in the SNA, GDP, NDP, and GNI and NNI are related to the balancing items in the various accounts. It shows the impact on national aggregates of transactions undertaken between a resident unit and <u>aone</u> resident in the rest of the world. It <u>also</u> describes the articulation of the accumulation accounts. <u>The chapter ends with a section on balancing the accounts.</u>
- 19.2 The chapter lays the groundwork for greater elaboration of the accounts, in both manners of presentation and further analysis that form the subject matter of later chapters.

## **B.** Integrating the accounts

- 19.3 The tables presented in the previous chapters 7 to 14 use a format very common in published tables; the items representing resources revenues are shown in the right-hand side of the table and the items representing uses expenditures in the left-hand side of the table. This format is flexible because it allows a multiple number of columns to be shown for both parts of the table and even for the two parts to be shown on different pages if the columns are sufficiently numerous. However, there is another format for the tables that is particularly useful for explanatory purposes, the T account.
- 19.4 In a T account, only one set of descriptive headings (stubs) is shown in the middle of the table with values representing resources revenues in columns to the right and values representing uses expenditures in columns to the left. An example of a T account is given in table 1619.1. The rows in the table show the rows from tables 67.1, 78.1, 79.2, 89.1 and 910.1 at a high level of aggregation. Data for the individual sector accounts are not shown but the total for the economy as well as for the rest of the world and the total of both these are shown. In addition, the column for the goods and services account is retained.

#### Table 1619.1: Summary of the current accounts in the sequence of economic accounts

## 1. Summarizing the current accounts

19.5 The current accounts included in table <u>1617</u>.1 consist of the production account and accounts showing the <u>primary</u> distribution of income, the <u>secondary re</u>distribution of income and the use of income. In addition to these accounts, table <u>1619</u>.1 begins with imports and exports of goods and services, the entries from the rest of the world account that show the value of goods and services that <u>reachenter</u> the national economy from the rest of the world and those that are produced in the national economy but are provided to the rest of the world.

## The production account

19.6 The immediately following rows show the main entries from the production account: output andas well as taxes less subsidies on products not already included in the value of output (see paragraph 7.59 ff) on the resourcerevenues side and intermediate consumption on the useexpenditures side. The balancing item for the production account, value added, appears next, also on the useexpenditures side as the closing item of the production account. Value added is the basic building block for determining GDP.

### The generation of earned income account

19.7 The next few rows correspond to the generation of <u>earned</u> income account. This is the first part of the <u>primary</u> <u>distribution of earned</u> income account. Value added, the balancing item from the production account, appears as the only entry on the <u>resourcesrevenues</u> side of the account. The entries on the left-hand side of the account under <u>usesexpenditures</u> show how much of value added is generated by labour in the form of <u>compensationremuneration</u> of employees and how much of the value of output is payable to government in the form of taxes on product<u>ions</u> less subsidies on product<u>ions</u>, <u>including taxes on products less subsidies on products</u> not already included in the value of output. The balancing items, <u>operating surplus</u> and <u>mixed income</u>, represents the contribution of capital to the generation of labour input of <u>self-employed persons</u> and the contribution of capital to the value added of unincorporated enterprises.

#### The allocation of primaryearned income account

- 19.8 In the allocation of primaryearned income account, these contributions to value added appear as resourcesrevenues of the relevant sectors; compensationremuneration of employees to households, taxes less subsidies to government and operating surplus and mixed income to the sectors containing the relevant production units. In addition, however, the allocation of primaryearned income account shows how much of each of these three items is payable to non- resident units and where comparable items generated in non-resident units are payable to resident sectors.
- 19.9 In the course of production, producers may have made use of financial and non-produced <u>non-financial</u> assets belonging to other units. The payments for the use of these assets are shown as property income. Property income may be payable by residents or non-residents and may be receivable by residents or non-residents. Once the values for three of them are known, the value of the last is necessarily determined. For example, property income receivable by residents must be equal to property income payable by both residents and nonresidents less property income receivable by non-residents. Thus property income receivable by both residents and non-residents (shown under <u>resourcesrevenues</u>) must be equal to property income payable by both residents and non-residents (shown under <u>usesexpenditures</u>).
- 19.10 The balancing items from the generation of earned income account, operating surplus and mixed income, are recorded Value added as a resourcerevenue on the allocation of earned income account. plusTogether with the resourcerevenue entries of compensationremuneration of employees, operating surplus, mixed income, taxes less subsidies on production and property income, less the corresponding entries for these items as usesexpenditures leads to the balance of primaryearned incomes. This is the balancing item for the allocation of primaryearned income account shown as an useexpenditure, and the first item, a resourcerevenue, of the secondary distribution of income transfers other than social transfers in kind account.
- 19.11 From the balance of primaryearned incomes, another key aggregate of the SNA, national income, is derived. Value added is determined by the criterion of residence; all resident units and only resident units contribute to the total. For the balance of primaryearned income, however, the focus changes not just from production to income but to the residence of the units receiving the income generated by production rather than the residence of the producing units themselves. Further discussion of national income appears below in connection with the discussion of the rest of the world account.

## The secondary distribution of income transfers other than social transfers in kind account

19.12 The secondary distribution of income transfers other than social transfers in kind account shows how primaryearned income is transformed to disposable income by the payment and receipt of current transfers. Various factors stimulate redistribution of income between sectors of the economy. One of these is the role of government in levying current taxes on income and wealth; one is the role played by social insurance schemes in redistributing contributions by current workers to retirees; another is the role of insurance in
providing a mechanism whereby small regular payments by many units are channelled to a few units suffering predefined sorts of losses. Among other types of current transfers, the role of purely voluntary transfers is of increasing interest. Such transfers may provide the main source of finance for NPISHs, in the form of international cooperation between governments, or may be between resident and non-resident households in the form of workers' remittances.

- 19.13 Current transfers payable by resident and non-resident units must be equal to current transfers receivable by both resident and non-resident units, and thus total uses and resources are equal as is the case for property income.
- 19.14 Disposable income is an important balancing item in the accounts since it shows, disregarding the impact of capital transfers, how much can be consumed without the need to run down assets or incur liabilities. It thus corresponds to the economic theoretical concept of income.

# The use of income accounts

- 19.15 The use of disposable income account shows how much disposable income is in fact used for <u>final</u> consumption and how much is saved. When looking at the sector accounts, the adjustment for the change in pension entitlements has to be made to ensure that these form part of the saving of households and not of pension funds. However, in the aggregate only flows relating to pension entitlements involving non-resident employees or resident employees of non-resident enterprises appear.
- 19.16 Table <u>1619.1</u> does not include the redistribution of income <u>invia transfers in</u> kind account and the use of <u>adjusted</u> disposable income <u>adjusted for social transfers in kind</u> account but these could be inserted either in place of, or as a complement to, the <u>income transfers other than social transfers in kind account and the</u> use of disposable income account.

# 2. Summarizing the accumulation accounts

19.17 Table <u>1619</u>.2 presents a summary of the accumulation accounts and balance sheets with the same degree of detail as used for the current accounts in table <u>1619</u>.1. In this case, the titles given to the right- and left-hand columns are changed; the columns to the right are described as changes in liabilities and net worth, and those to the left show changes in assets.

#### Table 1619.2: Summary of the accumulation accounts and balance sheets

# The capital account

- 19.18 The first items appearing on the right-hand side of the capital account are saving and the current external balance. Also appearing as resourcesrevenues are capital transfers receivable. By convention, capital transfers payable also appear under resourcesrevenues but with a negative sign. For the economy as a whole, including transactions with the rest of the world, capital transfers receivable and payable exactly offset one another in the same way that property income and current transfers do. However, this equality is not generally true for the total economy excluding the rest of the world nor for individual sectors within it.
- 19.19 Together, saving plus <u>receivable</u>, <u>minus payable</u>, <u>capital transfers</u> (net) show how much is available within the economy to acquire non-financial capital, primarily capital formation but also non-produced non-financial assets. This total is shown as a special aggregate called changes in net worth due to saving and capital transfers. It is not a balancing item but has the same characteristic of being an analytical construct of particular interest.
- 19.20 The <u>usesexpenditures</u> shown in the capital account are the acquisition, <u>less disposals</u>, of produced <u>non-financial assets</u> and non-produced non-financial assets, <u>both excluding natural capital</u>, as <u>well as acquisitions</u>, <u>less disposals</u>, <u>of natural capital</u>. The balancing item of the capital account is net borrowing or lending. When there is net lending, it shows the extent to which the sum of saving and capital transfers is actually used to

finance the acquisition of non-financial assets and how much is lent to the rest of the world. When there is net borrowing, saving plus capital transfers are insufficient to finance all the acquisition of non-financial assets and borrowing from the rest of the world is necessary.

# The financial account

- 19.21 The financial account shows exactly how net lending or borrowing takes place by showing all the transactions in financial instruments. Transactions in financial assets shown as changes in assets exactly balance the amounts shown as changes in liabilities-and net worth because when all transactions of resident units with either other resident units or non-resident units are taken into account, there can be no net lending or borrowing left unexplained.
- 19.22 Because the financial account does not introduce any new balancing items and only explains how net lending or net borrowing is effected, and because it requires quite different data sources and understanding of the data sources, this account is not always compiled by national accountants. However, without the financial account, the compiler cannot be certain that the estimates for the other accounts are fully consistent and complete. Just as the national accountant must have an understanding of the balance of payments system and ensure that the transactions relating to the rest of the world are fully captured in the accounts, so there is a need to have an understandingappreciate the implications of systems of monetary and financial statistics. Two later chapters, chapters 2629 and 2733, discuss the relationships with these other statistical systems in more detail.

# 3. The goods and services account

- 19.23 Throughout the sequence of accounts, each transaction line is balanced. For the distributive and redistributive transactions, this is automatically the case if the data are fully reconciled since whatever is shown as payable by one unit must be shown as receivable by another. However this is not obviously the case for the transactions relating to goods and services. In order to preserve the balancing nature of the accounts, a column headed "goods and services" is included on each side of the accounts. In every case where there is a transaction relating to goods and services, an entry in the goods and services column on the other side of the account is made.
- 19.24 Ultimately the entries on the left-hand side of the account show the value of all goods and services supplied to the economy, either as productiondomestic output or imports, plus the taxes on products less subsidies not already included in the value of outputpaid on them. On the right-hand side of the account, the use of the goods and services is shown, as intermediate or final consumption, capital formation or exports.
- 19.25 Clearly, ex post the total amount of goods and services supplied to the economy must be equal to the total use made of those goods and services. Setting the entries in the left-hand goods and services column equal to those in the right-hand side column gives the familiar goods and services account, described in chapter 1415:

Output + imports + taxes less subsidies on products

= intermediate consumption + final consumption + exports + capital formation

- 19.26 The equation reflects the notion that goods and services produced in the current period are used either to generate more goods and services in the current period (intermediate consumption) or to generate more goods and services in future periods (capital formation) or to satisfy human wants immediately (final consumption). However, because no economy is entirely closed, it is necessary to allow for those goods and services supplied from outside the economy (imports) and those goods and services used by other economies (exports).
- 19.27 This identity comprises the goods and services account. The goods and services account shows the balance between the total goods and services supplied as resources to the economy as output and imports (including the value of taxes less subsidies on products not already included in the valuation of output) and the use

of the same goods and services as intermediate consumption, final consumption, capital formation and exports.

# 4. The accounts for the rest of the world

19.28 The entries in the integrated accounts for the rest of the world correspond to the entries in the balance of payments as laid out in  $BPM_{-}^{76}$ . Table <u>1619</u>.3 shows the entries for the rest of the world in the structure of the balance of payments accounts.

Table 1619.3: Entries for the rest of the world using the BPM76 structure of accounts

- 19.29 There are threefour current accounts; one for goods, one for and services, one for primaryearned income and one for secondarytransfer income. Each of these has a balancing item but, unlike the accounts in the SNA, the balancing items do not carry down from one account to the next. However, other balancing items that do match those in the SNA are allowed for. Thus the external balance of goods, services and primaryearned income is the sum of the [external] balance of goods, the [external] balance of and services and the [external] balance of primaryearned income for the total economy. When this item is added to the external balance of secondarytransfer income, the current external balance is derived which corresponds to saving for the total economy. In this respect, it should be noted that all balancing items in the external account have an opposite sign compared to the accounts of the rest of the world in national accounts. While the national accounts record flows and positions between residents and non-residents from the perspective of non-residents, the external accounts record the relevant flows and positions from a domestic point of view.
- 19.30 In the capital account of the rest of the world, the only entries are for capital transfers receivable from and payable to the rest of the world and acquisition less disposals of non-produced non-financial assets involving non-resident units. These give the <u>[external]</u> capital <u>externalaccount</u> balance. When this is added to the current external balance, the result is net lending to or borrowing from the rest of the world.

# 5. Integration of stock and flow data

# Linking the opening and closing balance sheets

- 19.31 The balance sheets are an integral part of the SNA. An understanding of the articulation of the balance sheets with the flows relating to assets in the capital, financial and other changes in assets <u>and liabilities</u> accounts is fundamental to understanding the role capital accumulation plays in the SNA.
- 19.32 The basic accounting identity linking the opening and the closing balance sheet values for a single type of asset can be summarized as follows:

The value of the stock of a specific type of asset in the opening balance sheet valued at the prices prevailing at the date the balance sheet refers to;

*plus* the total value of the assets acquired, less the total value of those disposed of (including consumption of fixed capital<u>depreciation and depletion</u>, where appropriate), in transactions that take place within the accounting period;

*plus* the value of other positive or negative changes in the volume of the assets held (for example, as a result of the discovery of a subsoil resource or the destruction of assets as a result of war or a natural disaster);

*plus* the value of the positive or negative nominal holding gains accruing during the period resulting from a change in the price of the asset;

*equals* the value of the stock of the asset in the closing balance sheet valued at the prices prevailing at the date the balance sheet refers to.

- 19.33 The value of the non-financial assets acquired, less the total value of those disposed of, in transactions that take place within the accounting period is recorded in the capital account and the value of transactions in financial assets (and liabilities) in the financial account. The value of other positive or negative changes in the volume of the assets (and liabilities) held is recorded in the other changes in the volume of assets and liabilities account. The value of the positive or negative nominal holding gains accruing during the period resulting from a change in the price of the asset (or liability) is recorded in the revaluation account. This means that the value of each entry in the closing balance sheet can, in principle, be constructed by taking the value in the opening balance sheet and adding to it the entries relating to the same asset (or liability) in each of the four accumulation accounts.
- 19.34 A nominal holding gain may be decomposed into a neutral holding gain and a real holding gain. The nominal holding gain indicates by how much the value of an asset has increased over the period. The neutral holding gain indicates the increase that would have been necessary for the asset to exactly maintain its purchasing power over the period. If the nominal holding gain is larger than the neutral holding gain, the owner of the asset has a real holding gain (equal to the difference between the nominal and neutral holding gains). If the nominal holding gain is less than the neutral holding gain, then the owner suffers a real holding loss.
- 19.35 The identity linking the opening and closing balance sheets and the accumulation account is valid even in the case of assets that are held only temporarily within the accounting period and that do not appear in either the opening or the closing balance sheets. For example, an asset may be acquired in a period, increase in price due to a holding gain and then suffer some destruction before being sold again before the end of the period.
- 19.36 The nominal holding gains and losses shown in the revaluation account include both realized and unrealized holding gains and losses but the realized holding gains and losses are incorporated in the value of transactions of the assets, leaving only the unrealized holding gains and losses in the closing balance sheet.
- 19.37 The link between the balance sheet and flow accounts in respect of financial assets and liabilities is often recognized and presented. Less attention has been focused on the links for non-financial assets though<sub>27</sub> aAs chapter  $\frac{2017}{2017}$  on capital services makes clear, it is no less important, especially as regards an understanding of productivity growth in the economy.

# Net worth

- 19.38 The balancing item on a balance sheet is equal to the sum of all the assets less all the liabilities and is called net worth. The change in net worth between the opening and closing balance sheet can be shown to be composed of three items.
  - a. The first of these is the change in net worth due to saving and capital transfers. This comes from the capital account and is the item shown as the total of <u>resourcesrevenues</u> on that account.
  - b. The second item is the change in net worth due to other changes in the volume of assets and <u>liabilities</u>, and is the sum of all the entries for assets, <u>less all the entries for liabilities</u>, in the other changes in the volume of assets and <u>liabilities</u> account <u>less all the entries for liabilities</u>.
  - c. The third item is the change in net worth due to nominal holding gains and losses. This is the sum of the entries for nominal holding gains and losses for all assets<u>recorded in the revaluation account</u> less the entries for nominal holding gains and losses on all liabilities<u>as recorded in the revaluation account</u>. This can be broken down into the change in net worth due to neutral holding gains and losses and the change in net worth due to real holding gains and losses in an obvious manner.

# Asset accounts

19.39 The identity linking opening and closing balance sheets holds for assets (or liabilities) in total, for every separate class of asset (or liability), and indeed for every individual asset (or liability). An asset (or liability) account describes the changes in the stock of an asset (or liability) or class of assets (or liabilities) from one balance sheet to the next, itemizing which changes are due to capital transactions, which to financial

transactions and which to other changes in volume and revaluation. Asset accounts are described in chapter  $\frac{1314}{12}$ .

# 6. Consolidating the accounts

19.40 Although it is not usual to present the accounts in a fully consolidated form, it is useful from a pedagogical point of view to consider what results from a full consolidation of the accounts.

### Consolidating the current accounts

- 19.41 All the items in table <u>1619</u>.1 relating to the distribution and redistribution of income appear on both sides of the account. Their inclusion permits the derivation of significant balancing items but it is also possible to consider what entries are left if they are eliminated by consolidation. In fact what remains are the entries in the goods and services columns plus the entries for saving and the current external balance. This result can be seen from the following:
  - a. ResourcesRevenues
  - Imports 499;
  - Output 3 604;
  - Taxes on products 141;
  - Subsidies on products -8;
  - Total 4 236;
  - b. UsesExpenditures
  - Exports 540;
  - Intermediate consumption 1 883;
  - Final consumption 1 399
  - Saving 427;
  - Current external balance -13;
  - Total 4 236.
- 19.42 The current external balance (-13) is equal to the external balance of goods and services (-41) plus the <u>external</u> <u>balance of earned and transferflows of</u> income coming from the rest of the world (28). If imports, exports and the external balance of goods and services are removed from the consolidation just described, the following result can be derived:

#### Output 3 604

plus taxes on products 141

minus subsidies on products 8

minus intermediate consumption 1 883

(result 1 854)

equals

final consumption 1 399

plus saving 427

plus external balance of earned and transfer income from the rest of the world 28.

19.43 The first part of this identity is the definition of income generated in the economy. If the <u>external balance of</u> <u>earned and transfer</u> income from the rest of the world is regarded as an analogue to saving generated within the domestic economy, this identity can be seen as the simple economic concept that income is equal to consumption plus saving.

# Consolidating the accumulation accounts

19.44 When the capital and financial accounts are consolidated, all the entries in the financial account are eliminated and the entries for net lending or borrowing that appear in each account cancel. All that is left is:

acquisitions less disposals of produced assets (= capital formation) (414)

*plus* the acquisition less disposals of non-produced assets (0)*equals* saving (427) *plus* the current external balance (-13).

Consolidating the rest of the world account

19.45 Looking only at the capital and financial account of the rest of the world:

the current external balance (-13)

plus the acquisitions less disposals of non-produced assets (0)

plus capital transfers receivable (4)

minus capital transfers payable (1)

equals net lending or borrowing (-10).

19.46 Combining this identity with the previous one reduces to:

the acquisitions less disposals of produced assets (= capital formation) (414) *plus* the acquisitions less disposals of non-produced assets (0) *equals* saving (427) *plus* net lending or borrowing to the rest of the world (-10) *minus* capital transfers payable to the rest of the world (4). *plus* capital transfers receivable from the rest of the world (1).

In other words investment is equal to saving generated from within the total economy or drawn in from the rest of the world.

# C. The macroeconomic aggregates in the SNA

# **1.** The GDP identities

19.47 Rearranging the order of items appearing in the goods and services account leads to the most familiar definitions of GDP:

Output (3 604)

minus intermediate consumption (1 883)

plus taxes less subsidies on products (141 - 8)

equals

final consumption (1 399)

plus the acquisitions less disposals of produced assets (= capital formation) (414)

plus exports (540)

minus imports (499)

equals GDP (1 854).

There are thus two separate ways in which GDP can be defined:

- a. the production measure of gross domestic product (GDP) is derived as the value of output less intermediate consumption plus any taxes less subsidies on products not already included in the value of output,
- b. the expenditure measure of gross domestic product (GDP) is derived as the sum of expenditure on final consumption plus gross capital formation plus exports less imports.
- 19.48 The production measure of GDP can also be expressed as value added adjusted to ensure all taxes less subsidies on products are included. As described in chapter 78, value added can be viewed as the elements comprising income: compensationremuneration of employees, operating surplus, mixed income and other taxes less subsidies on production. If separate estimates are available of these components, then a third way of compiling GDP is possible, that is, from the income side. Because other taxes less subsidies on production are included and taxes less subsidies on products are to be included also, the two tax items can be replaced by the term that is the sum of them both, taxes less subsidies on production and imports.

GDP (1 854)

equals

compensation<u>remuneration</u> of employees (1 150)

plus gross operating surplus (452)

plus gross mixed income (61)

plus taxes less subsidies on production and imports (191).

The third way in which GDP can be defined is thus

c. the income measure of gross domestic product (GDP) is derived as <u>compensation</u> <u>remuneration</u> of employees plus gross operating surplus plus gross mixed incomes plus taxes less subsidies on both production and imports.

# 2. A note on the valuation of output

- 19.49 In chapter 67, it is explained that the preferred measurement of output in the system is basic prices. At basic prices, the value of output excludes all taxes on products and includes all subsidies on products. It includes all other taxes on production and excludes all other subsidies on production. However, the data sources in some countries may not permit this valuation to be followed. In this case, output will be valued at producers' prices. All taxes on both products and production (possibly excluding any VAT type taxes) will be included in the value of output and all subsidies on both products and products and production will be excluded.
- 19.50 For this reason, the definition of GDP from the production side given above includes the phrase "plus any taxes less subsidies on products not already included in the value of output". When output is valued at producers' prices, there will be no further taxes on products to add in (except possibly VAT type taxes); they will be already included in the measure of output (and similarly subsidies on products will already be deducted). In this case, GDP may be defined as *the production measure of gross domestic product (GDP) is derived as the value of output at producers' prices less intermediate consumption*. When output is measured at basic prices (as preferred in the SNA and as followed in the numerical example) the definition can be rephrased as *the production measure of gross domestic product (GDP) is derived as the value of output at basic prices less intermediate consumption plus taxes less subsidies on products.*

# **3.** Gross and net domestic product

- 19.51 While the third definition of GDP is correct both economically and statistically, it is held not to be the best measure of income. Income is usually defined as the amount that can be consumed while keeping the level of capital intact. (For further discussion on this see <u>paragraph 9.25</u>the introduction to chapter 8.) It is for this reason that the items <u>consumption of fixed capitaldepreciation and depletion are-is</u> so important in the accounts and appears in every account as the difference between balancing items on a gross and net basis. To measure domestic production on a net basis, it is necessary:
  - a. to deduct <del>consumption of fixed capital<u>depreciation</u> and <u>depletion</u> from the production measure of GDP,</del>
  - b. to replace gross capital formation by net capital formation, and subtract depletion, in the expenditure measure of GDP,
  - c. to replace gross operating surplus by net operating surplus and gross mixed income by net mixed income in the income measure of GDP.
- 19.52 Each deduction from GDP is equivalent because the difference between gross and net capital formation is the consumption of fixed capitaldeprecation, while depletion is explicitly subtracted as a stand-alone item. Both items also representas is the difference between the sum of operating surplus and mixed income on a gross basis as opposed to a net basis. Thus, net domestic product (NDP) is defined as gross domestic product (GDP) less the consumption of fixed capitaldepreciation and less depletion.

NDP (1 632)

equals

GDP (1 854)

minus consumption of fixed capitaldepreciation (222)

minus depletion (...).

# 4. Gross and net national income

19.53 In some countries, border or seasonal workers may have a significant effect on the amount of compensationremuneration of employees that is either payable abroad or receivable from abroad. CompensationRemuneration earned abroad but repatriated to the country where the employee is resident (as opposed to where he or she works) adds to the income of households available for consumption. The concept of national income as opposed to domestic production is thus another key aggregate of the SNA. As well as labour income from abroad in the form of <u>compensationremuneration</u> of employees, income earned abroad on capital, especially financial capital, in the form of property income, is included in national income as well as any taxes <u>less subsidies on production and importson products</u> payable by non-residents. Similar payments flowing out of the total economy to the rest of the world have to be deducted from GDP to reach national income.

19.54 Gross national income (GNI) is defined as GDP plus <u>compensationremuneration</u> of employees receivable from abroad plus property income receivable from abroad plus taxes less subsidies on production receivable from abroad less <u>compensationremuneration</u> of employees payable abroad less property income payable abroad and less taxes plus subsidies on production payable abroad. In the terms of an equation,

GNI (1864)

equals

GDP (1 854)

plus compensation remuneration of employees receivable from abroad (6)

plus property income receivable from abroad (44)

plus taxes less subsidies on production and imports receivable from abroad (0)

minus compensationremuneration of employees payable abroad (2)

minus property income payable abroad (38)

minus taxes less subsidies on production and imports payable abroad (0).

19.55 As mentioned above, an income concept is better measured after deducting consumption of fixed capital depreciation and depletion, so Net national income (NNI) is defined as GNI less the consumption of fixed capital depreciation and depletion.

NNI (1 642)

equals

GNI (1864)

minus consumption of fixed capitaldepreciation (222)

minus depletion (...).

# 5. National disposable income

- 19.56 A further step in examining the impact of the rest of the world on the national economy is to consider current transfers receivable from abroad and those payable abroad. Transfers receivable from abroad include remittances from nationals working abroad for long enough (more than one year) to be treated as resident elsewhere. However, like <u>compensationremuneration</u> of employees payable from abroad, these transfers from non-residents can have a major impact on the resources available to the national economy. Overseas assistance, other than development assistance for capital projects, is also shown here. As before, transfers payable abroad must be deducted in moving from national income to national disposable income.
- 19.57 National disposable income, more often than domestic product and national income, is usually shown on a net basis. *Net national disposable income (NNDI) is defined as net national income (NNI) plus current transfers receivable from abroad less current transfers payable abroad*. In equation terms,

NNDI (1 604)

equals

NNI (1 642)

plus current transfers receivable from abroad (17)

minus current transfers payable abroad (55).

# D. An example set of integrated economic accounts

19.58 The T accounts shown in table <u>1619</u>.1 and <u>1619</u>.2 can be extended to cover all the sectors of the economy and as much detail as required in the accounts. Such an extended presentation is referred to as <u>the sequence</u> set of (integrated) economic accounts. An example is tables <u>1619</u>.4 and <u>1619</u>.5 which show, simultaneously, the general accounting structure of the SNA and present a set of data for the individual institutional sectors, the economy as a whole and the rest of the world.

Table 1619.4: Summary current account with sector details - uses expenditures

Table <u>1619.4</u> (cont): Summary current account with sector details – <u>resourcesrevenues</u>

Table <u>1619</u>.5: Summary of the accumulation accounts and balance sheets with sector details – assets and changes in assets

Table <u>1619</u>.5 (cont): Summary of the accumulation accounts and balance sheets with sector details – liabilities, net worth and changes in them

The table brings together in one presentation:

the institutional sector accounts,

the rest of the world accounts, and

the goods and services account.

19.59 In order to simplify this table while still having it comprehensive, classifications of sectors, transactions and other flows, assets and liabilities are at the highest level of aggregation compatible with understanding the structure of the SNA. However, columns and rows can be subdivided to introduce subsectors or more detailed classifications of transactions and other flows, assets and liabilities.

# **1.** Institutional sector accounts

#### **Current accounts**

- 19.60 As an example of the institutional sectors current accounts, consider the column for non-financial corporations.
- 19.61 The production account shows output (2 808) on the right-hand side, intermediate consumption (1 477) and value added (1 331 gross, 1 174 net, the difference referring to consumption of fixed capitaldepreciation and depletion (157), on the left-hand side). Value added, the balancing item of the production account, appears again in the same row as a resourcerevenue of the generation of earned income account.
- 19.62 The <u>usesexpenditures</u> of the generation of <u>earned</u> income account (<u>compensationremuneration</u> of employees (986) and other taxes (88) less subsidies on production (35)) are shown on the left-hand side, the balancing item being net operating surplus (135), which appears again as a <u>resourcerevenue</u> of the allocation of <u>primaryearned</u> income account.
- 19.63 In the allocation of <u>primaryearned</u> income account, property income receivable (96), along with operating surplus is recorded on the right-hand side, and property income payable (134) is recorded on the left-hand side. It also shows, as a negative item related to rent, the reallocation of depletion to the legal owner of natural resources in proportion to its economic ownership of the resources. The balancing item is the net balance of

primarycarned incomes (97), which appears again as a resourcerevenue of the secondary distribution of income transfers other than social transfers in kind account. The secondary distribution of income transfers other than social transfers in kind account shows current transfers, payable (98) and receivable (72), leading to the balancing item of net disposable income (71). This item, which can also be described as the undistributed income of non-financial corporations, appears as a resourcerevenue in the use of income account.

- 19.64 The only transaction appearing in the use of income account for the corporations sectors is an entry for the change in pension entitlements. In this case the entry has a value of zero so the balancing item of the use of income account, saving, has the same value as disposable income.
- 19.65 The accounts for other institutional sectors may be read the same way, the relevant transactions varying according to the sector involved.

# The use of income account

19.66 The presentation of the two ways in which disposable income is associated with final consumption, one taking account of the redistribution of incomeyia transfers in kind leading to actual consumption and the other showing final consumption expenditure to disposable income directly, is simplified in table 1619.4. The redistribution of incomesocial transfers in kind account and the use of adjusted disposable-income adjusted for social transfers in kind account are merged with the use of disposable income account as follows. Disposable income, netgross, is 317 for general government, 37 for NPISHs and 1 219 for households. Final consumption expenditure is 352 for government, 32 for NPISHs and 1 015 for households. Total consumption expenditure is 1 399. Saving is given by disposable income less final consumption expenditure.

# The accumulation accounts

19.67 The accumulation accounts follow the sequence of current accounts for the institutional sectors. For example, net saving of households is 192. Households receive 23 and pay 5 as capital transfers. Thus the value of the changes in their net worth due to saving and capital transfers is 210. Households have 48 as gross fixed capital formationacquisitions less disposals of produced assets (25 as net fixed-capital formation-after deduction of consumption of fixed capitaldepreciation (23)), changes in inventories of 2, and acquisitions less disposals of valuables of 5. Their acquisitions less disposals of non-produced non-financial assets (land) are 4. The net lending of households is 174. They incur financial liabilities (net) of 15 and acquire financial assets (net) of 189. Other changes in volume of assets and liabilities are 2. The value of the assets held by households increases by 96 due to changes in the prices of both non-financial assets (80) and financial assets (16); there are no nominal gains or losses on their liabilities, which means that all their liabilities are denominated in monetary termsnominal values and probably in the national currency of the economy in question.

# The balance sheets

19.68 The balance sheets are also part of the integratedsequence of economic accounts. In order to see the relationships between the accumulation accounts and balance sheets, take general government as the example. The opening assets are 1 185 (789 non-financial assets and 396 financial assets) and the opening liabilities 687, net worth thus being 498. The total value of non-financial assets increases by 57, which results from all changes in these assets recorded in the accumulation accounts, gross fixed capital formationacquisition less disposals of produced assets (excluding natural capital) (35), consumption of fixed capital\_depreciation related to these assets (-27), acquisitions less disposals of valuables (3), acquisitions less disposals of non-produced non-financial assets (excluding natural capital) (2), acquisitions less disposals of natural capital (...), depreciation and depletion related to these assets (- ...), other volume changes (0) and nominal holding gains (44). Financial assets decrease by 9 (net disposal of financial assets, 10, other volume changes, 0, nominal holding gains, 1). On the right-hand side, liabilities increase by 102, which results again

from all changes in liabilities recorded in the accumulation accounts (net incurrence of liabilities (93), other volume changes (2), revaluation of liabilities (7)). So the closing assets are 1 233 (846 + 387) and the closing liabilities are 789; closing net worth (444) shows a decrease over the year of 54. The sources of this change in net worth are summarized on the right-hand side of the account showing the change in balance sheets: changes in net worth due to saving and capital transfers (-90, see also the right-hand side of the capital account), to other changes in volume of assets and liabilities (-2, see also the right-hand side of the other changes in volume of assets and liabilities account), and to nominal holding gains or losses (38, see also the right-hand side of the revaluation account).

# 2. The rest of the world account

- 19.69 As explained earlier, the rest of the world accounts are presented from the viewpoint of the rest of the world. Imports of goods and services (499) are a resourcerevenue for the rest of the world, even though they represent an outflow from the national economy and exports (540) are an useexpenditure of the rest of the world. Thus imports appear on the right-hand side of the table and exports on the left. The external account of goods and services is shown at the same level as the production account for institutional sectors. The external balance of goods and services is -41. With a positive sign, it is a surplus of the rest of the world (a deficit of the national economy) and vice versa.
- 19.70 As explained in connection with table <u>1619</u>.3, the external balance on <u>primaryearned</u> income is -10 and on <u>secondarytransfer</u> income is 38, giving a current external balance of -13.
- 19.71 Transactions of the accumulation accounts appear in the columns for the rest of the world when relevant (mainly capital transfers and financial transactions). The rest of the world columns show the assets and liabilities position of the rest of the world vis-à-vis the national economy (external assets and liabilities account). The row "changes in net worth due to saving and capital transfers" corresponds, for the rest of the world, to the current external balance and capital transfers.

# 3. The goods and services account

19.72 In the integrated economic accounts, the goods and services account is shown in a column, not in a row. It reflects the various transactions in goods and services that appear in the accounts of the institutional sectors. Intermediate consumption and final consumption appear as uses in the institutional accounts on the left-hand side of the accounts. For the goods and services account, they appear in the right-hand side column, even though the right-hand side is generally reserved for resourcesrevenues and consumption is a use. This device of using the opposite side of the account from normal gives a balance for the row for each of the items appearing in the goods and services account. On the resources side of the table, the figures appearing in the column for goods and services are the counterparts of the uses made by the various sectors and the rest of the world: exports (540), intermediate consumption (1 883), final consumption expenditure or actual final consumption (1 399), gross fixed capital formation acquisitions less disposals of produced assets (excluding natural capital) (376), acquisitions less disposals of produced natural capital (...), changes in inventories (28) and acquisitions less disposals of valuables (10). On the useexpenditure side of the table, the figures in the column for goods and services are the counterparts of the resources revenues of the various sectors and the rest of the world: imports (499) and output (3 604). On the same side taxes less subsidies on products (133) are shown directly in the column for goods and services. They are a component of the value of the supply of goods and services that has no counterpart in the value of the output of any institutional sector.

# 4. The total economy column

19.73 The columns for the total economy remain to be explained. Except for taxes less subsidies on products and gross and net domestic product, the figures in these columns are simply the sum of the corresponding figures for the institutional sectors. The production account for the total economy includes, as resourcesrevenues, output (that is, the total output of the economy (3 604)) and taxes less subsidies on products (133), the latter being the counterpart of the figure appearing on the left-hand side in the column for goods and services. The usesexpenditures side of the production account for the total economy shows intermediate consumption (1

883) and domestic product at market prices (1 854 gross, 1 632 net). The latter is the sum of value added of the various sectors and taxes less subsidies on products. Domestic product then appears on the right-hand side as a <u>resourcerevenue</u> of the generation of <u>earned</u> income account for the total economy. Taxes less subsidies on products are shown again on the left-hand side in the column for total economy and on the right-hand side as a <u>resourcerevenue</u> of government (and the rest of the world if relevant). This double routing of taxes less subsidies on products is made in order to get domestic product, gross and net, directly in the overall accounts, as explained above.

19.74 The other items in the columns for the total economy are self-explanatory. Net national income at market prices (1 642) is shown directly as the sum of balance of primaryearned incomes of the various sectors; national disposable income, national saving, etc. are also obtained directly.

# **E.** Balancing the accounts

- <u>19.75</u> As explained in more detail in section E of chapter 4, the accounting system underlying the SNA derives from the following bookkeeping principles:
  - a. <u>Vertical double-entry bookkeeping, which implies that each transaction leads to at least two entries,</u> traditionally referred to as a credit entry and a debit entry, in the books of the transactor. As a consequence, net lending or net borrowing resulting from non-financial transactions is by definition equal to net lending or net borrowing resulting from financial transactions.
  - b. Horizontal double-entry bookkeeping, which implies that each transaction of a certain unit leads to a counterpart transaction of another unit. As a consequence, for any transaction, total receipts of all units, including receipts of non-resident units from resident units, are by definition equal to total payments of all units, including payments by non-resident units to resident units. This also holds for total supply of goods and services and total use of goods and services, as explained in chapter 15 and, more concisely, in paragraph 19.47.
  - c. Quadruple-entry bookkeeping, which basically combines the two principles above.
- 19.76 The first principle also ensures the fundamental identity of a unit's balance sheet, that is, the total value of assets equals the total value of liabilities plus net worth, i.e., net worth equals the sum of cumulative changes in net worth due to saving and capital transfers, cumulative changes in net worth due to other changes in assets and liabilities, and cumulative changes in net worth due to holding gains and losses. It also ensures, as explained in paragraph 19.32, that for a single type of asset (or liability and net worth) the difference between the opening and the closing value can be explained by the total value of the assets acquired, less the total value of those disposed of (including depreciation and depletion where appropriate) plus the value of other positive or negative changes in the volume of the assets and liabilities plus the value of the positive or negative nominal holding gains resulting from a change in the price of the asset.
- 19.77 The system of national accounts can thus be seen as a fully consistent and closed accounting system guided by the quadruple-entry bookkeeping principle. From a conceptual point of view, all transactions and positions of a unit/sector add up, and for all transactions (stocks), total receipts (stocks of financial assets) of all agents are equal to total payments (stocks of liabilities).
- 19.78 This quadruple entry bookkeeping system is not just a theoretical notion. It provides a very powerful tool for checking the quality of the data used for the compilation of national accounts, by looking at the consistency of the source data in two ways. First, one can see whether the numbers for an institutional unit or sector are internally consistent, by checking whether they respect the traditional vertical double entry bookkeeping rules. In the national accounts, this consistency is usually checked by comparing the balancing item from the capital account with the balancing item of the financial account. The other check concerns the consistency between total payments and total receipts, for each of the transactions (and positions), including total supply and total use of goods and services.
- 19.79 The compilation of national accounts typically involves the combination of information from a large variety of data sources. The type and quality of information available will depend on the country, but all countries

use a mix of data derived from statistical surveys, administrative data sources, financial reports, etc. These data sources may relate to particular units or sectors, or may relate to particular sets of transactions, other flows or stocks. The source information available may also differ depending on the frequency (e.g., quarterly versus annual) and the timeliness of the relevant national accounts estimates.

- 19.80 These data sources used as input for the compilation of national accounts are often not fully in line with the standards of the SNA, and adjustments may need to be made before integrating the results in the framework of national accounts. These adjustments may relate to differences in industry or sector coverage, conceptual differences with regard to the recording and valuation of the flows and stocks, and items that may be missing. In some cases adjustments can be made on the basis of counterpart information available from other data sources, but in other cases assumptions have to be made to fill these gaps.
- 19.81 The next step in the compilation process is to confront and balance the various pieces of information within the frameworks of the national accounts, be it the sequence of economic accounts for institutional sectors, the supply and use tables, or the labour market tables, in order to ensure consistency in line with the above principles. As noted above, the various data sources consist of different types of information, have undergone different types of adjustments, and differ in quality. Therefore, the balancing process can be quite complex. It often involves weighting the relative quality of the various data sources, discussing possible reasons for any differences, making decisions using informed judgement on which information to use and simultaneously adjusting the information in the framework to arrive at full consistency. Often, this is an iterative process.
- 19.82 To arrive at full consistency is the ideal, but this is not the practice. Usually, countries manage to compile estimates which respect the horizontal double entry bookkeeping principle, although some countries do publish, for example, different estimates for GDP from the production perspective and GDP from the expenditure perspective (particularly for quarterly estimates), thus not fully respecting the equality of supply and use of goods and services. In addition, these countries may publish yet another estimate for GDP from an income perspective.
- 19.7519.83A more general phenomenon is that countries are not in a position to compile estimates which fully<br/>respect the vertical double entry bookkeeping principle for all, or most of, the institutional sectors. As a<br/>consequence, one can observe differences between net lending or net borrowing resulting from non-financial<br/>transactions versus net lending or net borrowing resulting from financial transactions. These differences are<br/>usually framed and published as "statistical discrepancies". If such discrepancies have a structural<br/>component, in the sense of being consistently positive or negative for a certain institutional sector, there<br/>should be continued research to resolve the inconsistencies and further improving the estimates.

# Chapter 17: Capital services (chapter 20 in the 2008 SNA, moved upwards, revised title and revised content)

(OLD Chapter 20: Capital services and the national accounts)

#### A. Introduction

- 17.1 This chapter differs in content and style from those describing the accounts of the SNA. Its aim is to show how a link can be made between the value of assets used in production and the gross operating surplus generated. This link has been elaborated over a period of about fifty years in a body of knowledge described as the theory of capital services. In recent years, statistical offices have incorporated the ideas from the theory into the measurement of stocks of those assets used in production. Because there is evidence that this approach leads to improved measures of capital stock, it is recommended that a table supplementary to the standard accounts is prepared to display the implicit services provided by non-financial assets. The contribution of labour input to production is recognized in remuneration of employees. By also associating estimates of capital services with the standard breakdown of value added, the contributions of both labour and capital to production of the SNA. The methods for measuring the contributions of labour and capital to the analysis of productivity are summarized in section F of chapter 18.
- 17.2 The rest of the introduction gives a very general overview of the ideas involved in linking capital services with national accounts. Section B shows how the measurement of capital stock can be aligned with the notion of the efficiency of an asset as well as its price. This is followed by section C showing how to identify flows of capital services within existing entries in the accounts. Section D shows how consideration of the basic link between asset value and contribution to operating surplus can be exploited to determine the appropriate way to account for costs associated with acquiring and disposing of assets and to place a value on assets where limited market price information is available. Finally, section E summarizes the fundamental methods of capital measurement and discusses a table on capital services.

#### 1. The basic ideas of capital services

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- 17.3 Non-financial assets give rise to benefits either from being used in production or simply from being held over a period of time. This chapter concerns those non-financial assets that contribute to production and how this contribution is recorded in the accounts. The assets concerned are <u>any produced fixed assets (excluding natural capital)</u>, non-produced fixed assets (excluding natural capital), or natural capital assets which are used in <u>an on-going basis on</u> production. Valuables give rise to benefits derived from holding them as stores of value rather than using them and so are not covered by this chapter.
- 17.4 Assets appear on the balance sheet of their economic owner and the changes in value between one balance sheet and the next have to be identified and included in the appropriate account. Changes in the value of assets due to changes in absolute or relative prices appear in the revaluation account. Changes due to unexpected events not reflected in transactions appear in the other changes in the volume of assets and liabilities account. Every other change in value is treated as a transaction and must be recorded elsewhere in the SNA. If the user of the asset is not the legal owner, two sets of transactions are recorded, those giving rise to payments between the user and the owner and those that show the user receiving the benefits of using the asset. These latter are recorded as internal to the user. If the legal owner of the asset is also the user of the asset, only the internal transactions are recorded.
- 17.5 Assets used in production have to be paid for but the payment is not deducted from the value of production in the period the asset is acquired but is spread over the whole of the period the asset is in use in production. For fixed assets, this gradual payment for an asset is recorded as <u>depreciation</u>, which is the decline in the value of the asset due to its use in production. However, assets are not just a charge on production, they also contribute to the profitability of an enterprise by being the source of operating surplus. It has long been commonplace to recognize that operating surplus is the return to capital used in production. <u>This chapter</u>

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presents an articulation of how this surplus is generated and how it relates to the value of an asset and the way in which this value changes during a period. As noted, this articulation is known as the theory of capital services. This terminology sits a bit uncomfortably with national accountants since the services referred to are not the outputs of production in the way that transportation or education services, for example, are. Nevertheless, the terminology is well established and should not in itself give rise to problems as long as it is remembered that capital services are not produced services. Alternatively, capital services can be thought of as simply the term for the way in which the changes in the value of assets used in production are captured in the production account and the balance sheet.

- 17.6 Much of the impetus for identifying the entries associated with capital services in the national accounts has come from those interested in the analytical uses that can be made of the information, especially for productivity studies. Because much of this work has been undertaken by researchers, it is perhaps inevitable that the rationale and reasoning behind the proposals should have been expressed in a rather academic manner, in particular making extensive use of sometimes rather complex algebra. This chapter takes a different approach. It aims to show that, rather than introducing a new concept into the SNA, capital services can, in theory, be identified within the existing accounts. Further, recognizing this can lead to improvements in the estimates of <u>depreciation</u>, which are currently required in the production accounts, and of the values of capital stock, which are required in the balance sheets. The derivation of information analytically useful for productivity studies can thus be seen as a by-product of improved national accounts compilation practices and not an additional exercise. The explanation is done in terms of highly simplified numerical examples but still aims to demonstrate the connection between the concepts referred to in studies referring to capital services and the national accounts approach to the valuation of capital and the derivation of stock levels.
- 17.7 The explanation given here is to some extent superficial since it is intended to give an overview of the concepts and indicate in general terms why the theory of capital services is relevant to national accountants. For a deeper understanding of the subject, reference should be made to the two OECD manuals on the subject, <u>Measuring Capital (2009)</u> and <u>Measuring Productivity</u> (2001), and some of the practical and theoretical work referenced in those manuals.

# B. Valuing capital stock

- 17.8 Estimating the value of capital stock is not a straightforward process. Whereas it is possible to measure all new capital formation undertaken in a year directly and simply aggregate it, estimating the total value of a stock of assets, even of the same basic type, but with differing characteristics and of different ages, is not simple. In theory, if there were perfect second-hand markets for assets of every specification, these observed prices could be used to revalue each asset at the prices prevailing in a given year, but in practice, this sort of information is very seldom available. Even if information from a second-hand market is available, there are a number of potential problems with using it to revalue other assets: the market may be extremely thin, so that the assets offered for sale on second-hand markets may be unrepresentative of the assets that are not offered for re-sale; and the prices for second-hand assets may be close to their scrap value, thus not providing a good representation of the capital services that can be derived from them in the remainder of the service life. See the discussion of prices from second-hand markets in paragraphs 4.164 to 4.166 and 4.307. Thus measures of capital stock must be derived indirectly and this is conventionally done by making assumptions about how the price of an asset declines over time and incorporating this in a model based on the perpetual inventory model (PIM). Basically the PIM writes down the value of all assets existing at the beginning of the year in question by the reduction in their value during the year, eliminates those assets that reach the end of their useful lives in the year and adds the written-down value of assets acquired during the year. This routine is so well established that it is possible to overlook the assumptions it rests on but it is an investigation of these assumptions that reveals the dual benefits of deriving capital service values.
- 17.9 In the absence of observable prices, the value of an asset may be determined by the present value of its future earnings. Economic theory states that in a well functioning market (suitably defined) even when prices are observable, this identity will hold also. There are thus two sorts of questions that may be posed about the value of an asset; (i) how much would it fetch if sold, and (ii) how much will it contribute to production over its useful life. The first of these is the traditional question asked by national accountants; the second is basic to studies of productivity. However, these two questions are not independent.

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#### 1. Knowing the contribution to production

17.10 Suppose an asset will add values of 100, 80, 60, 40 and 20 to production over the next five years. For simplicity assume all products have the same prices and there is no inflation. Assume, further, that the real rate of interest is five per cent per annum for all five years.

- 17.11 The value of the asset in all five years can be derived using present value techniques as shown in table <u>17.1</u>. (For simplicity, in this and all the following examples, the values shown are values at the start of the year so that, when discounting, the factor for the whole year is used. This simplification is made only to facilitate exposition; in practice mid-year figures should be used. It should also be noted that the figures in the tables are rounded and therefore may appear not to add exactly. However, a reader who follows the examples in a spreadsheet will achieve exactly the figures shown.)
  - 17.12 The addition to the value of the asset in year 1 from the expected earnings of 80 in year 2 is 76, that is 80 divided by 1.05. (Alternatively, the addition to the value of the asset in year 1 can be viewed as 80 times a discount factor of 0.9524, the reciprocal of 1.05.) The addition to the value of the asset in year 2 from earnings in year 3 is 57 (60 divided by 1.05) and in year 1 is 54 (57 divided by 1.05) and so on. When the value of 100 for the earnings in the first year is added to 76, the value of the second year's earnings in the first year, and to 54, the value of the third year's earnings in the first year, a value of the asset in year 4 and 5 in the first year, a value of the asset in year 1 of 282 is derived. When the table is complete, the value of the asset in each of the five years is seen to be 282, 191, 116, 59 and 20.
  - 17.13 The decline in value of the asset from year to year can be calculated by deducting each succeeding year's value from the value of the present year. Thus a series of 91, 74, 57, 39 and 20 is derived, a series that sums to 282, the original value of the asset. If the decline in value of the asset (91 in the first year) is deducted from the contribution to production (100 in the first year), the value of income generated in a year results (9 for the first year). To see that this item represents income, consider that the sum of the elements in the first column for years 2 to 5 together (182) represents the value of the same capital stock existing in year 2 but value di in the first year. This value of 182 increases by 9 to 191 between year 1 and year 2. This amount satisfies the criterion for income that it is the amount that the owner of the capital can spend and still be as well off at the end of the period as at the beginning.

# Table <u>17</u>.1: Example of deriving the value of capital stock from knowledge of its contribution to production

| -02                         |        |        |        | Discoun | t rate 5% |                |
|-----------------------------|--------|--------|--------|---------|-----------|----------------|
|                             | Year 1 | Year 2 | Year 3 | Year 4  | Year 5    | Sum of 5 years |
| Contribution to asset value |        |        |        |         |           |                |
| from earnings in :          |        |        |        |         |           |                |
| Year 1                      | 100    |        |        |         |           |                |
| Year 2                      | 76 -   | - 80   |        |         |           |                |
| Year 3                      | 54     | ← 57 · | 60     |         |           |                |
| Year 4                      | 35     | 36     | 38     | 40      |           |                |
| Year 5                      | 16     | 17     | 18     | 19      | 20        |                |
| Value in year               | +282-  | -+191  | 116    | 59      | 20        |                |
| Value index (year on year)  | 1.00   | 0.68   | 0.61   | 0.51    | 0.34      |                |
| Decline in value            | L 91'  | 74     | 57     | 39      | 20        | 282            |
| Income                      | . 9    | 6      | 3      | 1       | 0         | 18             |

17.14 Over the five-year period, the value of income is equal to the difference between the sum of the diagonal

elements (300) less the amount of the decline in value (282), or to put it another way, there is an identity between the value of income the asset yields and the discounting inherent in establishing its current value.

#### 2. Knowing the value at any time

17.15 Now suppose nothing is known about the contribution of the asset to production but the decline in the value of the asset over the five years, due to ageing, is known. If this is postulated in terms of a value index relative to the preceding year's value, and the initial value is known to be 282, then the entries in table <u>17.2</u> can be calculated. By design, a value series consistent with the figures in table <u>17.1</u> is assumed. Applying the decline in value of 0.68 to the initial value of 282 gives a value of 191 for year 2; applying the value decline of 0.61 to 191 gives 116 for year 3 and so on. (Alternatively a time series of values could be postulated and applied to the initial value.) From this the declines in value of the asset from year to year can be deduced and seen to be identical with those in table <u>17.1</u>.

Table 17.2: Example of deriving the value of capital stock from knowledge of its decline in price

|                             |        |        |        | Discoun | t rate 5% | 8              |
|-----------------------------|--------|--------|--------|---------|-----------|----------------|
|                             | Year 1 | Year 2 | Year 3 | Year 4  | Year 5    | Sum of 5 years |
| Contribution to asset value |        |        |        |         |           |                |
| from earnings in :          | 5-100  |        |        |         |           |                |
| Year 1                      | 100    |        |        |         |           |                |
| Year 2                      | 76     | 80     |        |         |           |                |
| Year 3                      | 54     | 57     | 60     |         |           |                |
| Year 4                      | 35     | 36     | 38     | 40      |           |                |
| Year 5                      | 16     | 17     | 18     | 19      | 20        |                |
| Value in year               | 282    | A 191  | A 116  | 59      | 20        |                |
| Value index (year on year)  | 1.00   | 0.68   | 0.61   | 0.51    | 0.34      |                |
| Decline in value            | 91     | 74     | 57     | 39      | 20        | 282            |
| Income                      | 9      | 6      | 3      | 1       | 0         | 18             |

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17.16 In general this is as far as the PIM goes. Its twofold purpose is to calculate asset values for the balance sheet and the figures for <u>depreciation</u> and these requirements are satisfied at this point. But it is in fact possible to go further. The contribution of the asset to production in the final year (20) is the same as the final year's value. If this is discounted by five per cent, the addition to the value of the asset at the start of year 4 is 59, there must be a figure of 40 contributed to the production in that year. Extending this, for year 3 the value of 116 must consist of 18 representing the contribution to production in year 5 of 20 discounted twice, 38 representing the value contributed to production in year 4 of 40 discounted once and so by residual the value contributed to production in year 4 of 40 discounted once and so by residual the value contributed to walues of the amounts of income in a year be derived just as in table <u>17</u>.1.

# 3. Age-efficiency and age-price profiles

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17 Although tables <u>17.1</u> and <u>17.2</u> start from different assumptions, exactly the same complete table results even though they are filled in a different order in the two cases. Table <u>17.1</u> starts from assumptions about the declining contribution to production and derives stock values and the decline in value each year. Table <u>17.2</u> starts from assumptions about the decline in value cach year. Both techniques give values of stocks to include in the balance sheets and the decline in value cach year.

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figures of <u>depreciation</u>. The assumptions made in the two cases must be consistent. In fact it can be shown that every pattern of decline in the contribution of an asset to production (usually called the age-efficiency profile) corresponds to one and only one pattern of decline in prices (usually called the age-price profile).

17.18 Given this, it would seem possible to take the information in a set of PIM assumptions and simply derive the contributions to production from these. While it is possible to do this, it is generally held to be preferable to start again by postulating a set of age-efficiency profiles. The reason for this can be illustrated by table <u>17.3</u>.

#### Table 17.3: Table 17.2 with a slightly different pattern of price decline

|   |        |        |        | Discoun | t rate 5% |                |
|---|--------|--------|--------|---------|-----------|----------------|
|   | Year 1 | Year 2 | Year 3 | Year 4  | Year 5    | Sum of 5 years |
| Contribution to asset value<br>from earnings in : |        |        |        |         |           |                |
| Year 1  | 80     | _      |        |         |           |                |
| Year 2  | 96     | 101    |        |         |           |                |
| Year 3  | 75     | 79     | 83     |         |           |                |
| Year 4  | 24     | 26     | 27     | 28      |           |                |
| Year 5  | 6      | 6      | 6      | T       | 1         |                |
| Value in year                                     | 282    | 211    | 116    | 35      | 7         | ->             |
| Value index (year on year)                        | 1.00   | 0.75   | 0.55   | 0.30    | 0.20      |                |
| Decline in value                                  | < 70   | 95     | 81     | 28      | 7         | > 282          |
| Income  | 10     | 6      | 2      | 0       | 0         | 18             |

- 17.19 Table <u>17.3</u> again starts from a series of relative price changes as in table <u>17.2</u> but these changes are somewhat different. Instead of a series of 1.00, 0.68, 0.61, 0.51 and 0.34, a series of 1.00, 0.75, 0.55, 0.30 and 0.20 is taken. These changes underestimate the rate of decline in value in the second year and assume a faster rate of decline in second year and assume a faster rate of decline in second year and assume a faster rate of asset would be over twenty per cent more efficient in its second year than in its first and still more efficient in the third year than in the first before declining quickly thereafter? Yet this pattern of flows is still consistent with an initial value of 282, as in table <u>17.2</u> and with cumulative declines in value adding to this amount over five years.
  - 17.20 These are the reasons why it is argued that making assumptions about efficiency decline is likely to lead to superior results for the value of stocks, their decline in value and the income they generate than making assumptions about the rate of price decline. As a further example of why this may also be easier, consider the case of an asset that contributes the same to production, let us say 100, for each of five years and then stops dead, like a light bulb. It is easy to postulate a constant age-efficiency profile but the corresponding age-price profile is much less intuitively obvious and varies according to the discount factor applied.
  - 17.21 However, while there are good reasons for using age-efficiency profiles as the starting point, where actual information is available on age-price profiles, even partial information, it should be confirmed that the selected age-efficiency profile is consistent with the observed age-price movements.

#### 4. The special case of geometrically declining profiles

17.22 A number of patterns can be postulated for either the age-price or age-efficiency profile. These include straight line depreciation and various non-linear forms discussed in *Measuring Capital*. One of particular interest is that where the price declines geometrically, that is each year the price (when adjusted for inflation) is a fixed proportion, f, of the

year before. Because such a series converges to, but never actually reaches, zero, it is difficult to portray it in a table such as those shown above but the interesting characteristic can be derived by means of a little very simple algebra. The SNA recommends that the geometric depreciation method be used as a default option; however, other depreciation profiles may be considered more suitable for certain types of assets (see paragraph 7.280).

17.23 It can be seen from the tables above that the value of an asset at the start of any year, Vt, is equal to the capital services to be rendered in that year, a, plus a discount factor, d, times the value of the asset at the start of the next year, Vt+1. Thus

 $V_t = a + d V_{t+1}$ . In the case where  $V_{t+1} = f V_t$ ,  $V_t = a/(1-df)$ .

By analogy, if the value of the capital services rendered by the asset in year t=1 is b,  $V_{t+1} = b/(1-df)$ . But since  $V_{t+1} = fV_t$ , it follows that b must be equal to af. Thus we have the case that the shape of the age-price profile and the shape of the age-efficiency profile are exactly the same.

17.24 As noted above, there is one and only one age-price profile corresponding to one age-efficiency profile, so it follows that the geometrically declining profile is the only profile that is the same for both the decline in price and the decline in efficiency. One consequence is that figures for capital stock adjusted for the decline in value are equal to those for capital stock adjusted for the decline in efficiency. This property adds to the reasons that can be advanced for choosing this profile to determine the value of capital stock.

#### 5. Practical considerations

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- 17.25 As noted at the outset of this section, there are many simplifications built into the examples presented, made in order to facilitate the explanation of the basic theory behind the idea of capital services to those new to the idea. *Measuring Capital* should be consulted for a more rigorous discussion and for considerations such as the rationale for choosing one age-price (or age-efficiency) profile rather than another, how to estimate life lengths and retirement patterns of assets and the role of expectations in the calculations.
- 17.26 The manual also discusses the fact that the return to capital must be sufficient to cover taxes levied on the asset in question, a point that is ignored here also in the name of simplification.
- 17.27 To be precise, a distinction is made between the interest or discount rate, r, usually assumed to be five per cent in this chapter, and the discount factor which is the reciprocal of (1+r). When r is 5 percent, the discount factor is 95.24 per cent. When the discount factor is 95.0 per cent, the discount rate is 5.26 per cent.

#### C. Interpreting the flows

17.28 The tables above generate three time series of particular interest. One is the contribution to production of an asset over time, one is the decline in the value of the asset and one is the income generated by the asset. Obviously the middle term corresponds to <u>depreciation</u> as normally understood in the SNA. The contribution of capital to production is what is called gross operating surplus and so the third time series, income, corresponds fittingly to net operating surplus. However, these flows can be described by alternative names also. The diagonal element of the tables, showing the contribution to production, is also known as the value of capital services. The income element is the return to capital. The rate of return on capital is the ratio of income to the value of capital. For tables <u>17.1</u> and <u>17.2</u>, the income flow as a proportion of the next year's capital stock value (that part not used in the current year) is also five per cent, the same as the discount rate. The alternative terminologies are illustrated in table <u>17.4</u>.

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#### 1. Capital services and gross operating surplus

- 17.29 At this point, the national accountant asks how can gross operating surplus be estimated in this way when it is derived as a balancing item in the generation of income account? There are two possible answers to this question. The first answer is that there is not a complete identity with gross operating surplus but the value of capital services is implicitly within it so may be noted as an "of which" item relative to gross operating surplus. Suppose the discount rate chosen is the rate that can be obtained on a bank deposit, say. This determines the amount the user of the asset needs to generate as net operating surplus if the asset is to be cost effective. If the figures for capital services and gross operating surplus are both 100, then the producer has made a reasonable choice of asset; it is earning as much for him as leaving his money in the bank. If he earns a little more than 100, he has done better than leaving the money in the bank. If the national accounts show he has earned 150, say, it may be that the producer has been very lucky indeed, perhaps realizing some monopolistic profits. However, it is also possible that there is some sort of asset he is using that has not been identified in calculating capital services, one possibility being some form of intangible asset. Similarly if the value of gross operating surplus is much lower than the value of capital services estimated, there may be good reason to question the range and valuation of assets assumed to be used in production or the quality of the estimates of gross operating surplus. Thus deriving the value of capital services in this manner is also a valuable tool for checking data quality.
- 17.30 The alternative to treating capital services as an element of gross operating surplus is to equate gross operating surplus with capital services exactly and to do this by determining a rate of retum (discount rate) that brings this about. Many traditional analyses of productivity have used this approach and some cross-country comparisons of productivity depend on this assumption. Other studies, used at the industry level, suggest that the variation in apparent rate of return obtained in this way needs to be used, if at all, with very great caution. There is still robust discussion in academic circles about the preferred way of determining the rate of return, exogenously as described in the preceding paragraph or endogenously as described here. One way of interpreting the difference is to say that using an exogenous rate of return simply confronts the cost of capital (capital services) with the benefits (gross operating surplus); the endogenous rate of return.

| 2   |        |              |             | Discoun    | t rate 5% |                |
|---|--------|--------------|-------------|------------|-----------|----------------|
|   | Year 1 | Year 2       | Year 3      | Year 4     | Year 5    | Sum of 5 years |
| Contribution to asset value<br>from earnings in : | Value  | of           |             |            |           |                |
| Year 1  | 100    | - capital s  | envia       |            |           |                |
| Year 2  | 76     | 80           | COS OF      | 900        |           |                |
| Year 3  | 54     | 57           | 60          |            | ratio     |                |
| Year 4  | 35     | 36           | 38          | 40         | Ing sur   | Jus            |
| Year 5  | 16     | 17           | 18          | 19         | 20        | -              |
| Value in year                                     | 282    | 191          | 116         | 59         | 20        |                |
| Value index (year on year)                        | 1.00   | 0.68         | 0.61        | 0.51       | 0.34      | 1000           |
| Decline in value                                  | 91     | 74           | 57          | 39         | 20        | 282            |
|   | C      | onsumpt      | ion of fixe | ed capital |           |                |
| Income  | 9      | 6            | 3           | 1          | 0         | 18             |
|   | Return | n to capital | or net op   | erating su | rplus     |                |

#### Table 17.4: Capital services and SNA terminology

#### 2. Prices and volumes

17.31 An examination of table 17.1, or indeed any of the others, shows that the value of an asset at a point in time,

such as the start of a year, can be expressed rather neatly as the sum of the capital services rendered in the year plus the discounted value of the asset at the end of the year. This is the starting point of much of the algebraic elaboration of capital services in the literature, but with one important difference. Whereas most national accountants tend to think first in terms of current price aggregates and later (possibly) a breakdown into a volume aggregate plus a corresponding price, most descriptions of capital services run in the other direction. They assume a volume and develop a theory of the corresponding price (the "user cost"). These could be multiplied together to give a current value but much analysis is done using volume or price information.

- 17.32 One reason for working this way is that the assumption underlying table <u>17.1</u>, that the contributions to production over the life of the asset are known, is not often true in practice. What is known, estimated or simply assumed is an index of how the efficiency changes over time. Equally the value of the asset assumed known in table <u>17.2</u> is only known on an asset-by-asset basis when each is new; all other value figures are estimates for reasons explained above. It is possible to use the identity that the start-of-year value of an asset equals capital services rendered in the year plus the discounted end-of-year value, all expressed in index number form and assuming no inflation, into one that expresses the value of the capital services as dependent on the decline in the value of the asset due to ageing (the depreciation element) and the rate of return (the opportunity cost of money). If the impact of general inflation is now taken into account, the price of the capital services (usually called the user cost) can be expressed as depending on the increase in value of a new asset of the same type, the nominal cost of money and the relative year-on-year decline in value of the asset due to ageing.
  - 17.33 It is also possible then to have different prices for different sorts of assets and look at differential movements between asset prices and the movements in the general level of inflation. (Table <u>17.1</u> was based on the very restrictive assumptions of there being neither absolute nor relative price inflation.)
  - 17.34 Another important consideration passed over in the simple numeric tables is the following. For balance sheet data, values at the date the balance sheet is drawn up are needed. For estimates of capital services/gross operating surplus as well as for <u>depreciation</u> and income flows, values at average-year prices are needed. In practice, the mid-year observations are often assumed to be close approximations to the annual averages but this is not always so, especially in times of significant inflation.

#### D. Applying the capital service model

- 17.35 Once a theoretical link between the content of gross operating surplus and the capital services embodied in an asset used in production is accepted, there are a number of other beneficial implications for the national accounts. These include the question of the use of land in production, the valuation of non-produced natural resources, the separation of mixed income into the labour and capital components, the measurement of assets with a residual value, the treatment of costs of ownership transfer on acquisition, the treatment of terminal costs, capital maintenance, the valuation of work in progress on long-term projects, an alternative approach to estimating the imputed rentals of owner-occupied dwellings and the separation of the payments under a financial lease into the element to be regarded as the repayment of principle from the element regarded as interest. Each of these will be explained a little further below.
- 17.36 Before discussing land and <u>other non-produced</u> natural resources, it is useful to recall the consequences of an asset being used by a unit not the legal owner of the asset. The important distinction is whether the user does or does not assume the risks associated with its use in production. When the user does not assume the risks, the asset is regarded as being subject to an operational lease. In such a case the payment to use the asset is a rental and forms part of intermediate consumption. The benefits from using the asset in production accrue to the owner in the operating surplus of the production account relating to his leasing activity. (See paragraphs 27.6 to 27.8.)
  - 17.37 When the user does assume the risks associated with the use of the asset in production, the benefits from using the asset in production accrue to the user and appear in his operating surplus. This is true of both produced and non-produced assets. The difference between produced and non-produced assets concerns the type of lease existing between the legal owner and the user and the type of property income paid to the legal owner of the asset.

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17.38 In the case of a produced asset, the user of the asset who assumes all risks associated with the asset becomes the economic owner of the asset. The asset appears on the balance sheet of the economic owner. If the legal owner is different, any payment from the economic owner to the legal owner is recorded as property income payable under a financial lease. (See paragraphs 27.9 to 27.15.)

17.39 In the case of a non-produced asset, when the user of the resource and legal owner differ, three different sets of conditions may apply. First, the legal owner may permit the resource to be used to extinction and thus transfers economic ownership of the resource. Second, the legal owner can extend or withhold permission to continued use of the resource from one year to the next and thus retains economic ownership of the resource. In this case the asset remains on the balance sheet of the legal owner but a resource lease between the legal owner and user obliges the latter to pay the former property income in the form of rent. Under the third option the economic ownership of the resource is shared to the extent that both the user and the legal owner and user obliges the latter to pay the former property income in the form of rent. Under the third option the economic ownership of the resource is shared to the extent that both the user and the legal owner and the leg

17.40 For all non-financial assets used in production, the estimation of the value of the capital services associated with the asset allows this to be contrasted with the property income payable for its use to determine whether the use of the asset is cost-effective.

#### 1. Land

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- 17.41 The first and oldest recognized form of non-produced capital is land. Land is special in that, under good management, the value is assumed to remain constant from year to year except for the effects of inflation in land prices. That is to say, there is no depreciation of land and all the contribution to production can be regarded as income. To show how this can be related to the previous examples, Table <u>17.5</u> shows part of a corresponding table for land that contributes 20 to production in perpetuity. A full table would have an infinite number of rows and columns. Here only a few are shown and some very simple algebra (with explanation) is used to explain how the totals are reached.
- 17.42 The value of the first column is the sum of 20, 20 discounted once (the second year's contribution to production discounted once), 20 discounted twice for the third year and so on if not for ever, at least for very many years. With a discount rate of 5 per cent as before, the sum of this column is 420. To see that this is so, consider a simple geometric progression. What is required is the sum of a series that can be written as:

#### $S_n = a + ad + ad^2 + ad^3 + ad^4 + ad^5 + \ldots + ad^n$

where a is the return to the asset in every period and d is the discount factor. (As noted earlier. for a discount rate of 5 per cent, the discount factor is 95.24 per cent.) If every term in the equation is multiplied by an extra factor d the result is:

 $\mathrm{dS}_n = \mathrm{ad} + \mathrm{ad}^2 + \mathrm{ad}^3 + \mathrm{ad}^4 + \mathrm{ad}^5 + \ldots + \mathrm{ad}^{n+1}$ 

Subtracting the second expression from the first gives:

 $S_n(1-d) = a(1-d^{n+1})$ 

If d is less than unity (as it will be in a discounting framework) and n is very large, that last term becomes insignificant and the sum of the series,  $S_n$ , can be determined as a/(1-d). In table <u>17.</u>5, a is 20 and d is 0.9524, so the sum of the series is 420.

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#### Table 17.5: The case of land

|                             |        |        |        | Discoun | t rate 5% |         |
|-----------------------------|--------|--------|--------|---------|-----------|---------|
|                             | Year 1 | Year 2 | Year 3 | Year 4  | Year 5    | Year 10 |
| Contribution to asset value |        |        |        |         |           |         |
| from earnings in :          |        |        |        |         |           |         |
| Year 1                      | 20     |        |        |         |           |         |
| Year 2                      | 19     | 20     |        |         |           |         |
| Year 3                      | 18     | 19     | 20     |         |           |         |
| Year 4                      | 17     | 18     | 19     | 20      |           |         |
| Year 10                     | 13     | 14     | 14     | 15      | 16        | 20      |
| Year 25                     | 6      | 7      | 7      | 8       | 8         | 10      |
| Year 40                     | 3      | 3      | 3      | 3       | 4         | 5       |
| Value in year               | 420    | 420    | 420    | 420     | 420       | 420     |
| Value index (year on year)  | 1.00   | 1.00   | 1.00   | 1.00    | 1.00      |         |
| Decline in value            | 0      | 0      | 0      | 0       | 0         | 0       |
| Income                      | 20     | 20     | 20     | 20      | 20        |         |

- 17.43 However, since each of the columns of the table, though one term shorter than the previous one, is also an infinite series beginning in exactly the same way, the sum of each column is also 420. Thus the decline in value of the land from year to year is zero and the whole of the 20 is not just the contribution to production but also income. In national accounts parlance, the gross and net operating surplus are both 20 and there is no depreciation. Equally the value of the capital service and the return to capital are both 20.
- 17.44 As noted above, it may seem slightly odd to think of a non-produced asset contributing a "service" since in national accounts services are always produced. This is simply a reflection of the words chosen by economists to describe the contribution of capital to production without connecting the word "service" to the specific interpretation given to it in the SNA. Similarly one may hear remuneration of employees described as the cost of labour services.
- 17.45 Another term used for capital services is resource rent of land is the extent to which the farmer benefits from using the land for agricultural production (20). This rent accrues whether the farmer is farming his own land or is a tenant farmer. The amount that the tenant farmer is due to pay his landlord is what the national accounts show as rent under property income. In the days when a farmer paid his rent as a share of the crop yield, the link was more obvious. What he retained represented enough to cover his costs and the cost of his own (and any hired) labour. In a monetized economy, the rent payable to the landlord is often agreed a very long time in advance. Comparing the rent earned (as operating surplus) with the rent payable to the farming income.

# 2. Valuing <u>non-produced</u> natural resources

- 17.46 There is an increasing interest in placing a capital value on natural resources but, since these assets are seldom sold on the market, there has been doubt about how to do this. Looking at the <u>resource rent</u> to be earned by a mineral deposit, for example, is one way to solve the problem.
- 17.47 Suppose that a mining company knows the size of the deposit being mined, the average rate of extraction and the costs of extraction of one unit. After allowing for all intermediate costs, labour and the <u>capital services of all non-</u>

financial assets used in production including any rents paid on the use of non-produced non-financial assets, what is left must represent the resource rent of the natural resource. By applying this to the expected future extractions, a stream of future income can be estimated and from this, using the techniques already described, a figure for the value of the stock of the resource at any point in time.

17.48 In fact, the application of the capital service technique goes further than this. In the case of <u>renewable non-produced</u> <u>natural resources such as fish in open waters</u>, if the rate of <u>regrowth</u> is at least equal to the rate of <u>extraction</u>, then the value of the <u>fish</u> does not decline and the rate of <u>extraction</u> is sustainable. However, in the case of a mineral deposit with no natural renewable capability, then it is possible as before to separate the contribution to production into an element showing <u>the depletion</u> (the decline in value of the deposit) and a residual element. Because this residual amount is consistent with the idea of maintaining the level of wealth intact, it can be regarded as income;

#### 3. Mixed income

- 17.49 When discussing land, above, it was pointed out that the <u>resource rent</u> of the land was the part that was not otherwise accounted for by intermediate consumption, the cost of hired labour and the capital services rendered by <u>non-financial</u> assets and the labour cost of the farmer. Very often, it is difficult to put a value on the labour of a self-employed person and so this may be merged with the <u>resource rent</u> on land and the capital services rendered by <u>non-financial</u> assets used and described as mixed income. In principle, though, if a separate estimate of the capital services rendered by fixed assets can be made from information about the services rendered by similar assets in other parts of the economy, then mixed income can be split into its labour and capital components.
- 17.50 In practice this has often proved difficult since the residual amount for self-employed income may turn out to be very small or even negative. Among the possible causes of this are that the value of output may be volatile due to such things as fluctuations in output prices or the impact of weather. The estimates for the capital services may also be high because larger companies are able to make more efficient use of capital, for example using a high value piece of equipment continuously rather than intermittently, or because they actually have other, intragible, assets, which have not been taken into account. This means the capital services for these unmeasured assets are attributed to those that are recognized but this addition is not appropriate for the self-employed worker. Thus the acceptance of the capital services model is unlikely to provide a quick and accurate breakdown of mixed income but it does show the way to probe the data for both large and small enterprises to ensure that capital is being measured comprehensively and consistently.

#### 4. Assets with a residual value

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- 17.51 Very many assets are used by a single owner until they are worn out and worth nothing. However, this is not the case for all assets. Some are disposed of after a few years, perhaps because the cost of regular maintenance is deemed by the current owner to be too high relative to the value the asset contributes to production. Some airlines, for example, may wish to use the fact that they keep up-to-date fleets of aircraft as part of their advertising appeal. In other cases, for example with construction equipment, the original owner may simply have no further use for the asset.
- 17.52 Table <u>17.6</u> shows an example of an asset that is used for only four years and then disposed of for a value of 300. Again for simplicity it is assumed that the disposal value after four years is known when the asset is acquired. For example, the market in used assets may be sufficient to ensure that the value at any point is equal to the remaining services to be delivered by the asset. Inflation is still assumed to be zero.
  - 17.53 The top, triangular, part of the table shows the normal calculation of the value of the capital services to be rendered in these four years, a value that at the outset is seen to be 1 107. To this the discounted value of the residual value of 300 must be added. This value is 247, making the total value of the asset 1 354. As in the case where an asset is held to exhaustion, the decline in the value of the asset including the residual value is lower year by year than the decline in the capital services to be rendered in these four years because there is an income element coming from the fact that the remaining value increases as the time for disposal of the asset gets closer. The total of the decline in the value of the asset to be shown as <u>depreciation</u>, is 1 054. This value, together with the residual value of 300, is equal to the original value of 1 354. The total income (net operating surplus) is 121, the sum of the income arising from the use in production (68) plus the income arising from the unwinding of the discount factor on the terminal value (53).

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#### Table 17.6: An asset with a residual value

|                             |        |        |        | Discou | nt rate 5%     |                |
|-----------------------------|--------|--------|--------|--------|----------------|----------------|
|                             | Year 1 | Year 2 | Year 3 | Year 4 | Residual value | Sum of 4 years |
| Contribution to asset value |        |        |        |        |                |                |
| from earnings in :          |        |        |        |        |                |                |
| Year 1                      | 400    |        |        |        |                |                |
| Year 2                      | 286    | 300    |        |        |                |                |
| Year 3                      | 227    | 238    | 250    |        |                |                |
| Year 4                      | 194    | 204    | 214    | 225    |                |                |
| Value in year               | 1 107  | 742    | 464    | 225    | 0              |                |
| Decline in value            | 365    | 278    | 239    | 225    |                | 1 107          |
| Income                      | 35     | 22     | 11     | 0      |                | 68             |
| Residual value              | 247    | 259    | 272    | 286    | 300            |                |
| Income                      | 12     | 13     | 14     | 14     |                | 53             |
| Joint value                 | 1 354  | 1 001  | 736    | 511    | 300            |                |
| Decline in value            | 352    | 265    | 226    | 211    |                | 1 054          |
| Income                      | 48     | 35     | 24     | 14     |                | 121            |

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17.54 Table <u>17.6</u> illustrates that the cumulative value of the <u>depreciation</u> calculated in respect of an asset should be equal to the initial value of the asset, treated as fixed capital formation, less the value to the owner on disposal of the asset. This holds whether the asset passes into use as a fixed asset by another user, is used for another purpose in the same economy or is exported.

#### 5. Costs of ownership transfer on acquisition

- 17.55 The costs of ownership transfer incurred on acquisition of an asset are treated as fixed capital formation. This assertion is equivalent to assuming that the services rendered by the asset must be sufficient to cover both the costs of the costs of ownership transfer. Table 17.7 shows an example where costs of 30 are incurred on the acquisition of the asset in table 17.6. In order for the asset to have exactly the same value as before on disposal, 300, the costs of ownership transfer have to be accounted for during the period in which the owner who incurred the costs uses the asset in production. The figures in the triangular part of table 17.7 are added to those in the corresponding part of table 17.6 giving increased value to the asset in each year until the end of year 4, increased <u>depreciation</u> and slightly increased income, because the costs of ownership transfer are also viewed as the present value of the extra services required to meet the costs.
- 17.56 If the costs of ownership transfer were to be attributed to the whole life of the asset and not just that part for which the unit that paid the costs owns the asset, there is a mismatch between the calculated value of the asset and the market value demonstrated in the sale at a value of 300. In such a case, the data have to be brought back into reconciliation by means of an entry in the other changes in the volume of assets and liabilities account but this means that not all of the costs incurred by the initial owner are shown as a charge against gross value added and so income is over-stated. This may be inevitable when assets are sold unexpectedly but in the case of many vehicles and large mobile construction equipment, the purchaser may well take account not only of the residual value but also factor the expected life length into the calculations of the amount of <u>depreciation</u> to be attributed to the costs of ownership transfer so there is no residual value of the scosts left on disposal.

Table 17.7: Example of costs of ownership transfer on the acquisition of the asset in table 17.6

|                             |        |         |        | Discount | rate 5% |                |
|-----------------------------|--------|---------|--------|----------|---------|----------------|
| 2                           | Year 1 | Year 2  | Year 3 | Year 4   |         | Sum of 4 years |
| Contribution to asset value |        |         |        |          |         |                |
| from earnings in :          |        |         |        |          |         |                |
| Year 1                      | 10     |         |        |          |         |                |
| Year 2                      | 9      | 9       |        |          |         |                |
| Year 3                      | 6      | 7       | 7      |          |         |                |
| Year 4                      | 5      | 5       | 6      | 6        |         |                |
| Value in year               | 30     | 21      | 13     | 6        |         |                |
| Decline in value            | 9      | 8       | 7      | 6        |         | 30             |
| Income                      | 1      | 1       | 0      | 0        |         | 2              |
| Residual value              | 1 384  | 1 0 2 2 | 749    | 517      | 300     |                |
| Decline in value            | 361    | 273     | 232    | 217      | 10000   | 1 084          |
| Income                      | 49     | 36      | 25     | 14       |         | 123            |

#### 6. Terminal costs

17.57 Table <u>17.6</u> considered the case where an asset had a residual value at the time the current owner disposed of it. It is also possible to have assets that have significantly large costs associated with disposal <u>that the owner</u> is obligated to incur. Examples include the decommissioning costs of nuclear power stations or oil rigs or the clean-up costs of landfill sites. The following discussion is not meant to downplay the practical difficulty of estimating terminal costs, simply to demonstrate why in principle the existence of terminal costs should reduce the value of the asset throughout its life.

17.58 Terminal costs are similar to capital formation in that they should be covered by income generated during\_the time the asset is used in production. To avoid a negative value of the asset at the end of its life, the expected terminal costs are added to the value of the asset at the time the asset at the end of its life, the acounterparty entry of provisions at the liability side, both to be recorded in the other changes in the volume of assets and liabilities account. At the end of the life of the asset, the actual investment expenditures on terminal costs, which lead to a positive change in the value of the saset, are counterbalanced with a reversal of the flows in the beginning of the period, i.e., a decline in the value of assets and liabilities.

17.59 Table 17.8 shows an example of how terminal costs should be recorded. The analysis of the data is similar to that for table 17.6 but also includes the recording of provision charges for the terminal cost (see paragraphs 1.223 to 14.225). The value of the capital services to be provided by the asset in use is still 1 107. The value of the capital services to be provided by the asset in use is still 1 107. The value of the capital services to be provided by the asset in use is still 1 107. The value of the asset of the terminal cost of -300 which will be incurred when the asset is disposed of. Subtracting the present value of the asset of 860 is lower than without the present value of the capital services implies that the initial value of the asset of 860 is lower than without the presence of terminal costs. The initial value of 860 is recorded as capital formation in year 1. The terminal cost will be recorded as capital formation at the time of disposal, but it is important that the depreciation associated with the terminal cost (with a positive sign) is added to the value of the asset, allowing the terminal investment to be written off. To maintain the correct contribution of the asset shown on the balance sheet, 1 107 in year 1, is equal to the capital formation for the initial acquisition of the asset plus the discounted value of the capital formation associated with the terminal costs. When discounting is used, the carrying amount of a provision increases in each period to reflect the passage of time. These amounts (shown in the row "unwinding of the discount") also need to be recorded as positive and negative entries in the other changes in volume of assets and liability also need to be recorded as positive and negative entries in the other changes in volume of assets and liability also need to be recorded as positive and negative entries in the other changes in volume of assets and liability also need to be recorded as positive and negative entries in the other changes in volume of assets and liab

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account each year. The depreciation recorded should equal the change in the value of the asset plus the unwinding of the discount to ensure that the total value of the terminal costs are fully depreciated. If this combined amount is recorded as depreciation, then the cumulated value of depreciation, 1 160, is equal to the capital formation associated with the acquisition of the asset plus the capital formation associated with the asset is decommissioned and the terminal costs are incurred, gross capital formation of 300 is recorded. In addition, the provisions are reversed, showing an entry -300 in other changes in volume of assets and 300 in other changes in volume of liabilities, bringing the cumulative value of the provision charges to zero.

# <u>47.59</u><u>17.60</u> Anticipated costs on ownership transfer on disposal of an asset, including legal fees, commission, transport and disassembly, etc., should in principle be treated in the same way as terminal costs.

|   |   |   |  | Discour                        | <u>nt rate 5%</u>        |                                    |
|---|---|---|--|--------------------------------|--------------------------|------------------------------------|
| -   | <u>Year 1</u>   | <u>Year 2</u>   | <u>Year 3</u>                                | Year<br>4                      | <u>Residual</u><br>value | <u>Sum of 4</u><br><u>years</u>    |
| Contribution to asset value from earnings in:<br>Year 1<br>Year 2<br>Year 3<br>Year 4<br>Value excluding terminal cost<br>Terminal cost<br>Joint value                  | 400<br>286<br>227<br>194<br><b>1,107</b><br>-247<br>860             | <u>300</u><br>238<br>204<br><b>742</b><br>-259<br>483 | 250<br>214<br>464<br>-272<br>192             | 225<br>225<br>-286<br>-61      | <u>0</u><br>-300         | -                                  |
| Initial value of provision<br>Unwinding of the discount<br>Joint value plus provision<br>Decline in value<br>Depreciation<br>= decline in value + unwinding of discount | <u>247</u><br><u>12</u><br><u>1,107</u><br><u>365</u><br><u>377</u> | <u>13</u><br>742<br>278<br>291                        | <u>14</u><br><u>464</u><br>239<br><u>253</u> | <u>14</u><br>225<br>225<br>239 |                          | -<br>-<br>-<br>-<br><u>1,160</u>   |
| Income  | <u>23</u>   | <u>9</u>  | <u>-3</u>                                    | <u>-14</u>                     |                          | <u>15</u>                          |
| -<br><u>SNA values:</u><br><u>GFCF</u><br><u>Provision charge</u><br>(a sthes shares in uslume)   | <u>860</u><br>259   | <u>13</u>   | <u>14</u>                                    | <u>14</u>                      | <u>300</u><br>-300       | -<br>-<br><u>1,160</u><br><u>0</u> |
| Asset value<br>Depreciation<br>Provision (= contingent liability)   | <u>1.107</u><br><u>377</u><br><u>-259</u>                           | <u>742</u><br>291<br><u>-13</u>                       | <u>464</u><br>253<br>-14                     | <u>225</u><br>239<br>-14       | <u>0</u><br><u>300</u>   | -<br>-<br><u>1,160</u><br><u>0</u> |

#### Table 17.8: An asset with a terminal cost

### 7. Major repairs and renovations

17.6017.61 Major repairs and renovations that extend the life of an asset are treated as capital formation and the value of the repairs and renovations is added to the value of the asset before the work was undertaken. The example of costs of ownership transfer on acquisition of an asset can be applied directly in this case, excepting only that the costs are incurred in a year other than the year of acquisition. The value of the capital repairs is supposed to be equal to the discounted value of the increased services that the asset will yield, either by increasing the services in each of the remaining years of the initial life length, or extending the life length, or both.

17.61<u>17.62</u> The value of the capital repairs can be analysed by merging the value with that of the asset in question and reworking all the calculations of the services to be rendered, the income generated and the

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<u>depreciation</u> for the asset and the maintenance taken together. However, as table <u>17.7</u> shows, it is also possible to leave the calculations for the asset as they were and simply aggregate them with a separate analysis of the maintenance undertaken as if it related to a wholly new asset.

#### 8. Work-in-progress for long term projects

17.6217.63 Table 17.9 relates to an asset with a final value of 200 that is to be constructed over a period of four years. One possibility is that, assuming no inflation, work in progress of 50 should be recorded in each of the four years. However, consistent with the notion of discounting future income, an alternative view is preferable. Suppose still that there is a discount rate of five per cent. In each year, the value of the completed asset in each of years 1 to 3 will be 172.8, 181.4 and 190.5, each of which will cumulate to a value of 200 after, respectively, three, two or one years accumulation in value of 5 per cent. Dividing each of these by four implies that even if equal amounts of work are put in place in each year, the values to be recorded should be 43.2, 45.4, 47.6 and 50.0. In addition, though, there will be income arising from a return to the work already put in place. This would give a time series for the work put in place and other income of 2.2, 4.5 and 7.1 in each of years two to four giving the value of the partially completed structure as 43.2, 90.7, 142.9 and 200.0. These are the values that a purchaser of the partially completed structure would be willing to pay, given that he would forgo the income from the finished structure for up to three years.

#### Table 17.9: Valuing work-in-progress spanning several years

| S  |        |        | Discou | int rate 5% |
|--|--------|--------|--------|-------------|
|  | Year 1 | Year 2 | Year 3 | Year 4      |
| Value of final product in each year                            | 172.8  | 181.4  | 190.5  | 200.0       |
| Value of construction activity (one<br>quarter of final value) | 43.2   | 45.4   | 47.6   | 50.0        |
| Income accruing on work put in place                           |        |        |        |             |
| In year 1  |        | 2.2    | 2.3    | 2.4         |
| In year 2  |        |        | 2.3    | 2.4         |
| In year 3  |        |        |        | 2.4         |
| End year value   | 43.2   | 90.7   | 142.9  | 200.0       |

# 9. Owner-occupied dwellings

- 17.6317.64 The SNA specifies that an imputed rental on owner-occupied housing should be included in the production boundary and form part of household consumption. In a situation where there is either no rental market in such properties or only a very limited one, this is difficult to implement. Cross-country comparisons of the results (as in the International Comparison Program) show that the different techniques used produce highly variable results. Here too, the use of the techniques described in this chapter may be helpful.
- 17.64<u>17.65</u> In the example for land, it is possible to deduce a value of 420 for the land that yielded resource rent of 20 every year in perpetuity. While modern houses do not last forever, if they are assumed to last for, say, fifty years the discount factor applied over this period gives contributions to the value of the asset that are negligible at the end and again it may be supposed that, if the value of the house is 420, then the imputed rental is 20. Given that the market for houses is much better established than for rented housing, this may also provide a source of useful and comparable data for a troublesome area of national accounts. However, this method should be used with caution since houses are often bought in the expectation of making significant real holding gains. It should also be recognized that the rental for a house usually includes land rent.

# 10. A financial lease

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- 17.6517.66 The process of discounting future income streams to determine present value applies to financial assets as well as to non-financial assets. Consider an agreement with a bank to borrow 1 000 over a period of five years at five per cent interest. The total amount to be paid to the bank will be 1 100 at a rate of 220 per year. But, as table 17.10 shows, each year's payment does not consist of repayment of principal of 200 and interest of 20. Interest is payable on the remaining balance, so is highest in the first year and is zero in the last year. (This is a result of the simplifications used in the chapter. In practice, interest would be charged daily and so even in the last year some interest would be payable. However, the way in which the balance between interest and repayment of principal changes over time as the loan is repaid holds.)
- 17.6617.67 The arithmetic behind table 17.10 is indistinguishable from any of the other tables in this chapter demonstrating that the same principles hold for valuing financial assets as for non-financial assets. The same methodology that can be used to show how much of the contribution to production is <u>depreciation</u> and how much contributes to net operating surplus can also be used to show how much of the payment to the bank is a repayment of capital and how much is interest. Both <u>depreciation</u> and a repayment of capital feature in the accumulation accounts as changing the value of the stock of assets. The contributions to net operating surplus and are shown in the current accounts.
- 17.67<u>17.68</u> This duality is especially important when an asset is acquired under a financial lease. In this case, table <u>17.10</u> can be used to show both the change in value of the asset and the change in the loan taken out to pay for it. Cost benefit analyses of the merits of borrowing to acquire assets also depend on this sort of calculation. Unless the asset can contribute at least as much to production as the interest due to the lender, it is not a good investment. Even if a producer has sufficient funds available to purchase an asset without borrowing, it makes sense to undertake such an analysis since the alternative to acquiring the asset is to convert the funds to an asset that will either earn income or appreciate and yield holding gains.

#### Table 17.10: The case of a financial lease

| 10   |        |        |        | Interes | t rate 5% |                |
|--|--------|--------|--------|---------|-----------|----------------|
|  | Year 1 | Year 2 | Year 3 | Year 4  | Year 5    | Sum of 5 years |
| Contribution to loan value<br>from payments due in : |        |        |        |         |           |                |
| Year 1   | 220    |        |        |         |           |                |
| Year 2   | 210    | 220    |        |         |           |                |
| Year 3   | 200    | 210    | 220    |         |           |                |
| Year 4   | 190    | 200    | 210    | 220     |           |                |
| Year 5   | 181    | 190    | 200    | 210     | 220       |                |
| Loan value in year                                   | 1000   | 819    | 629    | 430     | 220       |                |
| Repayment of principal                               | 181    | 190    | 200    | 210     | 220       | 10 00          |
| Interest   | 39     | 30     | 20     | 10      | 0         | 100            |

# E. Capital measurement

17.69 Capital services is just one part of capital measurement in the SNA. This section provides an overview of a set of accounts that encompass all aspects of capital measurement, including wealth stocks, productive stocks, depreciation, revaluation, other changes in volume of assets and liabilities, and capital services. These measures are all closely associated with the PIM, and if they are compiled in an integrated manner, the quality of key measures such as net domestic product, net worth and productivity will be enhanced. These measures encompass at least fixed assets and natural resources, but more broadly could encompass other non-financial assets that might be compiled using the PIM including inventories, valuables and consumer durables (which are allowed as a supplementary item on the balance sheet).

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provide an all-inclusive coverage of measuring capital: all stocks and flows of fixed assets, natural resources and land. The new chapter should cover and explain the differences between both wealth and productive capital stocks." The section also includes the content of the 2008 SNA section E, "A supplementary table on capital services", as its final subsection.

#### 1. Basics of capital measurement

17.70 Because capital plays two basic roles in the SNA, as a contributor to wealth and income and as a contributor to the production process, the capital measures in the SNA fit in two broad categories. Wealth stocks represent the value of the capital stock and show how these add to the net worth of institutional sectors and the total economy. Associated with wealth stocks are flows such as capital formation, depreciation, and other changes in assets and liabilities that are related to the measurement of net value added from production, net income and the acquisition of wealth. These measures are associated with changes from period to period in the value of the wealth stock and contribute to the important net measures that appear in the national accounts, institutional sector accounts and balance sheets. The second category of measures is associated with the efficiency of the stock of assets in providing capital services. A measure of stock that is adjusted for current and past declines in efficiency is called the productive stock, and it is used in preparing aggregate measures of capital services. The set of measures that focus on capital services are used especially for estimating productivity and the contribution of the capital stock to economic growth. While both sets of measures are constructed from the same capital flows, it is important that compilers and users of the data should clearly distinguish between the two.

17.71 Before getting into the details of measurement, it is appropriate to recall briefly the various simplifying assumptions that underlie the numeric examples in the chapter, assumptions that would be totally inappropriate in serious estimation of capital service flows. The most important are:

a. Somewhat different figures would emerge if any of the tables were to be calculated for the start of year, end of year or mid-year. Mid-year flows need to be discounted by half the annual discount rate to give start of year figures, for example.

b. The assumption that there is no price inflation, either overall or between different assets, is clearly unrealistic. Changes due to price movements need to be separately identified and included in the revaluation account.

c. The general preference for an age-efficiency approach to determine the value of capital stock should not be taken to mean that information on age-price decline, when such exists, is to be ignored. The solution is to find an age-efficiency pattern that matches the observed decline in prices. Where such a match can be made, this may inform the choice of age-efficiency declines where no matching price information is available. Use of geometric depreciation simplifies this choice by using a single depreciation rate to describe both the age-efficiency and age-price patterns.

17.72 There is a question about the appropriate level of detail to be used for assets. They are very diverse and even products that appear superficially similar, such as aircraft, may have quite different specifications. This is a problem that must be resolved whatever means of determining a stock figure for assets is used. The final choice may be a source of inaccuracies, or conversely, may lead to extra resource cost for little improvement in the results.

17.73 So far, this chapter has mostly focused on a single asset, for which it is assumed that the owner of the asset is able to calculate, at least approximately, its capital service—the contribution of the asset in the production process—over the anticipated life of the asset. Using this information, it is possible to derive the basic stocks and flows associated with the asset.

17.74 For national accounts compilers, the situation is different. There is a vast variety of assets, including nonproduced natural resources and fixed assets of different ages. Information on capital services is not readily available and must be inferred from other information. Prices of fixed assets may only be observed when the asset is initially acquired. The assets can be organized by classifications, such as the SNA's classifications of fixed assets and of natural resources, and possibly by more detailed classifications such as the Central Product Classification, Version 2.1. The data on fixed assets recorded in company accounts may be of limited usefulness to compilers because it is recorded at historical cost.

17.75 In practice, the measurement of capital is usually based in part on estimates that may have been prepared as part of the compilation of GDP. These estimates need to be organized in time series to support a PIM. For fixed assets, including cultivated biological resources yielding repeat products, the basic information required for the PIM is:

a. Time series of estimates of gross fixed capital formation (GFCF) by type of asset (according to the

**Commented [ED6]:** This paragraph and the next one are from 2008 SNA 20.69 to 20.70 with some editing.

SNA's classification of fixed assets) at current prices and in volume terms;

- b. Time series of price indices that can be used as deflators for each type of asset;
- c. An age-price profile (or an associated age-efficiency profile) for each type of asset. If geometric depreciation is used (as the SNA recommends as a default option—see paragraph 7.280), then the only information needed is a depreciation rate for each type of asset. In paragraphs 17.22 to 17.24, one can see that in the case of geometric depreciation, the age-price profile and the age-efficiency profile are the same. If geometric depreciation is not used, the age-price profile must be derived from the age-efficiency profile (or vice versa) to ensure that the two profiles are consistent (see Annex D of Measuring Capital).
- d. If other changes in the volume of assets are relevant for a type of asset, those other changes in volume should be added to the value of the assets.
- e. To support the calculation of net value added and net operating surplus by industry, as well as multifactor productivity estimates by industry, the PIM will need to be calculated by industry as well as by type of asset. Therefore, time series of fixed capital formation and other changes in volume of assets by type of asset need to be prepared for each industry.
- f. To support wealth and depreciation estimates for institutional sector accounts, the PIM will need to be calculated by institutional sector as well as by type of asset. Therefore, time series of fixed capital formation and other changes in volume of assets by type of asset need to be prepared for each institutional sector. Typically, price indices and depreciation rates differ across types of assets but are assumed not to differ between institutional sectors for each type of asset.

#### 2. Calculating depreciation

- 17.76 Depreciation is defined as "the decline, during the course of the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage" (see paragraph 7.264). A decline in value during the accounting period can be understood as the sum of two components. One component is the price change that reflects the price movement of the asset class under consideration, given a particular age (and measured, for example, by comparing the price of a new asset at the beginning of the period with the price of a new asset at the end of the period). Another component is the price change that reflects the ageing of the asset given a particular price level for the asset class (and measured, for example, by comparing the price of a one-year-old asset). Depreciation is measured as the price change due to ageing, thereby controlling for the overall movements in asset prices. This fits with the idea that "depreciation must be measured with reference to a given set of prices, i.e. the average prices of the period" (see paragraph 11.218).
- 17.77 The measurement of depreciation is directly associated with the age-price profile of an asset or of a cohort of assets. The rate of depreciation of a t-year-old asset is the difference in the price of a t-year-old asset and a t+1-year-old asset, expressed as a proportion of the t-year old asset. For geometric depreciation, this proportion is constant for all years t.
- 17.78 Careful consideration should be given to selecting the depreciation rates, or more generally, the age-price profiles. Some fixed assets (such as motor vehicles) have prices from sales of used, or second-hand assets that can be used to directly estimate the depreciation rate. In other cases, information on the typical service lives of the asset can be used. The selection of depreciation rates is discussed in more detail in *Measuring Capital*.

#### 3. Calculating the net ("wealth") stock

17.79 The stock of assets surviving from past periods and corrected for depreciation is the "net" or "wealth" capital stock. The net stock is valued as if the capital good (used or new) were acquired on the date to which a balance sheet relates. The net stock is designed to reflect the wealth of the owner of the asset at a particular point in time. Hence, the notion of "wealth" stock seems more descriptive than "net" stock because there are other types of "net" capital measures. The wealth stock is the measure that enters balance sheets of the

#### national and of institutional sectors.

#### 4. Calculating productive stock

17.80 The stock of a particular type of asset surviving from past periods and corrected for its loss in productive efficiency is the productive capital stock. Productive stocks constitute an intermediate step towards the measurement of capital services. The flow of capital services is assumed to be proportional to the productive stock of an asset class. If the factor of proportionality is constant, the rate of change of capital services will equal the rate of change of the productive stock. The rate of change of the productive stock is assumed to be the volume component when it comes to splitting the change in the total value of capital services at current prices into a price and a volume component. The concept of a productive stock is combined with the corresponding capital service price, the resulting value represents the flow of capital services, which is the relevant variable for aggregation across different types of assets.

# 5. Perpetual inventory model for non-renewable mineral and energy resources

17.81 For non-renewable mineral and energy resources, the PIM should be applied for each type of asset, with the resulting estimates then summed across asset types for wealth stocks or aggregated using chain indices for volume estimates. Data may be available on stocks and extraction in physical volume terms. The valuation of stocks is explained in paragraphs 14.56 to 14.57 and the measurement of depletion is explained in 11.232 to 11.234. A PIM for each type of asset can be calculated in physical terms or in constant prices. Compared with fixed assets, the PIM for a mineral resource is simpler in that depreciation does not need to be calculated. The opening stock for each year is carried forward from the closing stock of the previous year. There is no gross capital formation, so additions to the stock consist solely of other changes in the volume of assets (if any), which might include new discoveries, for example. Extraction of the resource is recorded as depletion and is subtracted in the calculation of the closing stock at the end of the year is equal to the opening stock plus other changes in the volume of assets less depletion.

#### 6. User costs

- 17.82 Capital services are considered the appropriate measure of capital input in the production process, but to make them useful one needs to develop measures of value, price and volume of capital services. Depreciation does not represent the full cost of using a fixed asset, as one can see by imagining a case where the fixed asset is leased by its owner to another unit that uses it in production. The owner will charge a rental price that includes not only depreciation but also a net return on capital that reflects the financing costs of capital.
- 17.83 If there are rental markets, observed rentals could provide a first approximation to the user cost of capital for owner-users of the same assets. While rental markets may be common for some types of assets, such as dwellings, for most asset types rental prices are not available. Thus, various components of cost must be added up to approximate the cost of capital services. In the simplest case, three main cost elements are considered: (i) the cost of financing or the opportunity cost of the financial capital tied up through the purchase of the asset (which is used for calculating the return on non-financial assets used in producing non-market output) (ii) depreciation, i.e. the value loss due to ageing; (iii) revaluation, i.e. the expected price change of the class of assets under consideration. National accounts data on depreciation and prices can be used for estimating components (ii) and (iii), while component (i) might be based on gross operating surplus (along with a portion of gross mixed income) as part of the calculation of the net return to capital. Implementing the user cost methodology requires various assumptions that are discussed in *Measuring* (financial).

#### 7. Aggregation

17.84 The final step in the compilation of capital stock and capital service statistics is to aggregate across asset

types to calculate aggregate stocks for institutional sectors, industries or the total economy. In current prices, aggregation is taken as the simple summation of stocks or capital services across asset types. Balance sheets are generally compiled in the current prices of the beginning/end of the period.

17.85 For aggregation in volume terms, the calculations described in chapter 18 are typically applied. Because the wealth) stock is presented in current prices in the balance sheet, it may not be necessary to calculate it in volume terms. But if desired, the volume measure of the wealth stock can be calculated.

#### 8. A table on capital services

- 17.6817.86 This section describes a table that can be compiled to compare data coming from the standard national accounts tables for the elements of gross value added with those derived from applying the theory of capital services to the national accounts data on capital stock. The table can be prepared in current prices and in volume terms, with the capital service values in volume terms used for analysis of capital and multifactor productivity as described in section F of chapter 18.
- 17.6917.87 The first level of detail that might be examined is given in table 17.11. This assumes that information on value added by institutional sector is available. The figures for operating surplus for non-financial and financial corporations may be compared with capital services from fixed assets used by these sectors adjusted as necessary for non-produced natural resources, other non-produced non-financial assets and inventories. The figures for operating surplus of general government and NPISHs and those for capital services of those sectors must be equal except for possible adjustments for inventories and depletion. This is because by convention the net return to capital on assets used in non-market production is derived from an opportunity cost perspective when output is estimated as the sum of costs (see paragraphs 4.295 and 4.296). [The capital services for other household dwellings should match operating surplus for households and the figure for capital services for other household unincorporated enterprises is to be compared with the national accounts figure for mixed income (which should include a labour remuneration element also).

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| National accounts data             | Total/Gross | <b>Depreciation</b> | <b>Depletion</b> | Net       |
|------------------------------------|-------------|---------------------|------------------|-----------|
| Gross value added                  |             |                     |                  |           |
| Remuneration of employees          |             |                     |                  |           |
| Mixed income                       |             |                     |                  |           |
| Operating surplus                  |             |                     |                  |           |
| Non-financial corporations         |             |                     |                  |           |
| Financial corporations             |             |                     |                  |           |
| General government                 |             |                     |                  |           |
| NPISHs                             |             |                     |                  |           |
| Households                         |             |                     |                  |           |
| Taxes less subsidies on production |             |                     |                  |           |
| Capital services                   |             | Capital             | Decline in       | Return to |
|                                    |             | Services            | value            | Capitai   |
| Fixed assets                       |             |                     |                  |           |
| Market producers (excluding house  | eholds)     |                     |                  |           |
| Non-financial corporations         | ,           |                     |                  |           |
| Financial corporations             |             |                     |                  |           |
| Non-market producers               |             |                     |                  |           |
| General government                 |             |                     |                  |           |
| NPISHs                             |             |                     |                  |           |
| Households                         |             |                     |                  |           |
| Dwellings                          |             |                     |                  |           |
| Other unincorporated enterprise    | s           |                     |                  |           |
| Natural resources                  |             |                     |                  |           |
| 1                                  |             |                     |                  |           |



# National Statistician's Committee for Advice on Standards for Economic Statistics

NSCASE October 2024 – Chapter 17 NSCASE Meeting Minutes

# System of National Accounts 2025 – Chapter 17: Capital Services

- 1. Rebecca Riley led the discussion on this paper.
- 2. Richard introduced the chapter. The chapter differed from the others discussed so far and that there was clear interest from Europe in standardisation in this area. He explained the main comment from the UK on the chapter was that different assets had different depreciation profiles, particularly when looking at tangible assets verses intangible assets. This would require a tailored solution to fit with the real characteristics of products on the market. He explained Europe were more in favour of using a standard geometric depreciation rate.
- 3. Rebecca agreed that the chapter was different and that it was trying to link the national accounts to productivity studies to help triangulate data and improve quality. The chapter suggested a table would be produced to illustrate the linkages more clearly. She noted it was surprising how little had changed from the previous version given the changes that had occurred in the other chapters, to which it cross-referred. She further noted that the chapter did not highlight the complications that arise in analysis of capital services measurement when intangibles were brought in.
- 4. The Chair believed this chapter was less of a core chapter than the others discussed as it was not crucial to the flow of funds from production to the financial sector.
- 5. The Chair asked if the ONS would regard the production of table 17.1 as something it would want to do in the early stages of implementation.
- 6. Richard believed that within the Multi Factor Productivity (MFP) system, this was already being produced though not in this precise template.
- 7. Nick thought that the UK seemed to be isolated in its position against geometric depreciation and that if the decision was made to use geomatic depreciation in the creation of these tables, the UK would have to follow on or deviate from the SNA.
- 8. Richard explained that the ONS used a mix of geometric and hyperbolic depreciation to produce these data.
- 9. David believed that the SNA should not constrain NSIs on a strategic level by a method given. It should be up to the countries to choose what was appropriate given the data that was available.


- 10. Cliodhna added that the ONS currently published its code on GitHub and that this table could be reconstructed.
- 11. Richard added that the ONS was most interested in bringing together the capital services and capital stocks data in order to confirm that the two sets of data were internally consistent. There was less urgency in ensuring that this was completed in precisely the method stated or with the precise geometric depreciation in every instance.

# Chapter 18: Measuring prices, volumes and productivity (revised title and revised content) (OLD Chapter 15: Price and volume measures)

## A. Introduction

- 18.1 Chapter <u>14-15</u> describes how the goods and services account may be compiled and elaborated within a supply and use table. The changes in the values of flows of goods and services can be directly factored into two components, one reflecting changes in the prices of the goods and services concerned and the other the changes in their volumes. One major advantage of compiling price and volume measures within an accounting framework, such as that provided by the supply and use tables, is that a check is provided on the numerical consistency and reliability of the set of measures as a whole. This is particularly important when every flow of goods and services in the economy has to be covered, including non-market goods and services whose valuation is even more difficult in volume terms than at current prices.
  - 18.2 Another advantage of compiling price and volume measures within an accounting framework is that implicit price or volume measures can be derived for certain important balancing items. In particular, gross value added can be measured in real terms by subtracting intermediate consumption in volume terms from output in volume terms, the so-called "double deflation" method. Double deflation may be used at the level of an individual enterprise, industry or sector. However, the primary objective of the SNA is not simply to provide guidelines on measures of changes in prices and volumes for the main aggregates of the SNA but to assemble a set of interdependent measures that make it possible to carry out systematic and detailed analyses of inflation and economic growth.

## 1. Index number theory

- 18.3 Section B gives an overview of the theory of index numbers as applied in the SNA. New mManuals have been published on the theory and practice of consumer price indices (CPIs) and on producer price indices (PPIs). These are Consumer Price Index Manual: Theory and Practices (CPIs) and on producer price indices (PPIs). These are Consumer Price Index Manual: Theory and Practice Concepts and Methods, (International Monetary Fund, International Labour Organization, International Monetary Fund, Statistical Office of the European Union (Eurostat), United Nations Economic Commission for Europe, Organisation for Economic and Co-operation and Development, Eurostat, United Nations Economic Co-operation and Development, United Nations, Economic Commission for Europe and the World Bank (20042020)) and Producer Price Index Manual: Theory and Practice, (International Labour Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, Economic Commission for Europe and the World Bank (2004).) A further manual on export and import price indices (XMPIs), Export and Import Price Index Manual: Theory and Practice (International Labour Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations Economic Commission for Europe and World Bank (2009). In particular chapter 2 of the CPI manual, chapter 14 of the CPI-and-PPI manuals and chapter 15 of the XMPI manual outline how such indices fit into the framework of the SNA.
- 18.4 The first topic in section B concerns the choice of an appropriate methodology for compiling inter-temporal price and volume measures for flows of goods and services in a national accounting context. Section B also deals with the consequences of price variation due to price discrimination; that is, how to treat goods or services that are sold to different purchasers on the same market in the same period at different prices. Such differences need to be clearly distinguished from price differences attributable to differences in qualities. This section also discusses the treatment of changes in quality over time, including the appearance of new products and the disappearance of old products.

## 2. Inter-temporal price and volume series

18.5 Section C shows how the considerations in section B can be applied to the SNA and time series of volumes and prices

**Commented [ED1]:** References to several manuals or handbooks have been updated to reflect new editions published since 2008.

be derived. It discusses not only the elements of the goods and services account but also how stocks of non-financial assets can be decomposed into price and volume elements. <del>Further, the section addresses the question of expressing key aggregates of the SNA that do not themselves have price and volume components in real terms, allowing an analysis of the immact of terms of trade on national income. For instance.</del>

18.6 Like section B, section C does not aim to be exhaustive in its coverage but draws on, and refers to, other manuals, specifically the Handbook on Prices and Volume Measures in National Accounts (Eurostat, 20012016) and chapter IX of Quarterly National Accounts Manual (International Monetary Fund (IMF), 2017).

# 3. Real income

18.7 Section D addresses the question of expressing key aggregates of the SNA that do not themselves have price and volume components in real terms, allowing an analysis of the impact of terms of trade on national income, for instance.

## 4. Volume measures for particular products

18.8 The methods discussed in Section C of this chapter can be used to appropriate derive volume and price measures for most products. For a few products that have unusual characteristics, this general guidance may not be sufficient, and Section E provides more specific guidance for those cases. The specific guidance in this section draws from handbooks such as Eurostat, *Handbook on Prices and Volume Measures in National Accounts*, 2016 edition and other handbooks that are cited in the section.

## 5. Productivity

18.9 Section F describes measures of productivity, which measure changes in the volume of output relative to changes in the volume of inputs. These measures are ratios in which the numerator is a volume measure of output or value added and the denominator is a volume measure of one or more inputs, especially of labour, capital or the combined contributions of labour and capital. This section draws on the handbooks, *Measuring Capital* (Organisation for Economic Co-operation and Development (OECD), 2009) and *Measuring Productivity* (OECD, 2001).

# 3.6. International price comparisons

- 48.7<u>18.10</u> Although most price and volume index numbers were developed to measure changes in prices and volumes over time, they can also be adapted to compare levels of prices and volumes between different regions or countries in the same period of time. Such comparisons are needed in order to be able to compare standards of living, levels of economic development or levels of productivity in different countries.
- 18.8.18.11 These topics are addressed in section DG, first in theoretical terms and then in terms of the implications for national accountants. <u>Measuring the Real Size of the World Economy: The Framework</u>, <u>Methodology, and Results of the International Comparison Program—ICP</u> (World Bank, 2013) describes the methodology underlying the International Comparison Program (ICP).

## 4.7. Further information

18.918.12 This chapter aims to do no more than introduce the most important concepts and considerations of the application of index number theory to the derivations of volume series within the SNA. Further information should be sought from the other manuals cited.

# **B.** An overview of index number theory

1. Quantities, prices and values

**18.1018.13** For each individual type of good or service it is necessary to specify an appropriate quantity unit in which that good or service can be measured. Goods or services may be supplied in units that are either discrete or continuously variable. Automobiles, aircraft, microcomputers, haircuts and appendectomies are examples of goods or services provided in discrete or integral units. The quantities of such goods and services are obtained simply by counting the number of units. Oil, electricity, sugar and transportation are examples of goods or services provided in units that vary continuously in respect of characteristics such as weight, volume, power, duration and distance. The choice of physical unit, and its price in relation to the unit selected, is therefore a matter of convenience. For example, the price quoted per tonne is one thousand times greater than one quoted per kilo. As long as the price is expressed in a manner consistent with the unit of volume, the value (v) at the level of a single, homogeneous good or service is equal to the price per unit of quantity (p) multiplied by the number of quantity units (q), that is:  $v = p \ge q$ .

### Additivity of quantities, prices and values

18.11-18.14 Certain important properties in relation to the additivity of quantities, prices and values may be briefly noted:

- a. Quantities are additive only for a single homogeneous product. For example, it is not economically meaningful to add 10 tonnes of coal to 20 tonnes of sugar. Less obviously, the addition of 10 automobiles of one type to 20 automobiles of another type would not be economically meaningful either if they differ in quality.
- b. The price of a good or service is defined as the value of one unit of that good or service. It varies directly with the size of the unit of quantity selected and in many cases can be made to vary arbitrarily by changing the unit of quantity, for example, by choosing to measure in tonnes instead of in kilograms. Prices, like quantities, are not additive across different goods or services. An average of the prices of different goods or services has no economic significance and cannot be used to measure price changes over time.
- c. Values are expressed in terms of a common unit of currency and are additive across different products. Values are invariant to the choice of quantity unit.
- 18.1218.15 In a market system, the relative prices of different goods and services should reflect both their relative costs of production and their relative utilities to purchasers, whether the latter intend to use them for production or consumption. Relative costs and relative utilities influence the rates at which sellers and buyers are prepared to exchange goods and services on markets. An aggregation of the values of different goods and services have been produced and consumed at the currently prevailing prices.

#### Volume, quantity, price and unit value indices

- 18.1318.16 A volume index is an average of the proportionate changes in the quantities of a specified set of goods or services between two periods of time. The quantities compared over time must be those for homogeneous items and the resulting quantity changes for different goods and services must be weighted by their economic importance, as measured by their relative values in one or other, or both, periods. For this reason volume is a more correct and appropriate term than quantity in order to emphasize that quantities must be adjusted to reflect changes in quality.
- 18.1418.17 Unfortunately, it may sometimes happen, especially in the field of foreign trade statistics based on customs documentation, that the data from which price and volume indices have to be calculated are not sufficiently detailed or are otherwise inadequate for the purpose. For example, the basic information available may be limited to the total number of units of some group of products imported or exported, or their total weight, for example, the total number of pairs of shoes, or total weight of a certain type. Indices built up from information of this kind are not volume indices when the numbers, or weights, cover different items selling at different prices. They are sometimes described as "quantity indices" for this

reason. The "price" indices associated with such indices are usually described as average or "unit value" indices. Unit value indices measure the change in the average value of units that are not necessarily homogeneous and may be affected by changes in the mix of items as well as by changes in their prices. Unit value indices cannot therefore be expected to provide good measures of average price changes over time for groups of non-homogeneous items.

# 2. Inter-temporal index numbers of prices and volumes

18.1518.18 The index numbers of interest within the SNA are designed to decompose changes in value aggregates into their overall change in price and volume components. A price index can be written and calculated as a weighted average of the proportionate changes in the prices of a specified set of goods and services between two periods of time, say a reference period 0 and current period *t*. Similarly, a volume index can be written and calculated as a weighted average of the proportionate changes in the volumes of a specified set of goods and services between two periods of time, say a reference period 0 and current period *t*. There are many index number formulae differing from each other mainly in the weights which they attach to the individual price or quantity relatives and the particular form of average used, whether it is arithmetic, geometric, harmonic, etc. These alternative formulae, their properties and relative merits, are outlined in detail in the CPI and PPI manuals.

## Laspeyres and Paasche indices

 $\frac{18.1618.19}{18.00}$  The two most commonly used index formulae are the Laspeyres and Paasche indices. The Laspeyres price index (*Lp*) is defined as a weighted arithmetic average of the price relatives using the value shares of the reference period 0 as weights:

$$L_{p} = \sum_{i=1}^{n} \left( \frac{p_{i}^{t}}{p_{i}^{0}} \right) S_{i}^{0} = \frac{\sum_{i=1}^{n} \left( \frac{p_{i}^{t}}{p_{i}^{0}} \right) p_{i}^{0} q_{i}^{0}}{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{0}} \equiv \frac{\sum_{i=1}^{n} p_{i}^{t} q_{i}^{0}}{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{0}}$$
(1)

That is, where  $p_{i_i}^0 q_i^0$  and  $v_i^0 = p_i^0 x q_i^0$  are the prices, quantities and values in period 0 of i = 1, ..., n products and  $s_i^0 = v_1^0 / \sum_{i=1}^n v_{i_i}^0$  the value shares in period 0. Similar expressions with superscripts *t* refer to period *t*.

18.1718.20 Note from (1) that the Laspeyres price index can be defined as the change in value of a basket of products whose composition is kept fixed as it was in the reference period 0. The Laspeyres volume index (LQ) can be similarly defined as the change in the value of a basket whose composition every period is updated but the prices of the reference period 0 are applied to the new quantities (or volumes), that is:

$$L_{Q=} \sum_{i=0}^{n} \left( \frac{q_{i}^{t}}{q_{i}^{0}} \right) S_{i}^{0} \equiv \frac{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{t}}{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{0}}$$
(2)

18.1818.21 Paasche indices also exist in both price and volume forms. The Paasche index differs from the Laspeyres index in two respects. It uses a harmonic mean instead of an arithmetic average and the fixed period volumes or prices are those of the current period t. The Paasche price index is given by:

$$P_{p} = \left[\sum_{t=1}^{n} \left(\frac{p_{t}^{t}}{p_{t}^{0}}\right)^{-1} S_{t}^{t}\right]^{-1} \equiv \frac{\sum_{i=1}^{n} p_{t}^{i} q_{t}^{t}}{\sum_{i=1}^{n} p_{t}^{0} q_{t}^{t}}$$
(3)

and a Paasche volume index, with fixed current period weights or prices, by:

$$P_{Q=}\left[\sum_{i=1}^{n} \left(\frac{q_{i}^{t}}{q_{i}^{o}}\right)^{-1} S_{i}^{t}\right]^{-1} \equiv \frac{\sum_{i=1}^{n} p_{i}^{t} q_{i}^{t}}{\sum_{i=1}^{n} p_{i}^{t} q_{i}^{o}}$$
(4)

Deflation and volume series using Laspeyres and Paasche formulae

**18.19** 18.22 The index of the change in monetary values between two periods,  $I_v = \sum_{i=1}^{n} v_i^t / \sum_{i=1}^{n} v_i^{t-1}$ , reflects the combined effects of both price and quantity changes. When Laspeyres and Paasche indices are used, the value change will exactly decompose into a price index times a volume index only if the Laspeyres price index is matched with the Paasche volume index, that is:  $L_p \times P_Q = I_V$  or the Laspeyres volume index is matched with the Paasche price index. For example, a price index, 1.05 representing a 5 per cent change multiplied by a volume index of 1.08, an 8 per cent change, yields a value change index of 1.134, a 13.4 per cent change.

## Laspeyres and Paasche indices reflects the combined effects

**18.2018.23** This relationship can be exploited whenever the total current values for both periods are known and either of a price or volume index. Suppose, for example, compilers want to derive a volume index. Laspeyres and Paasche volume indices are derived by dividing (deflating) the value change by appropriate price indices:  $L_Q = I_v/P_p$  and  $P_Q = I_v/L_p$  respectively. Note that  $L_Q$  from the right-hand side of equation (2) generates a time series of Laspeyres volume indices, for periods t = 1,...,T of:

$$\frac{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{1}}{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{0}}, \frac{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{2}}{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{0}}, \dots, \frac{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{T}}{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{0}}$$
(5)

Multiplying through the series by the common denominator  $\sum_{i=1}^{n} p_{1}^{0} q_{i}^{T}$  yields the volume series:

$$\sum_{i=1}^{n} p_{i}^{0} q_{i}^{1}, \sum_{i=1}^{n} p_{1}^{0} q_{1}^{2}, \dots, \sum_{i=1}^{n} p_{1}^{0} q_{i}^{T}$$
(6)

The relative movements from period to period for this series are identical with those of the associated Laspeyres volume indices given by (5), the two series differing only by a scalar that is the value in period 0.

18.2118.24 Series using the prices of a base year throughout, as illustrated by (6), are easy to understand but are not best practice in national accounts if the time period T is a lengthy one over which there are changes in the structure of the economy. For example, if volume changes are measured over a 10 year period, say 2010 to 2020, at constant 2010 prices, then the volume movements in later years are based on a price configuration that is likely to have changed. A better practice is to change the weights of (rebase) the Paasche deflator in 2015 and link the resulting index to the 2014 one. The resulting volume series over the 10 year

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The relationship between Laspeyres and Paasche indices

18.2218.25 Before considering other possible formulae, it is useful to establish the behaviour of Laspeyres and Paasche indices vis-à-vis each other. In general, a Laspeyres index tends to register a larger increase over the base year than a Paasche index, that is, in general:

both  $L_P > P_P$  and  $L_Q > P_Q$  (7)

It can be shown that relationship (7) holds whenever the price and quantity relatives (weighted by values) are negatively correlated, that is, as prices go up the quantities purchased go down or vice versa. Such negative correlation is to be expected for price takers, including consumers and firms purchasing intermediate inputs, who react to changes in relative prices by substituting goods and services that have become relatively less expensive for those that have become relatively more expensive. A positive correlation would be expected for price setting firms that substitute output towards goods and services that have become relatively more expensive. In such circumstances the inequalities in equation (7) would be reversed.

- 18.2318.26 Consumers are assumed to maximize utility, which in turn is related to combinations of goods and services purchased. Theoretical cost of living indices (COLIs) are defined as the ratio of the minimum expenditures required to enable a consumer to attain a fixed level of utility under the two sets of prices. The COLI increases if it becomes more expensive to maintain the same level of utility. A Laspeyres COLI would hold the preferences and utility fixed in the reference period and a Paasche COLI would hold them fixed in the current period.
- 18.2418.27 The Laspeyres price index provides an upper bound to the oretical Laspeyres COLI. Under the COLI, consumers can substitute products that have become relatively less expensive for ones that have become relatively more expensive to obtain the same level of utility, whereas the fixed basket Laspeyres index does not allow such substitution. Similarly, the Paasche index can be shown to provide a lower bound to the theoretical Paasche COLI.

## Other index number formulae

- 18.2518.28 Because different formulae give different results, a consideration of alternative approaches to choosing among them is needed and this in turn gives rise to a consideration of further index number formulae.
- 18.2618.29 It is apparent from the Laspeyres and Paasche price indices in equations (1) and (3) that both indices hold the basket of quantities fixed. The formulae differ in that Laspeyres holds the basket fixed in the reference period and Paasche in the current period. If the objective is simply to measure the price change between the two periods considered in isolation, there is no reason to prefer the basket of the earlier period to that of the later period, or vice versa. Both baskets are equally justifiable from a conceptual point of view. Thus, although they yield different results, neither formula can be judged superior to the other.
- 18.2718.30 A compromise solution for the price index is to use a formula that makes symmetric use of the base and current period information on quantities. The Fisher index can be shown to be the most suitable in this regard. (For an explanation of why this is so, see chapter 15 of the PPI manual.) The Fisher index (F) is defined as the geometric mean of the Laspeyres and Paasche indices, that is, for price and quantity indices respectively:

 $F_P = \{L_P, P_P\}^{\frac{1}{2}} \text{ and } F_Q = \{L_Q, P_Q\}^{\frac{1}{2}}$  (8)

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- 18.2818.31 Economic theory postulates indifference curves that show how consumers would alter their expenditure patterns in response to changes in prices. Unless the utility functions the indifference curves represent are similar in periods 0 and t, a Laspeyres and a Paasche index for this period will each refer to a differently shaped utility function. In general, the Laspeyres index will provide an upper bound to its underlying utility function while the Paasche index will give a lower bound to its underlying utility functions will be different.
- 18.2918.32 In order to resolve this dilemma, a series of indices called superlative indices have been derived that relate to utility functions that adapt over time to the changes in quantities brought about by changes in prices. The Fisher index is one example of a superlative index; a Törnqvist index is another example. A Törnqvist index is the geometric average of the price relatives weighted by average expenditure shares in two periods. Thus the Törnqvist price and volume indices are defined as:

$$T_{P} = \prod_{i=1}^{n} \left(\frac{p_{i}^{i}}{p_{0}^{0}}\right)^{\left(s_{i}^{0} + s_{i}^{1}\right)/2} \text{ and } T_{Q} = \prod_{i=1}^{n} \left(\frac{q_{i}^{i}}{q_{0}^{0}}\right)^{\left(s_{0}^{0} + s_{i}^{1}\right)/2}$$
(9)

Both Fisher and Törnqvist indices utilize and attach equal importance to information on the value shares in both periods for weighting purposes. For this reason they may be expected to lie between the bounds of Laspeyres and Paasche indices, as is desired. The difference between the numerical values of the Törnqvist and Fisher indices and other such symmetric indices is likely to be very small. Neither Törnqvist or Fisher volume indices use the prices of a specific single period. The term "at constant prices" is a misnomer for such series; the correct term is a series in volume terms.

18.3018.33 The above analysis has been from the consumer's or purchaser's perspective. Economic theory also defines Laspeyres and Paasche bounds from the producer's perspective. Revenue maximizing producers are expected to increase the relative quantities they produce in response to increases in relative prices. The resulting LaspeyresPaasche bounds are the reverse of those described above, as quantities produced are substituted towards commodities with above average changes in prices. But the implication for removing substitution bias by the use of Törnqvist and Fisher indices still holds.

## Desirable index number characteristics

- 18.3118.34 There are two frequently quoted characteristics that it is felt index numbers for deflating national accounts should satisfy. These are the "time reversal" and "factor reversal" tests. The time reversal test requires that the index for period t compared with period 0 should be the reciprocal of that for period 0 compared with t. The factor reversal test requires that the product of the price index and the volume index should be equal to the proportionate change in the current values. It follows from the discussion in the preceding section that Laspeyres and Paasche indices on their own do not pass either of these tests. However, it follows from the definitions of Fisher indices in (8) that the Fisher index does pass these tests.
- 18.3218.35 The Fisher index therefore has a number of attractions that have led it to be extensively used in general economic statistics. Indeed, Fisher described his index as "ideal". However, the Fisher index requires both reference and current period information for weights, which may affect the timeliness of the index, nor is it as easy to understand as Laspeyres or Paasche indices.
- 18.3318.36 The PPI manual provides in chapters 15, 16 and 17 an extensive account of the various approaches to choosing among index numbers. Also included in chapter 16 is the stochastic approach that favours the Törnqvist index. What is apparent from this extensive body of work is that all three approaches favour the Fisher index; that superlative indices such as the Fisher and Törnqvist indices produce very similar results and can all be justified from the economic theoretical approach and that the difference between superlative indices and the Laspeyres or Paasche indices, or their spread, is due to substitution bias.

# Index numbers in practice

1

18.3418.37 The Laspeyres price index in equation (1) has the same price and weight reference period 0. In practice, especially for CPIs where timeliness is of the essence, the price reference period 0 differs from the earlier weight reference period, say *b*, since it takes time to compile the results from the survey of households, establishments and other sources for the weights to use in the index. The Laspeyres index given by the first expression in equation (1) may have as its weights  $S_t^b$  instead of  $S_s^0$ . This index is a Young index and, like the Laspeyres index, has the undesirable property of failing the time reversal test.

 $\frac{18.3518.38}{18.38}$  Statistical offices often try to overcome this by adjusting the value shares used as weights by the changes in prices between *b* and 0 to form a Lowe index given by:

$$L_{oweP} = \frac{\sum_{i=1}^{n} \left(\frac{p_{i}^{1}}{p_{i}^{0}}\right) \left(\frac{p_{i}^{2}}{p_{i}^{0}}\right) v_{i}^{b}}{\sum_{i=0}^{n} v_{i}^{b} \left(\frac{p_{i}^{0}}{p_{i}^{0}}\right)} \equiv \frac{\sum_{i=1}^{n} p_{i}^{t} q_{i}^{b}}{\sum_{i=1}^{n} p_{i}^{0} q_{i}^{b}}$$
(10)

## 3. Chain indices

# The rebasing and linking of indices

- 18.3618.39 As noted in the previous section, over time the pattern of relative prices in the base period tends to become progressively less relevant to the economic situations of later periods to the point where it becomes unacceptable to continue using them to measure volume changes from one period to the next. It is then necessary to update the weights. With long time series, it is as inappropriate to use the most current weights for a date long in the past as it is to use the weights from a long time in the past for the current period. It is therefore necessary to link the old series to the new reweighted series by multiplication. This is a simple numerical operation requiring estimates for an overlapping period of the index or series calculated using both the old and new weights.
- 18.3718.40 The linking calculation can be undertaken in a number of ways. The current index on the new weights can be multiplied by a linking coefficient of the old to new index to convert the new index to the old index reference period. Alternatively, the index may have its reference period changed at the time of the introduction of new weights and the old index may be revised by dividing it by the linking coefficient. The process of linking an old series and a new one by means of a link for an overlap period is referred to as chaining. Numerical examples of linking and other chain index calculations are available in chapter 8 of Quarterly National Accounts Manual.
- 18.3818.41 Whether the chaining is done so as to preserve the earlier reference period in the new series or to change the reference period of the old series to the new one, the calculations have to be undertaken at each level of aggregation. Each component as well as each aggregate has to be linked individually because of non-additivity.

## Chaining each period

18.3918.42 The more frequently weights are updated the more representative will the resulting price or volume series be. Annual chain indices result from compiling annual indices over two consecutive years each with updated weights. These "links" are combined by successive multiplication to form a series. In order to understand the properties and behaviour of chain indices in general, it is necessary to establish first how chain Laspeyres and Paasche indices behave in comparison with fixed base indices.

### Chain Laspeyres and Paasche indices

18.4018.43 A chain Laspeyres volume index,  $L_{Q}$ , connecting periods 0 and t, is an index of the following form:

$$L_Q = \frac{\sum_{i=1}^{n} p_i^0 q_i^1}{\sum_{i=1}^{n} p_i^0 q_i^0} \times \frac{\sum_{i=1}^{n} p_i^1 q_i^2}{\sum_{i=1}^{n} p_i^1 q_i^1} \times \dots, \frac{\sum_{i=1}^{n} p_i^{t-1} q_i^t}{\sum_{i=1}^{n} p_i^{t-1} q_i^{t-1}}$$
(11a)

The corresponding chain Paasche volume index, PQ, has the following form:

$$P_Q = \frac{\sum_{l=1}^{n} p_l^1 q_l^1}{\sum_{l=1}^{n} p_l^1 q_l^0} \times \frac{\sum_{l=1}^{n} p_l^2 q_l^2}{\sum_{l=1}^{n} p_l^2 q_l^1} \times \dots, \frac{\sum_{l=1}^{n} p_l^t q_l^t}{\sum_{l=1}^{n} p_l^t q_l^{t^{-1}}}$$
(11b)

Laspeyres and Paasche price indices are obtained by interchanging the p's and q's in the expressions for the volume indices.

- 18.4118.44 In general, if fixed base indices are replaced by chain indices, the index number spread between Laspeyres and Paasche is likely to be greatly reduced. Chain indices thus have an advantage over fixed base ones. The relationship between a fixed base index and the corresponding chain index is not always the same, however, as it depends upon the paths followed by individual prices and quantities over time.
- 18.42<u>18.45</u> If individual prices and quantities tend to increase or decrease steadily over time it can be shown that chaining will significantly reduce the index number spread, possibly almost eliminating it. Chapters 9 and 19 of the PPI manual provides illustrative examples and chapter 15 explains the theory underlying these findings
- 18.4318.46 On the other hand, if individual prices and quantities fluctuate so that the relative price and quantity changes occurring in earlier periods are reversed in later periods, chaining will produce worse results (in comparison with the Fisher index) than a simple index.
- 18.4418.47 On balance, situations favourable to the use of chain Laspeyres and Paasche indices over time seem more likely than those that are unfavourable. The underlying economic forces that are responsible for the observed long-term changes in relative prices and quantities, such as technological progress and increasing incomes, do not often go into reverse. Hence, it is generally recommended that annual indices be chained. The price and volume components of monthly and quarterly data are usually subject to much greater variation than their annual counterparts due to seasonality and short-term irregularities. Therefore, the advantages of chaining at these higher frequencies are less and chaining should definitely not be applied to seasonal fluctuations.

## Annually chained quarterly Laspeyres-type indices

18.4518.48 Quarterly chain indices can be constructed that use annual weights rather than quarterly weights. Consider a quarterly Laspeyres-type volume index that measures the volume change from the average of year y-1 to quarter c in year y.

$$L_{Q}^{\overline{(y-1)} \to (c,y)} = \frac{\sum_{i} P_{i}^{y-1} q_{i}^{c,y}}{\sum_{i} P_{i}^{y-1} Q_{i}^{y-1}} = \sum_{i} \frac{q_{i}^{c,y}}{Q_{i}^{y-1}} s_{i}^{y-1}$$
(12a)

The upper case letters P and Q denote average quarterly values over a year, while p and q denote specific quarterly values. The superscripts denote the year (y) and quarter (c).  $P^{y-1}$  denotes the average price of item i in year y-l

and  $p_{cy}$  denotes the price of item *i* in quarter *c* of year *y*-*l* 1

and  $s^{y-1}$  is the base period value share, that is the share of item *i* in the total value in year *y*-1.

Thus:

$$P_{i}^{y-1} = \frac{\sum_{c} p_{i}^{(y-1)} q_{i}^{(y-1)}}{\sum_{i} q_{i}^{(y-1)}}; Q_{i}^{y-1} = \frac{\sum_{c} q_{i}^{(y-1)}}{4}; and$$

$$S_{i}^{y-1} = \frac{p_{i}^{y-1} Q_{i}^{y-1}}{\sum_{i} q_{i}^{(y-1)}} = \frac{\sum_{c} p_{i}^{(cy-1)} q_{i}^{(cy-1)}}{\sum_{i} \sum_{i} q_{i}^{(cy-1)}}$$
(12b)

- 18.4618.49 The quarterly Laspeyres-type volume indices can then be chained together with annual links. One of two alternative techniques for the annual chaining of quarterly data is usually applied, annual overlaps and one-quarter overlaps. In addition to these two conventional chaining techniques, a third technique sometimes is used based on changes from the same period in the previous year (the "over-the-year technique"). While in many cases all three techniques give similar results, in situations with strong changes in relative quantities and relative prices, the over-the-year technique can result in distorted seasonal patterns in the chained series. While standard price statistics compilation exclusively uses the one-quarter overlap technique, the annual overlap technique and the over-the-year technique do not result in data that aggregate exactly to the corresponding direct annual index. In contrast, the one quarter overlap technique and the over-the-year technique do not result in data that aggregate exactly to the corresponding direct annual index. The one-quarter overlap provides the stronges transition between each link in contrast to the annual overlap technique, which often introduces a step between each link, that is, between the fourth quarter of one year and the first quarter of the following year.
- 18.4718.50 The technique of using annual overlaps implies compiling estimates for each quarter at the weighted annual average prices of the previous year, with subsequent linking using the corresponding annual data to provide linking factors to scale the quarterly data upward or downward. The technique of one-quarter overlaps requires compiling estimates for the overlap quarter at the weighted annual average prices of the current year in addition to estimates at the average prices of the previous year. The ratio between the estimates for the linking quarter at the average prices of the current year in addition to estimates for each quarterly data up or down. The over-the-year technique requires compiling estimates for each quarter at the weighted annual average prices of the current year in addition to estimates for each quarter at the weighted annual average prices of the current year in addition to estimates for each quarter at the weighted annual average prices of the current year in addition to estimates for each quarter at the weighted annual average prices of the current year in addition to estimates at the average prices of the previous year. The year-on-year changes in these volume series are then used to extrapolate the quarterly volume series of the chosen reference period.
- 18.4818.51 Discrepancies between an annual chain volume series and the sum of the four quarters of an annually chained quarterly volume series derived using the one-quarter overlap technique can accumulate over time. Hence, quarterly chain volume series derived this way are usually benchmarked to the corresponding annual chain volume series using a procedure that minimizes the disturbance to the quarterly volume series whilst achieving consistency with the annual chain volume series. There is discussion on this in chapter <u>6</u> of Quarterly National Accounts <u>Manual</u>.
- 18.4918.52 If annual volume series are derived from data balanced in a supply and use table expressed in the prices of the previous year as recommended in section C, then it is standard practice to benchmark quarterly data to the corresponding annual balanced estimates. The benchmarking eliminates all discrepancies between the quarterly and annual chain volume series, including those arising from the use of the one-quarter overlap technique.
- 18.5018.53 To conclude, chaining using the one-quarter overlap technique combined with benchmarking to remove any resulting discrepancies between the quarterly and annual data gives the best result. In many circumstances, however, the annual overlap technique may give similar results. The over-the-year technique should be avoided.

## Chain Laspeyres or chain superlative indices?

18.5118.54 As explained earlier, the index number spread between Laspeyres and Paasche indices may be greatly reduced by chaining when prices and quantities move smoothly over time. In such circumstances the choice of index number formula assumes less significance as all relevant index numbers lie within the bounds of the Laspeyres and Paasche indices. Nevertheless, there may still be some advantages to be gained by choosing an index for chaining, such as the Fisher or Törnqvist, that treats both periods being compared

# symmetrically.

18.55 Such indices are likely to approximate more closely the theoretical indices based on underlying utility or production functions even though chaining may reduce the extent of their advantages over their Laspeyres or Paasche counterparts in this respect. A chain symmetric index, such as Fisher or Törnqvist, is also likely to perform better when there are fluctuations in prices and quantities. Chain Laspeyres indices, however, do not require current period data for weights and thus may lead to more timely estimates. Retrospective studies of the difference in national accounts estimates from using chain Laspeyres as against chain Fisher or Törnqvist can help in determining the advantage of using the latter formulae.

# Annually chained quarterly Fisher-type indices

18.5318.56 Just as it is possible to derive annually chained Laspeyres-type quarterly indices, so it is possible to derive annually chained Fisher-type quarterly indices. For each pair of consecutive years Laspeyres-type and Paasche-type quarterly indices are constructed for the last two quarters of the first year, year y-1 and the first two quarters of the second year, year y. The Paasche-type quarterly indices are constructed as backward-looking Laspeyres-type quarterly indices and then inverted. This is done to ensure that the Fisher-type quarterly indices are derived symmetrically. In the forward-looking Laspeyres-type indices the annual value shares relate to the first of the two years, whereas in the backward-looking Laspeyres-type indices the annual value shares relate to the second of the two years.

$$L_{q}^{\overline{(y-1)} \rightarrow c} = \frac{\sum_{l} P_{l}^{y-1} q_{l}^{c}}{\sum_{l} P_{l}^{l-1} q_{l}^{j-1}} = \sum_{l} \frac{q_{l}^{c}}{Q_{l}^{y-1}} S_{l}^{y-1}$$
(13)  

$$P_{Q}^{\overline{y} \rightarrow c} = \left[ L_{Q}^{\overline{y} \rightarrow c} \right]^{-1}$$
(14a)  

$$L_{Q}^{\overline{y} \rightarrow c} = \frac{\sum_{l} P_{l}^{y} q_{l}^{c}}{\sum_{l} P_{l}^{y} Q_{l}^{c}} = \sum_{i} \frac{q_{i}^{c}}{Q_{i}^{y}} S_{l}^{y}$$
(14b)

and  $q_i^c$  is the quantity of item *i* in quarter *c* in the second two quarters of year *y*-*1* or the first two quarters of year *y*.

- 18.5418.57 For each of the four quarters a Fisher-type index is derived as the geometric mean of the corresponding Laspeyres-type and Paasche-type indices. Consecutive spans of four quarters can then be linked using the one-quarter overlap technique. The resulting annually chained Fisher-type quarterly indices need to be benchmarked to annual chain Fisher indices to achieve consistency with the annual estimates.
- 18.5518.58 A difficulty arises at the end of the series because it is not possible to construct Paasche-type quarterly indices that use annual weights for the current year, at least using actual observed data. One solution is to construct "true" quarterly chain Fisher indices for the latest year or two and use these to extrapolate the annually chained Fisher-type indices. But this should only be done using seasonally adjusted data. As long as the irregular variation in quarterly price and volume relativities is not very great, quarterly chain Fisher indices of seasonally adjusted data can be expected to produce satisfactory results in most circumstances.

## Chaining and data coverage

18.5618.59 One major practical problem in the construction of index numbers is the fact that products are continually disappearing from markets to be replaced by new products as a result of technological progress, new discoveries, changes in tastes and fashions, and catastrophes of one kind or another. Price and volume indices are compiled by comparing the prices or quantities of goods of the same characteristics or quality

Formatted: Font: (Default) +Headings CS (Times New Roman), 10 pt, Font color: Auto, Complex Script Font: +Headings CS (Times New Roman), 10 pt, Don't snap to grid, Not Highlight (that is, homogenous goods) over time. This is not easy in product areas such as personal computers where quality changes rapidly.

18.5718.60 Chaining helps ameliorate the problems of such constant quality comparisons since the likelihood of an overlap of a product in two consecutive price periods is almost bound to be greatest and the chain indices can accommodate the changes in weight that accompany a new and a disappearing product.

## Additivity and chaining

- 18.5818.61 An aggregate is defined as the sum of its components. Additivity in a national accounts context requires this identity to be preserved for a volume series. Although desirable from an accounting viewpoint, additivity is actually a very restrictive property. Laspeyres volume indices are the only index number formulae considered here that are additive.
- 18.5918.62 A single link in a chain index is sufficient to destroy additivity even when additive indices, such as Laspeyres volume indices, are linked together. Consequently, if chain volume indices are converted into time series of values by using the indices to extrapolate the values of the base period, the index components may fail to add to aggregates in later periods. A perverse form of non-additivity can occur when the chain index for the aggregate lies outside the range spanned by the chain indices for its components, a result that may be regarded as intuitively unacceptable by many users. Whether published in monetary terms or indices, it is advisable to inform users via a footnote or other meta-data that chain volume series are not additive.
- 18.6018.63 There is a general tendency for the discrepancies from chaining to become larger the further a period is away from the reference year. If the reference year is chosen to be near the end of the series then the discrepancies will be relatively small for the latest quarters. Indeed, if the chain Laspeyres formula is used and if the reference year is chosen to coincide with the latest base year then the quarters following the reference year are additive. Another advantage of having the reference year near the end of chain volume series is that when they are expressed as monetary values their magnitudes do not differ greatly from the current values for the latest periods if price change is occurring at a modest rate. Maintaining this situation requires rereferencing the series every year when a new link is added to the chain and this entails revising the chain volume series for their entire lengths. Note that rereferencing entails revising levels but not growth rates.
- 18.6118.64 Although additivity may be preserved by never undertaking a weight change this advantage is significantly outweighed by the disadvantage of increasing irrelevance of the weights in use. Rates of change for subperiods of a series, including annual rates, can be usefully phrased in terms of contributions to change, as explained below.

### Variables that change sign

18.6218.65 Index number formulae are generally not applicable to time series that can take positive, negative and zero values. Nevertheless, there are ways of deriving pseudo chain volume series expressed in terms of monetary values in such cases. The most commonly used approach is to identify two associated time series that take only positive values and are such that when differenced yield the target series. An example is the stock of inventories at the start and end of the period as opposed to the change during the period. Chain volume series are not additive and so it is evident that this is an imperfect method since by construction an additive relationship is produced. It follows that the series to be differenced should be as closely aligned in terms of price and volume composition as possible with the target series. Hence, a chain volume series of opening inventories is derived as a chain volume series of closing inventories less a chain volume series of opening inventories. Sometimes public gross fixed capital formation can take negative values as a result of the sale of assets to the private sector, in which case the chain volume series of acquisitions and sales could be differenced.

## **Contributions to growth**

18.6318.66 When the Laspeyres formula is used and the base year and reference year coincide, the resulting volumes are additive in subsequent periods and the contribution by a component Ii to the growth of an aggregate, such as GDP, between two periods (t-n) and t can be obtained readily as follows:

$$\%\Delta_{i}^{(t-n)\to t} = \frac{100(l_{i}^{t} - l_{i}^{t-n})}{\Sigma_{i} l_{i}^{t-n}}$$
(15)

When chain volume series are derived using either the Laspeyres formula for annual indices or the annual chaining of Laspeyres-type quarterly indices, then year-to- year or quarter-to-quarter contributions to growth can be derived easily using data expressed in the prices of the previous year prior to chaining. Such data are additive and so equation (15) can be used with n=1. If contributions to growth are not published by the national statistical office, the user can estimate them. Assuming the one-quarter overlap technique has been used, the formula for calculating the contribution to the percentage change from period t-1 to period t is:

$$\%\Delta_{i}^{(t-1)\to t} = \frac{100.(l_{i}^{t} - l_{i}^{t-1})S_{i}^{t-1}}{\sum_{i} l_{i}^{t-n}S_{i}^{t-1}}$$
(16)

where the s are the shares of the items in the total as in equations (12).

## 4. Causes of price variation

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## Price variation due to quality differences

- 18.6418.67 In general, most types of goods or services, whether simple food products such as potatoes or high technology products such as computers, are available on the market in many different qualities whose physical characteristics differ from each other. For example, potatoes may be old or new, red or white, washed or unwashed, loose or pre-packed, graded or ungraded. Consumers recognize and appreciate the differences and are prepared to pay different prices. For some goods and services, such as personal computers and telecommunication services, there is a rapid turnover in the highly differentiated varieties and this, as considered below, creates severe problems for the measurement of price changes.
- 18.6518.68 The same generic term, such as potato, computer or transportation is used to describe goods and services that differ from each other in their price-determining characteristics. The price or quantity of a good or service of one quality cannot be directly compared to that of a different quality. Different qualities have to be treated in exactly the same way as different kinds of goods or services.
- 18.6618.69 Differences in quality may be attributable to differences in the physical characteristics of the goods or services concerned and be easily recognized, but not all differences in quality are of this kind. Goods or services delivered in different locations, or at different times, such as seasonal fruits and vegetables, must be treated as different qualities even if they are otherwise physically identical. The conditions of sale, or circumstances or environment in which the goods or services are supplied or delivered can make an important contribution to differences in quality. For example, a durable good sold with a guarantee, or free after-sales service is higher quality than the same good sold without guarantee or service. The same goods or services sold by different kinds of retailers, such as local shops, specialist shops, department stores or supermarkets may have to be treated as different qualities.
- 18.6718.70 It is generally assumed in economic analysis that whenever a difference in price is found between two goods and services that appear to be physically identical there must be some other factor, such as location, timing or conditions of sale, that is introducing a difference in quality. Otherwise, it can be argued that the difference could not persist, as rational purchasers would always buy lower priced items and no sales would take place at higher prices.
- 18.6818.71 When there is price variation for the same quality of good or service, the price relatives used for index number calculation should be defined as the ratio of the weighted average price of that good or service in the two periods, the weights being the relative quantities sold at each price. Suppose, for example, that a

Formatted: Font: (Default) + Headings CS (Times New Roman), Complex Script Font: + Headings CS (Times New Roman), Don't snap to grid, Not Highlight certain quantity of a particular good or service is sold at a lower price to a particular category of purchaser without any difference whatsoever in the nature of the good or service offered, location, timing or conditions of sale, or other factors. A subsequent decrease in the proportion sold at the lower price raises the average price paid by purchasers for quantities of a good or service whose quality is the same and remains unchanged, by assumption. It also raises the average price received by the seller without any change in quality. This must be recorded as a price and not a volume increase.

## Price variation without quality differences

- 18.6918.72 Nevertheless, it must be questioned whether the existence of observed price differences always implies corresponding differences in quality. There are strong assumptions underlying the standard argument which are seldom made explicit and are often not satisfied in practice: for example, that purchasers are well informed and that they are free to choose between goods and services offered at different prices.
- 18.7018.73 In the first place, purchasers may not be properly informed about existing price differences and may therefore inadvertently buy at higher prices. While they may be expected to search for the lowest prices, costs are incurred in the process. Given the uncertainty and lack of information, the potential costs incurred by searching for outlets in which there is only a possibility that the same goods and services may be sold at lower prices may be greater than the potential savings, so that a rational purchaser may be prepared to accept the risk that he or she may not be buying at the lowest price. Situations in which the individual buyers or sellers negotiate, or bargain over prices, provide further examples in which purchasers may inadvertently buy at a higher price than may be found elsewhere. On the other hand, the difference between the average price of a good purchased in a market or bazaar in which individual purchasers bargain over the price and the price of the same good sold in a different type of retail outlet, such as a department store, should normally be treated as reflecting differences in quality attributable to the differing conditions under which the goods are sold.

## **Price discrimination**

18.7118.74 Secondly, purchasers may not be free to choose the price at which they purchase because the seller may be in a position to charge different prices to different categories of purchasers for identical goods and services sold under exactly the same circumstances, in other words, to practise price discrimination. Economic theory shows that sellers have an incentive to practise price discrimination as it enables them to increase their revenues and profits. However, it is difficult to discriminate when purchasers can retrade amongst themselves, that is, when purchasers buying at the lowest prices can resell the goods to other purchasers. While most goods can be retraded, it is usually impossible to retrade services, and for this reason price discrimination is extensively practised in industries such as transportation, finance, business services, health, education, etc., in most countries. Lower prices are typically charged to purchasers with low incomes, or low average incomes, such as pensioners or students. When governments practise or encourage the practice of price discriminate in favour of households with low incomes as this may enable them to increase their profits. Thus, when different prices are charged to different consumers it is essential to establish whether or not there are in fact any quality differences associated with the lower prices. For example, if senior citizens, students or schoolchildren are charged lower fares for travelling on planes, trains or buses, at whatever time they choose to travel, this must be treated as pure price discrimination. However, if they are charged lower fares on condition that they travel only at certain times, typically off-peak times, they are being offered lower quality transportation.

## The existence of parallel markets

18.7218.75 Thirdly, buyers may be unable to buy as much as they would like at a lower price because there is insufficient supply available at that price. This situation typically occurs when there are two parallel markets. There may be a primary, or official, market in which the quantities sold, and the prices at which they are sold, are subject to government or official control, while there may be a secondary market, either a free

market or unofficial market, whose existence may or may not be recognized officially. If the quantities available at the price set in the official market are limited there may be excess demand so that supplies have to be allocated by rationing or some form of queuing. As a result, the price on the secondary or unofficial market will tend to be higher. It is also possible, but less likely, that lower prices are charged on the secondary or unofficial market, perhaps because the payment of taxes on products can be evaded in such a market.

- 18.7318.76 For the three reasons just given, lack of information, price discrimination or the existence of parallel markets, identical goods or services may sometimes be sold to different purchasers at different prices. Thus, the existence of different prices does not always reflect corresponding differences in the qualities of the goods or services sold.
- 18.7418.77 When there is price variation for the same quality of good or service, the price relatives used for index number calculation should be defined as the ratio of the weighted average price of that good or service in the two periods, the weights being the relative quantities sold at each price. Suppose, for example, that a certain quantity of a particular good or service is sold at a lower price to a particular category of purchaser without any difference whatsoever in the nature of the good or service offered, location, timing or conditions of sale, or other factors. A subsequent decrease in the proportion sold at the lower price raises the average price paid by purchasers for quantities of a good or service received by the seller without any change in quality. This must be recorded as a price and not a volume increase.
- 18.7518.78 It may be difficult to distinguish genuine price discrimination from situations in which the different prices reflect differences in quality. Nevertheless, there may be situations in which large producers (especially large service producers in fields such as transportation, education or health) are able to make the distinction and provide the necessary information. If there is doubt as to whether the price differences, as they have always been assumed to do so in the past.

# 5. The measurement of changes in quality over time

- 48.7618.79 Goods and services and the conditions under which they are marketed are continually changing over time, with some goods or services disappearing from the market and new qualities or new goods or services replacing them. National accountants use disaggregated price indices to deflate changes in consumption, production and investment values as the principle means of determining volume changes in such aggregates. Deficiencies in price indices carry over to estimates of volume changes. For example, estimates of price indices for computers that do not fully incorporate the increases in quality over time will overstate price changes and understate volume changes. National accountants need to be aware of the extent and nature of methods used by price compilers to take account of such quality changes, if they are to use them properly as deflators. This in turn requires that price compilers keep explanatory notes on such methods used, a policy advocated by chapter 7 of the CP1 manual and chapter 8 of the PPI manual.
- 18.7718.80 There are, of course, costs associated with implementing quality adjustment procedures tailored to the specific product groups. What is important for national accountants and price index compilers to appreciate is that quality change is an increasing feature of product markets. The default procedures of dealing with quality change, specifically by treating all replacements as comparable, or dropping varieties from the sample if missing, implicitly incorporate valuations of quality differences. Such valuations are unlikely to be appropriate and improvements can and should be made.
- 18.7818.81 An unfortunate common procedure to deal with missing values is to carry forward the price from the previous period into the current period. This may well bias the index and is strongly discouraged.
- 18.7918.82 A brief overview of some of the more common techniques follows. More extensive discussion can be found in all the three price manuals, those for CPI, PPI and XMPI. The techniques can be divided into those that are direct or explicit methods and those that are indirect or implicit.

# **Direct methods**

18.8018.83 In principle, the price relatives that enter into the calculation of inter-temporal price indices should measure pure price changes by comparing the prices of a representative sample of identical goods and services in different time periods. This is called the matched-models method. Price index compilers maintain detailed product descriptions of the items being priced in successive periods to ensure proper matching. When a model is missing because it is obsolete, a problem of quality adjustment arises. A number of methods can be used to take account of the quality change in order to continue the series.

- 18.8118.84 One possibility is to use the estimated relative costs of production as the basis for estimates of their relative prices and hence their relative qualities. It may often be feasible for producers to provide such estimates. If, however, the new quality feature was available as an option in the previous period, but now is a standard feature, the estimate of the valuation of the quality change may be based on the (relative) price of this option.
- 18.8218.85 An extension of the costs of production approach is known as model pricing. It is often applied to products made to order. A particular case in point is measuring building costs. The characteristics of buildings and other structures are so variable that it may be almost impossible to find identical buildings and structures being produced in successive periods of time. In these circumstances, a small number of hypothetical and relatively simple standard buildings and structures may be specified and their prices estimated in each of the periods. The specifications of these standard buildings or structures are chosen on the advice of construction experts who are also asked to estimate what their prices would be in each of the periods. Model pricing for services is described in Methodological Guide for Developing Producer Price Indices for Services. (Eurostat and the Organisation for Economic Co-operation and Development, 2005)

## Hedonics

- 18.8318.86 A more general and powerful method of dealing with changes in quality is to make use of estimates from hedonic regression equations. Hedonic regression equations relate the observed market prices of different models to certain-measurable price-determining characteristics. Provided sufficiently many differentiated models are on sale at the same time, the estimated regression equation can be used to determine by how much prices vary in relation to each of the characteristics or to predict the prices of models with different mixes of characteristics that are not actually on sale in the period in question.
- 18.8418.87 Hedonic regression equations have been estimated for high technology goods such as computers and electronic goods and for services such as air transportation. The technique has also been used for housing by regressing house prices (or rents) on characteristics such as area of floor space, number of rooms or location. The method has been used not only for inter-temporal price measurements for goods but also for services in the index. The assumptions behind such imputations are less soundly based than those behind the more targeted imputation. In either case, items subject to quality change tend to be atypical and unrepresentative, so that assuming that their prices change at the same rate as for goods or services whose characteristics do not change is questionable.
- 18.85 The hedonic approach is most useful when the market does not directly reveal the price and quality characteristics, but they can be inferred from prices of many varieties with different characteristics. To implement the hedonic approach, one needs to compile a data set consisting of prices and characteristics for many varieties. A sufficiently large data set with substantial variability in the mix of characteristics allows the hedonic regression to produce estimates of the implicit prices of the characteristics. For example, extensive data on the prices and characteristics of varieties of consumer goods can often be collected from the websites of retailers with relative case.
- 18.8618.89 The hedonic regression is usually conducted using a semilogarithmic form. That is, the logarithm of the price of a variety in the sample is regressed against a standard set of characteristics given by

 $\frac{\ln p = \beta_0 + z_1 \beta_1 + z_2 \beta_2 + z_3 \beta_3 + \dots + z_n \beta_n + c}{\sin \alpha + \cos \alpha}$ where  $\varepsilon$  is an error term that is assumed to satisfy the standard set of assumptions used in regression analysis. For the semilogarithmic form, logarithms are taken only of the left-hand side variable (that is, *Price*). Each of the characteristics,  $z_i$ , enters the equation without taking logarithm (though it is possible for the analyst to take logarithms if it would provide a better fit). The semilogarithmic form allows the use of indicator variables (or dummy variables) that take a value of one if the variety has a feature and zero if it does not. **Commented [ED2]:** This subsection has been slightly expanded to provide a better introduction to this topic which is of growing importance. The main source of new material is *Consumer Price Index Manual: Concepts and Methods* (2020 edition), paras. 6.136-6.223. The coefficients,  $\beta$ , can be interpreted as the percentage or proportional change in the price associated with a one-unit change in the characteristic.

18.8718.90 There are two ways in which hedonic quality adjustments can be applied to the estimation of price indexes. The first way is described as "patching" and is a way of dealing with noncomparable product substitutions in the matched-model method. It involves making an explicit quality adjustment to the price of an old variety that has dropped out of a sample to make it comparable to the new variety that has replaced it. The second way is a more comprehensive process that is used for rapidly changing products that are experiencing substantial changes in quality within relatively short periods. That process, known as hedonic price indices, requires a sample to be drawn in each period and controls for quality differences in the hedonic regression. Hedonic price indices are discussed in the *Consumer Price Index Manual: Concepts and Methods*, 2020 edition, 6.136–6.223.

Table 18.1 Hedonic Regression Imputation of New Variety's Price

| Variety/<br>Period | t       | 1+1                 | t+ 2                     | t + 3         | 1+4           |
|--------------------|---------|---------------------|--------------------------|---------------|---------------|
| 1                  | $p_i^*$ | $p_{\lambda}^{r+1}$ | $p_{1}^{r+2}$            | $p_{i}^{i+3}$ | $p_i^{t+k}$   |
| m                  | $p'_m$  | $p_{m}^{r+1}$       | $p_{m}^{r+2}$            |               |               |
| n                  |         |                     | $\tilde{\rho}_{a}^{t+2}$ | $p_a^{r+2}$   | $p_{a}^{t+4}$ |

**18.8818.91** Consider the sample for a matched model index in Table 18.1 where variety *l* is available in all periods, the "old" variety *m* is only available in periods *t*, *t* + 1, and *t* + 2, and the replacement variety *n* is only available in periods t, t + 1, and t + 2, and the replacement variety *n* is only available in periods t + 3 and t + 4. Variety m's replacement n is noncomparable, so  $p_m^{t+2}$  cannot be directly compared with  $p_n^{t+3}$ . The hedonic *imputation* approach would predict the price of variety *n* in period t + 2 using a hedonic regression estimated in period t + 2 and the characteristics of the new variety *n* from period t + 3. Alternatively, if data are not available to support estimation of regression coefficients each period, an alternative approach would be the hedonic quality-adjustment method.

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 The compilers of price indices should consider the limitations and challenges of implementing the hedonic approach:

- a. The hedonic approach requires staff to possess sufficient expertise and understanding of regression methodology to interpret the results and diagnostic statistics of the models.
- b. The estimated coefficients require regular updating, which entails updating of the data sets used to prepare estimates and updating of the estimates themselves.
- c. The sample of prices and characteristics used for the hedonic adjustments need to be representative of markets during the period that the adjustments are applied.
- d. The functional form and choice of variables to include in the model need to be carefully considered.
- e. The resources required for gathering and maintaining the data for estimating the hedonic regressions should be considered.
- f. The staff resources required for devising the specification, estimation and validation of the hedonic model and its regular updating should be considered.

## **Indirect methods**

18.9018.93 When the two qualities are not produced and sold on the market at the same time it becomes necessary to resort to indirect methods of quantifying the change in quality between the old and new

qualities. In such cases it is necessary to estimate what would be the relative prices of the old and new models, or qualities, if they were produced and sold on the market at the same time and to use the estimated relative prices to determine measures of the relative qualities.

- 18.9118.94 When a model is missing a replacement of a comparable quality may be found and the price comparisons continued. If there is no comparable replacement, the price in the missing period may be imputed using the measured price changes of a product group expected to experience similar price changes. Dropping the product from the calculation is equivalent to an imputation that assumes the price change for the missing model would follow those of all goods and services in the index. The assumptions behind such imputations are less soundly based than those behind the more targeted imputation. In either case, items subject to quality change tend to be atypical and unrepresentative, so that assuming that their prices change at the same rate as for goods or services whose characteristics do not change is questionable.
- 18.9218.95 If the replacement model is not directly comparable in quality, then the price change of the new model may be readily linked to the price series of the old one if the two models are for sale in the market at the same time, in an overlap period. The implicit assumption is that the difference in prices at the time of the overlap link is a good valuation of the difference in quality, an assumption that will not be valid if the overlap period is at an unusual point in time in the model's life cycle, for example when it is about to become obsolete and discontinued or has just been introduced at an unusually high price to obtain temporary monopoly profits in a segmented market.

## Rapidly changing differentiated product markets

- 18.9318.96 Problems of adjusting price changes for changes in quality in product markets with a rapid turnover of differentiated varieties require special consideration. The matched model method breaks down. Models of like quality can only be compared over relatively short periods and are not representative of the overall market. The summation in index number formulae such as the Laspeyres price index in equation (1) is misleading since in period the n items produced or consumed may be quite different from those on the market in period 0.
- 18.9418.97 Price index number compilers use a short-run formulation to ameliorate the difficulties of comparing the prices of like with like when there is a rapid turnover in differentiated goods and services. A Laspeyres price index, for example, comparing prices in period 0 and t, is given as:

$$L_{P} = \frac{\sum_{l=1}^{n} p_{l}^{0} q_{l}^{0} \left( \frac{p_{l}^{t-1}}{p_{l}^{0}} \right) \left( \frac{p_{l}^{t}}{p_{l}^{t-1}} \right)}{\sum_{l=1}^{n} p_{l}^{0} q_{l}^{0}}$$
(17)

- 18.95\_18.98 If a new type of good, for example a digital camera, is introduced in period t-1 to replace a nondigital one, then the compiler has only to wait for the good to be on the market for two successive periods before it can be included in the index. This provides a mechanism for changing the representative items to include the new, higher quality, item within a product category that has an assigned weight. Additional weighting information may be required to augment the weighting given to cameras within the wider group. However, a chain formulation in which weights are regularly updated would be a better mechanism to achieve this.
- 18.99 While a chain index with a short-run formulation such as in equation (17) will ameliorate the measurement problem in markets with a rapid turnover of differentiated varieties, it cannot take account of the effect on the overall price change from period *t-1* to period t of the new variety introduced in period t and of the old model that was dropped in period *t-1*. Two successive price quotes are required to implement the formula in (17) and a chain index. Hedonic indices are a means of incorporating such affects. They can take a number of forms, but essentially the prices and values of price-determining quality characteristics, say the speed, RAM, etc. of different varieties of personal computers are collected in each period. A Paasche-type hedonic imputation (or characteristics) price index would be derived by first estimating a

hedonic regression of price on quality variables based on period t-I data and then using the estimated coefficients to impute for t-I the prices of the varieties available in period t, including those not available in t-I. Prices for period t characteristics valued at period t prices can be directly compared with the estimated period t-I valuation of period t characteristics to yield a Paasche-type price index. A Laspeyres-type hedonic index can be similarly defined using an estimated period t regression and constant period t-I characteristics set, as can a Fisher-type hedonic index as a geometric mean of the two. An alternative formulation is to pool the two sets of observations in period  $\theta$  and t and include a dummy variable in the hedonic regression equation to distinguish observations in one period from those in the other. The coefficient on the dummy variable would be an estimate of the price change between the two periods having controlled for the effect of quality changes.

#### **Further elaboration**

- 18.9718.100 A detailed account of all the methods referred to above is available in chapters <u>6 and 7 of the CPI manual and chapters</u> 7 and 8 of the PPI manual. These chapters include the use of imputations, overlap prices, comparable replacements, non-comparable replacements using estimates from production costs, option costs and hedonic regressions, as well as methods for markets with a rapid turnover of differentiated varieties including short-run relatives, chaining, product augmentation and hedonic indices.
- 18.9818.101 Further discussion of this topic can also be found in Handbook on Hedonic Indices and Quality Adjustments in Price Indexes: Special Application to Information Technology Products (Organisation for Economic Cooperation and Development, 2004).

## 6. Practical advantages of compiling chain indices

- 18.9918.102 It has been shown on theoretical grounds that long time series of volume and price indices are best derived by being chained. The question is how often in the time series should a link occur. It has been argued that annual chaining is generally best on theoretical grounds, but what of the practicalities? There are a number of matters to consider, including data requirements, computing requirements, human resource requirements, loss of additivity, revisions and informing users.
  - If annual current values and corresponding volume or price data are available, then annual chaining is possible. No other data are required.
  - b. The computing requirements of deriving annual chain indices are greater than those for fixed-weighted Laspeyres-type indices and should not be attempted without adequate, tailored software, though improvements in the computational capacity of software used for compilation have made this objection less important. The complexity of the software needed depends on the formula used and the method of linking. For instance, it is quite simple to develop software to derive annually enained Laspeyres type quarterly volume measures using the annual overlap method.
  - c. Experience has shown that if the benefits of chain volume measures, along with the loss of additivity, are carefully explained to users via documentation and seminars before their introduction, chain volume measures are generally accepted. Particular attention should be given to informing the key users, including economic journalists, well beforehand.
  - d. When volume estimates are rebased, say every five or ten years, <u>without chaining annually</u> then it is typically the case that the growth rates are revised. If price and volume relativities have been changing rapidly, then the changes in the growth rates can be dramatic. Such is usually the case for any aggregate in which computers have a significant share. With annual chaining history is only "rewritten" a little each year, not in one large jump every five or ten years. Not surprisingly, the sort of big revisions associated with chaining only every five or ten years can have a detrimental effect on user confidence in the national accounts, not least because users learn they can expect similar revisions in the future. Annual chaining not only measures changes better, it is likely to increase confidence in the resulting national accounts volume indices.

## C. Derivation of volume measures in the national accounts

# 1. Introduction

- 18.10018.103 This section is concerned with the application of the theory described in section B to the practice of deriving volume measures of parts of the SNA. The parts concerned are primarily the components of the goods and services account. Ideally this should be done within the context of supply and use tables, as explained below. Just as flows of capital formation can be expressed in volume terms, so can stocks of non-produced assets. It is not considered possible to separate all income flows into price and volume components but some limited measures of real income are possible, as also explained below.
- 18.10118.104 The ideal way of producing volume estimates of macroeconomic aggregates is to work at a very detailed level, deflating each component by a strictly appropriate price indices. There are cases, though, where this approach is not possible; either appropriate price indices do not exist, or there may be inconsistencies in the current value data or the price indices, that make the results of deflation questionable. In such cases, alternative approaches must be considered including the possibility of projecting (or extrapolating) forward estimates for earlier years or using alternative indicators of the volume growth in a particular case.
- 18.10218.105 Once a set of volume measures is available for a given period, it needs to be presented with data for other periods in time series form. This is when chaining should be introduced for data derived by deflation of individual components. As recommended in section B, this should ideally be done annually using price indices of the previous year but if this is not possible, chaining over a longer period should be adopted. Major changes in economic structure, such as the impact of rapid fluctuations in oil prices on an oil exporting economy indicate that using the same base year before and after the change is likely to give quite misleading indications of the evolution of the economy. Chaining becomes essential rather than just desirable in such cases.

## Terminology for volume estimates

- 18.10318.106 When time series are constructed by dividing the current values for each year at the most detailed level possible by fixed base year Laspeyres price indices, it is appropriate to describe the resulting series as being at the constant prices of the base year. (This is because as long as the work is done at a sufficiently detailed level, the result approximates using a Paasche price index.) However, when each year's value is deflated by a price index with a different base year, it is no longer strictly correct to describe the resulting time series in this way. More accurate terms are "chain volume series", "chain volume measure" or "chain volume index" if the series is expressed in index number form. If it is desirable to specify the reference year in the term, then "chain volume series in reference year [currency units]" may be used.
- 18.104<u>18.107</u> The use of the term "at constant prices" is also inappropriate for series that are linked less frequently than annually and to volume series based on the use of Fisher or Törnqvist formulae, whose price configurations are not constant over the duration of the series. For such series the terms "volume series" or "volume index" are appropriate to describe a series or index.
- 18.105<u>18.108</u> The change of terminology also reflects the loss of additivity of the resulting time series since only series expressed in the same set of prices throughout, for example by using Laspeyres indices, are additive.

# 2. Price deflation vs. quantity revaluation

- 18.106\_18.109 Volume and price indices can only be derived for variables that have price and quantity elements. All transactions involving the exchange of goods and services and the levels of stocks of non-financial assets have this characteristic but income flows and financial assets and liabilities do not. Some balancing items have the characteristic but others do not and so they need to be considered individually.
- 18.107<u>18.110</u> While both volume and price measures are of major importance in the national accounts, the principal focus of users is on the growth rates of volume measures, rather than prices. The compilation of the national accounts in volume and current value terms reflects this priority, with the price aggregates being derived implicitly, by dividing the current values by the corresponding volumes.
- 18.10818.111 When independent, reliable and comprehensive data are available at current values it is generally

not necessary to construct volume measures by aggregating quantity relatives. In most cases it is preferable and more practicable to use price indices to deflate current value data. Even for cases like electricity where the volume measure seems to be easily available, a direct volume measure is inappropriate because of the treatment of prices applying in different markets as explained in paragraphs <u>islk.69</u> to <u>islk.75</u>. A change in the composition of the type of user leads to a change in the price and volume of electricity in the SNA even though the physical measure of electricity distributed may not have changed.

- 18.10918.112 As explained in section B, price information is easier to collect and aggregate than volume information because all prices are expressed in a common unit whereas volumes come in a multitude of units. Further, price relatives for a representative sample of goods and services can be used as typical for all goods and services in the same group in a way that volume measures would not be representative. More importantly, the volume changes associated with new and disappearing products can be properly reflected when current values are deflated by price indices as described in section B.
- 18.11018.113 For some products, for example closely specified agricultural products or minerals, it may be that the current value data have been constructed by multiplying a volume measure by an appropriate price. These are instances when there is no aggregation problem across the group of products and adjustments for quality differences are more easily and more satisfactorily made to the volume measures directly. While some such products may be of significant value in some countries, it will be a small number of the total number of products that can best be treated in this way.
- 18.11118.114 To obtain a Laspeyres volume measure the appropriate price index used to deflate the current value is a Paasche index and vice versa. However, the available price indices are nearly always constructed using the Laspeyres or Lowe formulae, because construction of a Paasche price index has exactly the same data requirements as the direct derivation of a Laspeyres volume index and faces the same problems. If robust current value data and Laspeyres price indices are available at a sufficiently detailed level then Paasche volume indices, at the detailed level, can be aggregated using the Laspeyres formula to obtain an approximation of a true Laspeyres volume measure of the aggregate.
- 18.112 <u>18.115</u> A Fisher volume index can be obtained either by taking the geometric mean of Laspeyres and Paasche volume indices or by deflating an index of the current values by a Fisher price index.

## 3. Available price indices

- 18.11318.116 There are four major types of price index available to derive volume measures in the national accounts: consumer price indices (CPIs), producer price indices (PPIs), export price indices (XPIs) and import price indices (MPIs). CPIs are measures of purchasers' prices and PPIs are measures of basic prices. XPIs are measures of FOB prices; MPIs may measure FOB or CIF prices.
- 18.11418.117 There are two defining aspects of recording transactions: timing and valuation. It is therefore critical that the price indices and the current values they are used to deflate correspond in both these aspects, as well as scope. The four types of price indices are usually available monthly and so quarterly and annual deflators can be obtained for flow and stock variables by averaging the monthly indices appropriately to centre the average at the desired valuation point. For flow variables this is usually the mid-point of the period, while for stock variables it is usually, but not always, the end of the period. For flow variables, the average price of the period should reflect known variations within the period. This is particularly important when there is a strong seasonal pattern, large irregular movements in certain months or hyperinflation. When none of these factors is present, the average price will be close to the observed price at the middle of the time period. The fact that this is frequently the case does not imply that the midperiod price is always the conceptually correct one to take, however.

## 4. The supply and use tables as the basis for volume measures of GDP

18.11518.118 Chapter 14-15 describes the supply and use tables. It explains how the supply table itemizes the products each industry produces which are then identified in the use table where the allocation of each product between intermediate consumption and final demand is spelled out. Compiling supply and use tables at current values ensures consistency in the different measures of GDP. More powerfully, compiling supply

and use tables in volume terms ensures that both the volumes and prices in the SNA are consistent. In principle, tables at current values and in volume terms should be compiled at the same time in order to make the best use of all the information available to the compiler.

- 18.116\_18.119 It is often the case that not all the detailed data required for compiling supply and use tables are available each period and estimates have to be made to fill the empty cells. For example, detailed data for intermediate consumption by product by industry are often collected infrequently. It is generally better to make an initial assumption of a constant composition of intermediate inputs over time in volume terms than in current values. Furthermore, adjustments to the raw and estimated data can be greatly assisted by evaluating growth rates in prices and volumes from the previous or following period. For these reasons it is recommended that supply and use tables should be compiled at current values and in volume terms at the same time and balanced simultaneously.
- 18.11718.120 In order to derive a set of supply and use tables in volume terms that are additive, the appropriate way to proceed is first to express the table in the prices of the previous year, that is, as Laspeyres volume indices linking the previous year to the current year, referenced to the values in the previous year. In order to obtain annual chain Fisher volume measures, it also necessary to derive supply and use tables of the previous year in the prices of the current year. Such values are in effect backward-looking Laspeyres indices. Fisher volume indices can then be derived as the geometric mean of the Laspeyres and Paasche volume indices between two adjacent years.

## 5. Volume measures of the output estimate of GDP

## Market output

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- 18.118<u>18.121</u> In principle, PPIs can be compiled for all market output and then they can be used to deflate current values to obtain volume estimates.
- 18.11918.122 In practice, there are some products for which it is very difficult to derive price indices and special steps must be taken to derive the corresponding volume measures. A particular case is those of margin industries including financial services. Output of a margin industry is usually calculated as the margin rate times the value of a transaction. To determine a volume figure the base year rate is applied to the value of the transaction suitably deflated to base year values. As explained in section E.7 of this chapter, in the case of implicit financial services on loans and deposits, the reference rate and the rates of bank interest are used in conjunction with figures of loans and deposits deflated by the general price increase since the base year.
- 18.12018.123 In other cases where there is no suitable deflator to apply to a current value, volume indices may be derived by extrapolating the current values in the base period by suitable indicators.

# Non-market output of government and NPISHs

- 18.12118.124 The current value of the output of non-market goods and services produced by government units or NPISHs is estimated on the basis of the sum of costs incurred in their production, as explained in chapter 67. This output consists of individual goods and services delivered to households and collective services provided to the community as a whole. The fact that such output is valued on the basis of the value of inputs needed to produce them does not mean that it cannot be distinguished from the inputs used to produce it. In particular, the change in the volume of output can be different from the change in the volume of inputs. Changes in productivity may occur in all fields of production, including the production of non-market services.
- 18.12218.125 In practice, there are three possible methods of compiling volume estimates of the output of non-market goods and services. The first is to derive a pseudo output price index such that when it is compared to the aggregate input price index the difference reflects the productivity growth thought to be occurring in the production process. Pseudo output price indices can be derived in various ways, such as by adjusting the input price index according to the observed productivity growth of a related production process or by basing the growth of the pseudo output price index on the observed output price indices of similar products.

However, such data are rarely available for the goods and services produced by government and NPISHs.

- 18.12318.126 The second approach, the "output volume method," is recommended for individual services, in particular, health and education. It is based on the calculation of a volume indicator of output using adequately weighted measures of output of the various categories of non-market goods and services produced. These measures of output should fully reflect changes in both quantity and quality.
- 18.12418.127 The third approach, called the "input method", may be used for collective services such as defence for which the "output volume method" is hardly applicable because there are, in general, no adequate quality-adjusted quantity measures of output. The "input method" consists of measuring changes in output by changes in the weighted sum of volume measures of all the inputs. The latter should fully reflect both changes in quantity and quality. They are generally best derived by deflating the various input costs by corresponding constant-quality price indices, or when such price indices are unavailable, using volume indicators that reflect input volume change (for example, number of hours worked by employees).
- 18.12518.128 It is useful at this stage to define the terms input, activity, output and outcome. Taking health services as an example, input is defined as the labour input of medical and non-medical staff, the drugs, the electricity and other inputs purchased and the <u>depreciation</u>-of the equipment and buildings used. These resources are used in the activity of primary care and in hospital activities, such as a general practitioner making an examination, the carrying out of a heart operation and other activities designed to benefit the individual patient. The benefits to the patient constitute the output associated with these input activities. Finally there is the health outcome, which may depend on a number of factors apart from the output of health care, such as whether or not the person gives up smoking.
- The measurement of the volume of output of non-market individual services should avoid two 18.12618.129 pitfalls. The first of these is that it should not be restricted to reflect the inputs or the activity of the unit producing the services. Inputs are not an appropriate measure and while activities may be the only available indicator and hence have to be used, they too are an intermediate variable. What should be measured is the service rendered to the customer. The second risk is that if outcome is defined in terms of the welfare objectives of the non-market service (for example, changes in the quality of health for the measurement of the health service, or changes in the quality of education for the measurement of the education service) the change in the volume of the output of the non-market unit cannot be reflected by the change in the indicators of outcome. This is because indicators of outcome can be affected by other aspects that are not directly related to the activity of the non-market services. For example, in the case of health, it is well- known that there are many factors other than the output of the non-market health units, such as sanitation, housing, nutrition, education, consumption of tobacco, alcohol and drugs, pollution, whose collective impact on the health of the community may be far greater than that of the provision of health services. Similarly, the output of education services is quite different from the level of knowledge or skills possessed by members of the community. Education services consist principally of teaching provided by schools, colleges, universities to the pupils and students who consume such services. The level of knowledge or skills in the community depends in addition on other factors, such as the amount of study or effort made by consumers of education services and their attitudes and motivation.
- 18.12718.130 In the light of these observations, the "output volume method" is the recommended method for compiling indicators of volume change of non-market services. The method is based on quantity indicators, adequately quality- adjusted, weighted together using average cost weights. Two criteria should be respected to compile adequate indicators of volume change. In the first place, the quantities and costs used should reflect the full range of services for the functional area under review and cost weights should be updated regularly. If part of the costs of the functional area is not covered by the quantity indicator, it should not be assumed that the uncovered part follows the changes of the part that is covered. If no direct output volume method is applicable for this part, an input method should be used for it. Secondly, quantity indicators should be adjusted for quality change. For example, services should be sufficiently differentiated with the aim of arriving at categories that can be regarded as homogeneous. An aspect of quality change is then captured by changes in the proportions of different categories if the weights assigned to each category are frequently updated. In addition, the quantity indicator of each category can be augmented by an explicit quality adjustment factor. One way of identifying explicit quality adjustment factors is by reviewing the effects that the service has on measures of outcome. When feasible, direct volume measures should be preferred for individual non-market services as described in the Handbook on prices and volume measures in national

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accounts (Eurostat, 2016) or the handbook *Towards measuring the volume of health and education and* services (Organisation for Economic Co-operation and Development, 2009). Compilers should take account that quite some progress has been made to derive volume estimates of output, especially for education and health, that take account of changes in the quality as well as the quantity of the services provided.

- 18.12818.131 It is recommended these volume indicators be tested for a substantial period of time with the aid of experts in the domain prior to their incorporation in the national accounts. Expert advice is particularly relevant in the areas of health and education, which usually dominate the provision of individual services. Further, the consequences of the estimates including the implications for productivity measures should be fully assessed before adoption. Unless and until the results of such investigations are satisfactory, it might be advisable to use the second best method, the "input method".
- 18.12918.132 Measuring changes in the volume of collective services is generally more difficult than measuring the volume changes in individual services because the former are hard to define and to observe. One reason is that many collective services are preventative in nature, protecting households or other institutional units from acts of violence including acts of war, or protecting them from other hazards, such as road accidents, pollution, fire, theft or avoidable diseases are concepts that are difficult to translate into quantitative measures. This is an area in which further research is needed.
- 18.13018.133 When it is not possible to avoid using an input measure as a proxy for an output measure, the input measure should be a comprehensive one, it should not be confined to labour inputs but cover all inputs. In addition, explanatory information should accompany the national estimates that draw users' attention to the methods of measurement.

## Output for own final use

- 18.131 Output for own final use falls into two categories, goods produced and consumed by households and fixed assets produced for own use. Included in the above are changes in inventories of finished goods and work-in-progress.
- 18.132\_18.135 For most output for own final use the use of pseudo output price indices is an effective, low-cost option. For goods produced and consumed by households, CPIs are likely to be available for similar goods. (However, for agricultural output grown and consumed by households, the price index used should not include any margins or taxes not actually incurred.) Similarly, there are likely to be output price indices available for fixed assets such as equipment, buildings and structures produced for own use as capital formation. For some types of fixed asset produced on own account there may be no output price indices available for similar products and different strategies may need to be considered. This is discussed further in the section on gross fixed capital formation.

#### Intermediate consumption

- 18.13318.136 As noted earlier, the most robust way of estimating intermediate consumption in volume terms is within the framework of a supply and use table in volume terms where information on volume growth rates as well as price information may be used.
- 18.134<u>18.137</u> Countries that compile PPIs generally do so for outputs, though countries with developed statistical systems may also compile input PPIs. Such input PPIs are directly applicable to the deflation of intermediate consumption.
- 18.135<u>18.138</u> If input PPIs are not compiled, output PPIs, MPIs and, to a limited extent, CPIs may be used instead. Intermediate consumption is valued at purchasers' prices, while output PPIs are valued at basic prices. There is thus a margin between the valuation of goods used as intermediate consumption at purchasers' prices and output PPIs, which is accounted for by transportation costs (unless the producer provides these services without a separate invoice), possible insurance costs, wholesale and retail trade margins and taxes less subsidies on products. The size of this margin will depend on circumstances. Often trade margins on goods for intermediate consumption are much smaller than for final consumption and the taxes may be smaller under a VAT system. For services used as intermediate consumption, the difference

in valuation usually consists of only taxes less subsidies on products.

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18.13618.139 Chapter 14.15 describes how the intermediate consumption part of the use matrix can be partitioned to show the domestic inputs at basic prices, imports, margins and taxes separately. If this information is available, the quality of the resulting deflation exercise will be improved since it will not be necessary to use the assumption that import, tax and margin proportions apply uniformly across the elements of the rows of the use matrix.

## Gross domestic product and gross value added

- 18.13718.140 When gross domestic product (GDP) is derived by summing final domestic expenditures and exports and subtracting imports, or by subtracting intermediate consumption from output and adding taxes less subsidies on products, volume measures of GDP can be obtained provided that the volumes being aggregated are additive, (that is, are based on the Laspeyres formula).
- 18.13818.141 Central to the production measure of GDP is value added, the balancing item in the production account. The most common practice is to deflate the values of output and intermediate consumption independently, industry by industry, and then derive the difference as value added for each industry. (This is known as the double deflation method.) Different price indices are necessary for two reasons. The first is because the goods and services included in intermediate consumption for any industry are not the same as the output of that industry. The second reason is that intermediate inputs are always measured at purchasers' prices whereas output is measured at either basic prices or producers' prices.
- 18.13918.142 The gross value added of an establishment, enterprise, industry or sector is measured by the amount by which the value of the outputs produced by that establishment, enterprise, industry or sector exceeds the value of the intermediate inputs consumed. This may be written as:

 $\sum PQ - \sum pq$  (18a)

where the Q's refer to outputs, P's their basic prices, q's to intermediate inputs and p's their purchasers' prices. Value added in year t at prices of year t is given by:

 $\sum P^t Q^t - \sum p^t q^t \tag{18b}$ 

while value added in year t at the prices of the base year, 0, is given by:

 $\sum P^0 Q^t - \sum p^0 q^t \qquad (18c)$ 

This measure of value added is generally described as being obtained by "double deflation" as it can be obtained by deflating the current value of output by an appropriate (Paasche-type) price index and by similarly deflating the current value of intermediate consumption.

- 18.140\_18.143 While the double deflation method is theoretically sound, the resulting estimates are subject to the errors of measurement in the volume estimates of both output and intermediate consumption. This may be especially true if output PPIs are applied to inputs, many of which are imported. Because value added is the relatively small difference between two much larger figures, it is extremely sensitive to error. It is therefore advisable to compare the growth rates of output and volume measures of value added over recent years with the corresponding growth rates of output and intermediate inputs and, if possible, with volume estimates of inputs of labour and capital services to check for plausibility.
- 18.14118.144 Because of the possible problems in trying to estimate value added using the double deflation approach, it is also common to estimate the volume movements of value added directly using only one time series, that is a "single indicator" method instead of double deflation. One such single indicator method is to extrapolate value added in proportion to the volume changes in the corresponding levels of output.

18.14218.145 The choice to be made between the use of a single indicator method (which may yield biased

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results) or a double deflation method (which may yield volatile results) must be based on judgement. The same choice need not be made for all industry groups. Further, the single indicator method may be used for quarterly figures until the year is complete and better double deflation estimates are available.

- 18.143\_18.146 In certain non-market service industries, it may be necessary to estimate movements in the volume of value added on the basis of the estimated volume changes of the inputs into the industries. The inputs may be total inputs, labour inputs on their own or intermediate inputs on their own. For example, it is not uncommon to find the movement of the implicit volume of value added estimated by means of changes in remuneration of employees at constant wage rates, or even simply by changes in numbers employed, in both market and non-market service industries. (There is extensive work being carried out to improve these working assumptions by trying to measure the outputs of government-provided health and education more objectively.)
- 18.14418.147 Compilers of data may be forced to adopt such expedients, even when there is no good reason to assume that labour productivity remains unchanged in the short- or long-term. Sometimes, volume changes for intermediate inputs may be used, for example, short-term movements in value added in real terms for the construction industry may be estimated from changes in the volume of building materials consumed such as cement, bricks, timber, etc. The use of indicators of this kind may be the only way in which to estimate short-term movements in output or value added, but they are not acceptable over long time periods.
- 18.14518.148 There is also interest in trying to associate movements in value added, after price effects have been eliminated, with changes in labour and capital inputs. These measures of multifactor productivity are discussed in Section F.3 of this chapter.

## 6. Volume measures of the expenditure estimate of GDP

- 18.14618.149 The measure of GDP easiest to express in volume terms is that of expenditure. As long as appropriate price indices exist, the estimates of final consumption expenditure of households, general government and NPISH, capital formation, exports and imports can be deflated without much conceptual difficulty. It is desirable to work at as great a degree of detail as possible using the product detail available for each aggregate. Care must be taken, as explained in section B.5 of this chapter, to ensure that differences in quality are properly accounted for in the price deflators. This is especially important in the case of capital formation where many items such as computers are subject to rapid technological change and many items are customized, for example large construction projects or pieces of heavy machinery built to individual specifications.
- 18.14718.150 Each of the components of the expenditure estimate of GDP should be expressed in volume terms. The main approaches to deriving these estimates are described in turn below.

# Household final consumption expenditure

- 18.14818.151 Household consumption expenditure should be deflated at as detailed a degree as possible. In general this will involve making use of CPIs though care is needed to ensure that the coverage of the CPI being used matches the category of consumption expenditure being deflated. Even where detailed estimates of consumption expenditure are not compiled from household surveys and other primary sources, having an estimate of household consumption expenditure by type of product from a supply and use table for deflation will significantly improve the estimate of consumption expenditure in volume terms as compared with the single deflation of a total figure only.
- 18.14918.152 A major component where CPIs are unlikely to be available is the measure of the rental services of owner-occupied dwellings. Three alternative approaches are outlined in chapter 11 of the CPI manual, but only the use-based approach is recommended for measuring the consumption of housing services in the national accounts. This approach can take either a user-cost formulation that attempts to measure the changes in the cost to owner-occupiers of using the dwelling, or a rental-equivalence formulation based on how much owner-occupiers would have to pay to rent their dwellings. The latter method is more generally adopted for CPIs.

**Commented [ED4]:** This paragraph is an abbreviated version of para. 18.28 of 2008 SNA.

**Commented [ED5]:** This paragraph was moved from para. 18.25 of 2008 SNA.

## Final consumption expenditure by government and NPISHs

18.150 The final consumption expenditure of general government and NPISHs consists of their nonmarket output less any revenue from incidental sales plus the value of goods and services purchased from market producers for onwards transmission to individual households at prices that are not economically significant less any partial payments. (The derivation of this identity is discussed in chapter 910.)

18.15118.154 Each of these items should be expressed in volume terms separately. The problem of measuring non-market output in volume terms is discussed above. For goods and services transferred to households, the price indices used should be those paid for the goods less the proportion that households pay. If the proportion of the price paid by government (or NPISHs) alters from one year to another, this is seen as a volume change in expenditure on the part of both general government (or NPISHs) and households.

 18.152
 Price indices for services are more difficult to compile than for goods and this is especially so for non-market services. Because the current values of non-market services are usually determined as the sum of costs, the obvious approach is to deflate each of these (including calculating remuneration of employees at constant remuneration rates). However, this does not allow for any change in the quality of services provided and in particular for the impact of any productivity changes that may have been achieved. When feasible, direct volume measures should be preferred for individual non-market services as described in *Handbook on prices and volume measures in national accounts* and *Towards measuring the volume of health and education and services*.

## Gross fixed capital formation

18.153<u>18.156</u> The availability of appropriate price indices for gross fixed capital formation varies considerably between different types of asset.

- 18.15418.157 There are often CPIs-house price indices for new dwellings and PPIs for new buildings and structures. The costs of ownership transfer should be deflated separately. The current value and volume estimates are usually derived from separate estimates of the constituent parts, legal fees, transport and installation costs etc.
- 18.155 [18.158 For standard products used as capital formation, PPIs are likely to be available but much capital formation is specific to the purchaser and appropriate indices may have to be developed using the best information available.
- 18.15618.159 Price indices for equipment vary considerably in their growth rates. For example, price indices for computer equipment have fallen rapidly year after year while price indices for transport equipment have tended to increase. It is important in such cases that the different types of equipment are deflated separately using the matching price indices (or, equivalently, an appropriately weighted Paasche price index is used to deflate the aggregate).

18.15718.160 Intellectual property products are generally not well covered by available price indices. There are several reasons for this. One is that many intellectual products are produced for own use and there may be no observed market prices. Another is that intellectual property products are very heterogeneous. However, these are not insurmountable difficulties and there are strategies for addressing them. As examples, the two major items in this category, software and databases and research and experimental development, are considered. Techniques for deriving volume measures of software and databases are described in section E of this chapter, with additional guidance on measuring the prices and volumes of software and data provided in section E of chapter 22. For research and experimental development (R&D), although it is often undertaken on own account, given its heterogeneous nature the choice for deflation lies between deriving pseudo output price indices and using input price indices.

Research and experimental development (R&D) is another activity that is often undertaken on own account. However, given the heterogeneous nature of R&D, the choice for deflation lies between deriving pseudo output price indices and using input price indi Commented [ED6]: Paragraph based on para. 18.26 of 2008 SNA.

## **Changes in inventories**

- 18.15818.161 Although changes in inventories may be small relative to other components of GDP, the fact that their relative size might change quite significantly from one period to the next means that they can make a significant contribution to changes in the size of GDP particularly in the quarterly national accounts. For this reason, the calculation of changes in inventories in volume terms is particularly important. However, it is also a challenging task. As noted in paragraph 15.62, 18.62, because changes in inventories can take positive, negative or zero values, a chain index should not be derived directly. Chain volume estimates of changes in inventories should be derived by first deriving chain volume estimates of the opening and closing stocks of inventories and then differencing them.
- 18.15918.162 Volume estimation should be undertaken at a detailed level for different types of inventories, (work-in-progress, finished goods, materials and supplies, goods for resale). Deflation of stocks of inventories must be related to the composition of those inventories in terms of products rather than to the industry holding those inventories. PPIs, MPIs, CPIs and labour cost indices are all commonly used in deriving deflators, with adjustments to the appropriate valuation basis. It is important to understand how enterprises value their inventories as this can provide information on not only the type of products but also the average length of time over which goods are kept in inventories.
- 18.160\_18.163 When goods are sent abroad for processing without a change of ownership, it must be remembered that some inventories may be held outside the national territory but national prices should be applied to them to derive their corresponding volumes.

#### Acquisition less disposal of valuables

18.16118.164 National statistical offices generally do not compile specific price indices for valuables. The major constituents should be deflated using the most suitable price indices available.

#### **Exports and imports**

1

- 18.162 Exports and imports consist of both goods and services. For both exports and imports, goods and services are expressed in volume terms using quite different deflators because of the very different sources available for goods and services. Improvements have been made to price indices for external trade in services that have led to improved data in this area.
- 18.16318.166 The valuation of imports and exports of goods is discussed in chapter 1415. In principle, they should be valued when change of ownership between a resident unit and a non-resident owner takes place and include or exclude transportation costs according to whether the supplier does not or does include transportation to the purchaser in the price charged. In practice, however, many countries are dependent for data on imports and exports of goods on customs declarations that value imports on a CIF basis but exports on a FOB basis. This assumes that change of ownership always takes place at the border of the exporting country. For balance of payments purposes, imports of goods should be converted to a FOB basis also but this is usually done at an aggregate level and may only be disaggregated in the supply and use context if at all.
- 18.16418.167 \_\_\_\_\_Given the existence of detailed XPI and MPI for goods, it should be a simple matter to deflate the current value estimates of exports and imports of goods at as detailed a level as practical in order to approximate the use of Laspeyres volume or Paasche price indices. In order to compile detailed volume estimates of imports of goods in the supply and use tables either the CIF estimates should be put onto a FOB basis or the MPIs need to be adjusted to a CIF basis. The usual working assumption is that CIF and FOB approximate purchasers' and basic prices respectively but as explained in chapter 1415, the adequacy of the approximation depends on circumstances surrounding transport margins.
- 18.165\_18.168 \_\_\_\_XPIs and MPIs are compiled by three general methods the nature of which is largely dependent on the source data used. The first and predominant method, at least in terms of the number of countries using it, is unit value indices compiled from detailed import and export merchandise trade data derived from administrative customs documents. As pointed out in section B, unit value indices are not price indices since

their changes may be due to price and (compositional) quantity changes. However, they are used by many countries as surrogates for price indices. The second method is to compile price indices using data from surveyed establishments on the prices of representative items exported and imported. The surveyed prices will be of items that are defined according to detailed specifications so that the change in price of the same item specification can be measured over time. The third method is a hybrid approach that involves compiling establishment survey-based price indices for some product groups and customs-based unit value indices for others.

- 18.16618.169 The case for unit value indices derived from merchandise trade figures is based on the relatively low cost of such data. Their use as deflators requires some caution as they have been shown to be subject to bias when compared with price indices. The bias in unit value indices is mainly due to changes in the mix of the heterogeneous items recorded in customs documents, but also to the often poor quality of recorded data on quantities. The former is particularly important in modern product markets given the increasing differentiation of products. Unit value indices may suffer further in recent times due to an increasing lack of comprehensiveness of the source data with increasing proportions of trade being in services and by ecommerce and hence not covered by merchandise trade data. Further, countries in customs and monetary unions are unlikely to have intra-union trade data as a by-product of customs documentation. Finally, some trade may not be covered by customs controls, such as electricity, gas and water, or be of "unique" goods, such as ships and large machinery, with profound measurement problems for unit values.
- 18.167<u>18.170</u> As noted above, current data sources for price indices for international trade in services are less comprehensive than in other areas. If MPIs and XPIs are available for exports and imports of services they can be readily used to derive the required volume estimates. If they are not, volume estimates of exports of services can be mostly derived using an assortment of PPIs and CPIs. For example, volume estimates of freight transport services could be derived using PPIs according to the form of transport, while volume estimates of accommodation services could be derived using the appropriate CPIs. If MPIs are not available for imports of services then price indices of the countries exporting the services, adjusted for changes in the exchange rate, may have to be used.
- 18.168<u>18.171</u> It must be remembered that if imports of goods are valued including transport services, then these transport services should be excluded from total imports of services.

# 7. Volumes and prices for stocks of fixed assets and <del>consumption of fixed enpitaldepreciation</del>

18.16918.172 Derivation of Deriving volume estimates of depreciationstocks requires estimates of capital stock excluding the effects of price changes. The levels of capital stock are typically derived by cumulating capital formation in successive periods and deducting the amount that has been exhausted. It clearly makes no sense to aggregate estimates of capital formation at the prices actually paid since the effect of rising prices (even prices rising only moderately) will be to overstate the amount of "new" capital relative to "old".

- 18.17018.173 The preferred technique is to estimate all capital still in stock at the price of a single year and then revalue this to the price prevailing when the balance sheet is to be drawn up, typically the first and last day of the accounting period. This should be done at the most detailed level practicable. More on this can also be found in chapter 17.
- 18.174 Consider first a single type of fixed asset. The stock of this type of asset consists of a number of items, typically of different vintages, that are valued and aggregated with a consistent set of prices. "Consistent" is to be understood here meaning the prices relate to the same period or point in time and being based on the same price concept, such as purchasers' prices. Measuring stocks at historical prices, that is, by adding up quantities that have been valued with prices of different periods is therefore an inconsistent valuation. It is sometimes found in enterprise accounts but does not constitute an economically meaningful measure in the context of the SNA.
- 18.172<u>18.175</u> The price vector used to value the quantities of <u>fixed</u> assets has to refer to a point in time (beginning or end of period) when the values of stocks are compiled for the opening or closing balance sheets. For other purposes, quantities of assets may be valued with a price vector that refers to the average of an accounting period. For example, measures of <u>depreciation</u> may be derived by subtracting the closing stock of assets

**Commented [ED7]:** These two paragraphs are based on paras. 18.31-18.32 of 2008 SNA.

from the opening stock plus gross capital formation as long as average-period prices are used for each component in order to eliminate holding gains and losses (and assuming no other volume changes in assets).

- 18.173\_18.176 The process by which many capital stock measures are constructed is the perpetual inventory method (PIM). For a given type of fixed asset, time series of gross fixed capital formation are deflated by means of the purchasers' price index of the same asset type, so that the quantities of assets are expressed in volume terms of a particular reference period. These time series in volume terms are then aggregated to yield a stock measure, where account is taken of retirement, efficiency losses or depreciation, depending on the nature of the stock measure constructed. The resulting stock measure is thus expressed in volume terms of the reference period chosen. This reference period may be the current period and stock measures valued in this way have often been labelled "current price capital stocks". However, this is not entirely accurate; as the description of the PIM showed, deflation is needed to arrive at these measures. Thus, they constitute a special case of a constant price valuation, namely valuation at the price vector of the current period.
- 18.174<u>18.177</u> Even when the PIM is not applied, for example in the case of direct surveys of assets, the valuation of different vintages of a particular asset should not use book values that reflect historical prices. Consistent valuation requires that older vintages are valued by the prices of assets of specified ages at the point in time to which the survey refers.
- 18.175<u>18.178</u> The next step is to aggregate the movements in capital stocks of individual asset types in volume terms. The use of linked or chain indices, as discussed earlier, is appropriate when building up a series that extends to the distant past since the current period price configuration will not remain representative.
- <u>48.176</u><u>18.179</u> Further details on the PIM, on the different types of capital stocks and their measurement are provided in chapter <u>17</u> and in Measuring Capital.

## 8. Volume measures for stocks of non-produced natural resources and depletion

- 18.17718.180 For natural resources, estimates of the physical stocks of particular types of assets may be available, whereas observed market prices may not be available. As discussed in chapters 11 and 14, in this situation the net present value of future benefits may be used to estimate the values in monetary terms to be recorded in the SNA balance sheets. For a single, homogeneous natural resource, the volume estimates will be proportional to the physical stocks, but for aggregating different types of natural resources, index numbers are used to derive volume estimates.
- 18.17818.181 Depletion of non-produced natural resources reflects the decline in the quantity of a stock that is not offset by regeneration of the stock. In physical terms, depletion is the decrease in the quantity or value of the stock of a non-produced natural resource over an accounting period that is due to extraction of the natural resource by economic units occurring at a level greater than that of regeneration. In monetary terms, it corresponds with the decline in future income, due to extraction, that can be earned from a resource, the value of which is based on the physical flows of depletion using the price of the natural resource in situ. For measuring depletion in volume terms, the valuation of the physical flows of depletion uses the price of the natural resource in situ in effect in the reference period. If price indices need to be calculated, they can be derived as the ratio of the value expressed in current prices to the volume measure.
- 18.182 The change in volume of the stock during any period of any individual non-produced natural resource-asset can be decomposed into the change in volume due to depletion, the change in volume due to capital formation (in the case of biological resources), and the change in volume due to other changes in assets (e.g., new additions to the stocks). The change in value of the stock in monetary terms is decomposed into depletion, other changes in assets, and revaluation. The depletion of non-produced natural resources in monetary terms is the change in physical stocks due to depletion multiplied by an average price in situ (i.e., the discounted unit resource rent) during the accounting period. The other changes in assets is the change in physical stocks due to other changes in assets times an average price in situ during the accounting period. The revaluation is the change in the price in situ multiplied by the average stock during the accounting period, though in practice it may be derived as a residual.
- 18.17918.183 For non-cultivated biological resources yielding once-only products, similar methodologies can be applied, albeit that the resource can also regenerate, thus giving rise to negative depletion. In the case of

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cultivated natural resources yielding once-only products, the decrease in regenerative potential is recorded as depreciation, while an increase is recorded as fixed capital formation. For cultivated biological resources yielding repeat products, monetary values and volume estimates are typically compiled using the PIM methods as explained in the previous subsection, where the aggregation of volume estimates for individual asset types uses chain indices.

# 9. Components of value added

18.180\_18.184 The price and volume measures considered up to this point relate mainly to flows of goods and services produced as outputs from processes of production. However, it is possible to decompose some other flows directly into their own price and volume components.

## Compensation of employeesRemuneration of employees

18.18118.185 The quantity unit for remuneration of employees may be considered to be an hour's work of a given type and level of skill (see paragraphs 16.70 to 16.82 for more details). As with goods and services, different qualities of work must be recognized and quantity relatives calculated for each separate type of work. The price associated with each type of work is the compensation paid per hour which may vary considerably between different types of work. A volume measure of work done may be calculated as an average of the quantity relatives for different kinds of work weighted by the relative values of remuneration of employees in the previous year or a fixed base year. Alternatively, a "price" index may be calculated for work by calculating a weighted average of the proportionate changes in hourly rates of compensation for different types of work, again using relative remuneration of employees as weights. If a Laspeyres-type volume measure is calculated infiretly by deflating the remuneration of employees at current values by an index of hourly rates of compensation, the latter should be a Paasche-type index.

## Taxes and subsidies on products

18.18218.186 Taxes on products are of two kinds, specific taxes linked to the volume of the product and ad valorem taxes levied on the value of the product. A measure of the tax volume of the former can be derived by applying the base year rate of the specific taxes to suitably deflated current value figures of the items bearing the specific tax and for the latter by applying the base year ad valorem rates to current values of items subject to ad valorem taxes deflated by appropriate prices. It is possible to derive a ratio of the tax data in current values and in volume terms but it is difficult to interpret this as a price index since it reflects changing tax rates and changing composition of the purchases of items subject to tax. The calculation for subsidies is carried out in an analogous manner.

18.18318.187 There is more discussion on this in paragraphs 14.148 to 14.152.

#### Net operating surplus and net mixed income

- 18.184\_18.188 When GDP is determined as the difference between output and intermediate consumption plus taxes less subsidies on production, gross value added is derived as an accounting residual. This is so in both current values and volume terms. In order for there to be an identity between different estimates of GDP in volume terms, it is not possible to give a price and volume dimension to gross value added. Rather the residual item is described as being "in real terms". If volume estimates of depreciation and depletion and remuneration of employees are available, net operating surplus and net mixed income can be derived but only in real terms and without a volume and price dimension. Thus it is not possible to derive an independent measure of GDP from the income approach since one item is always derived residually.
- 18.18518.189 The limit to a set of integrated price and volume measures within the accounting framework of the SNA is effectively reached with net operating surplus. It is conceptually impossible to factor all the flows in the income accounts of the SNA, including current transfers, into their own price and volume components. However, any income flow can be deflated by a price index for a numeraire set of goods and services to

Formatted: Font: (Default) +Headings CS (Times New Roman), 10 pt, Font color: Auto, Complex Script Font: +Headings CS (Times New Roman), 10 pt, Don't snap to grid, Not Highlight measure the increase or decrease of the purchasing power of the income over the numeraire but this is quite different from decomposing a flow into its own price and volume components. A particular instance where this is common is in the calculation of the terms of trade effect on real income as described in section D.

## 10. Quarterly and annual estimates

18.18618.190 In principle, the same methods used to derive annual volume estimates should be used to derive quarterly volume estimates. Guidelines on data sources and methods for compiling price and volume quarterly estimates are given in chapters 3 and 8 of the Quarterly National Accounts Manual. The main considerations are those described in paragraphs 18.45 to 18.50 In practice, annual data are generally more comprehensive and accurate than quarterly data. Although there are important exceptions, such as exports and imports of goods, the overall situation is one of a much richer and more accurate, albeit less timely, set of annual data than quarterly data. For this reason, a sound approach is to compile balanced annual supply and use tables expressed in current values and in the prices of the previous year and to derive quarterly estimates that are consistent with them. This approach lends itself to the compilation of annually chained quarterly Laspeyres volume measures, although it can be adapted to the compilation of annually chained quarterly Fisher measures, too.

#### 11. Supply and use tables in volume terms

- 18.18718.191 The rows of a use table show the way in which the total supply of a product is used for intermediate consumption, final consumption, capital formation and exports. This identity must hold in value terms. If the product in question is one where there is an unambiguous measure of quantity, the identity must also hold in volume terms. If the volume figures are derived by deflating the current values, the identity will only hold with certainty if each use category is deflated using a price index that is strictly appropriate to it.
- 18.18818.192 It is a good practice to compile supply and use tables in both current values and in volume terms at the same time so that the consistency of all the input data, including price indices, can be investigated together.

# 12. Summary recommendations

18.18918.193 The recommendations reached above on expressing national accounts in volume terms may be summarized as follows:

- a. Volume estimates of transactions in goods and services are best compiled in a supply and use framework, preferably in conjunction with, and at the same time as, the current value estimates. This implies working at as detailed a level of products as resources permit.
- b. In general, but not always, it is best to derive volume estimates by deflating the current value with an appropriate price index, rather than constructing the volume estimates directly. It is therefore very important to have a comprehensive suite of price indices available.
- c. The price indices used as deflators should match the values being deflated as closely as possible in terms of scope, valuation and timing.
- d. If it is not practical to derive estimates of value added in real terms from a supply and use framework and either the volume estimates of output and intermediate consumption are not robust or the latter are not available then satisfactory estimates can often be obtained using an indicator of output, at least in the short term. For quarterly data this is the preferred approach, albeit with the estimates benchmarked to annual data. An output indicator derived by deflation is generally preferred to one derived by quantity extrapolation.
- e. Estimates of output and value added in volume and real terms should only be derived using inputs as a last resort since they do not reflect any productivity change.
- f. The preferred measure of year-to-year movements of GDP volume is a Fisher volume index;

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changes over longer periods being obtained by chaining, that is, by cumulating the year-to-year movements.

- g. The preferred measure of year-to-year inflation for GDP and other aggregates is, therefore, a Fisher price index; price changes over long periods being obtained by chaining the year-to-year price movements, or implicitly by dividing the Fisher chain volume index into an index of the current value series.
- h. Chain indices that use Laspeyres volume indices to measure year-to-year movements in the volume of GDP and the associated implicit Paasche price indices to measure year-to-year inflation provide acceptable alternatives to Fisher indices.
- Chain indices for aggregates cannot be additively consistent with their components whichever formula is used, but this need not prevent time series of values being compiled by extrapolating base year values by the appropriate chain indices.
- j. A sound approach to deriving quarterly current value and volume estimates is to benchmark them to annual estimates compiled in a supply and use framework. This approach lends itself to the construction of annually chained quarterly volume measures using either the Fisher or Laspeyres formulae.

# D. Measures of real income for the total economy

## 1. The concept of real income

- 18.19018.194 Many flows in the SNA, such as cash transfers, do not have price and quantity dimensions of their own and cannot, therefore, be decomposed in the same way as flows related to goods and services. While such flows cannot be measured in volume terms they can nevertheless be measured "in real terms" by deflating their values with price indices in order to measure their real purchasing power over some selected basket of goods and services that serves as the numeraire.
- 18.19118.195 It is possible by use of a numeraire to deflate any income flow in the accounts and even a balancing item such as saving may be deflated by a price index in order to measure the purchasing power of the item in question over a designated numeraire set of goods and services. By comparing the deflated value of the income with the actual value of the income in the base year, it is possible to determine by how much the purchasing power of the income has increased or decreased. Income deflated in this way is generally described as "real income".
- <u>48.19218.196</u> Despite the terminology used, "real" incomes are artificial constructs that are dependent on two points of reference.
  - Real incomes are measured with reference to the price level in some selected reference year; they
    vary depending upon the choice of reference year.
  - Real incomes measure changes in purchasing power over some selected numeraire; they vary according to the choice of numeraire
- 18.193\_18.197 As there may often be no obvious or uncontroversial choice of numeraire there has always been some reluctance to show real incomes in national accounts on the grounds that the choice of numeraire should be left to the user of the statistics and not the compiler. However, when major changes in prices occur, it can be argued that compilers of statistics are under an obligation to present at least some measures of real income. Not all users of the accounts have the opportunity, inclination or expertise to calculate the real incomes which may be most suited to their needs. Moreover, there is a demand from many users for multipurpose measures of real income, at least at the level of the economy as a whole and the purpose of this section is to indicate how such measures may be compiled.

# 2. Trading gains and losses from changes in the terms of trade

18.194<u>18.198</u> In a closed economy without exports or imports, GDP is equal to the sum of final consumption plus capital formation. This sum is described as domestic final expenditures. GDP is also a measure of the income generated in the economy by production. Although income cannot be expressed as the product of prices and volumes, if GDP can be deflated, then in effect this must also be a measure of income in real terms. However, with the inclusion of imports and exports, GDP is no longer identical to domestic final expenditures. Even if imports and exports are equal in current values, they usually have different prices so there is an impact on real income measures of import and export prices. This is generally done by considering the terms of trade and calculating what is known as the trading gains and losses from changes in the terms of trade.

- 18.195<u>18.199</u> Further, the total real income that residents derive from domestic production depends also on the rate at which exports may be traded against imports from the rest of the world.
- 18.19618.200 The terms of trade are defined as the ratio of the price of exports to the price of imports. If the prices of a country's exports rise faster (or fall more slowly) than the prices of its imports (that is, if its terms of trade improve) fewer exports are needed to pay for a given volume of imports so that at a given level of domestic production goods and services can be reallocated from exports to consumption or capital formation. Thus, an improvement in the terms of trade makes it possible for an increased volume of goods and services to be purchased by residents out of the incomes generated by a given level of domestic production.
- 18.19718.201 Real gross domestic income (real GDI) measures the purchasing power of the total incomes generated by domestic production. It is a concept that exists in real terms only. When the terms of trade change there may be a significant divergence between the movements of GDP in volume terms and real GDI. The difference between the change in GDP in volume terms and real GDI is generally described as the "trading gain" (or loss) or, to turn this round, the trading gain or loss from changes in the terms of trade is the difference between real GDI and GDP in volume terms. The differences between movements in GDP in volume terms and real GDI and real GDI and if the commodity composition of the goods and services that make up imports and exports is very different, the scope for potential trading gains and losses may be large. This may happen, for example, when the exports of a country consist mainly of a small number of primary products, such as cocoa, sugar or oil, while its imports consist mainly of manufactured products. Trading gains or losses, T, are usually measured by the following expression:

$$T = \frac{X-M}{P} - \left\{\frac{X}{P_x} - \frac{M}{P_m}\right\}$$
(19)

where

X = exports at current values

- M = imports at current values
- $P_x$  = the price index for exports
- $P_m$  = the price index for imports
- P = a price index based on some selected numeraire.

 $P_x$ ,  $P_m$  and P all equal 1 in the base year. The term in brackets measures the trade balance calculated at the export and import prices of the reference year whereas the first term measures the actual current trade balance deflated by the numeraire price index. It is perfectly possible for one to have a different sign from the other.

 18.198
 18.202
 In addition to changes in the terms of tradel another factor that may affect real income measures is changes in the relative price of traded goods and services (measured as the average of import prices and export prices) with respect to the price of nontraded goods and services. This factor is known as the real exchange rate effect. The effects of changes in the real exchange rate depend on the position of the trade

**Commented [ED11]:** This new paragraph acknowledges a point raised in an article in Review of Income and Wealth (2022) that real income measures are affect by real exchange rate effects as well as terms of trade effects.

account. For given terms of trade, if imports exceed exports, then a depreciation of the domestic currency (that is, an increase in the price of traded goods and services relative to nontraded goods and services) results in a decline in real income. On the other hand, if exports exceed imports, then these effects go in the opposite direction.

- 18.19918.203 There is one important choice to be made in the measurement of trading gains or losses, the selection of the price index P with which to deflate the current trade balance. There is a large but inconclusive literature on this topic, but one point on which there is general agreement is that the choice of P can sometimes make a substantial difference to the results. Thus, the measurement of real GDI can sometimes be sensitive to the choice of P and this has prevented a consensus being reached on this issue.
- 18.20018.204 It is not necessary to try to summarize here all the various arguments in favour of one deflator rather than another, but it is useful to indicate the main alternatives that have been advocated for P. They can be grouped into three classes, as follows.
  - a. One possibility is to deflate the current balance, X-M, either by the import price index (which has been strongly advocated) or by the export price index, with some authorities arguing that the choice between *P<sub>m</sub>* and *P<sub>x</sub>* should depend on whether the current trade balance is negative or positive.
  - b. The second possibility is to deflate the current balance by an average of  $P_m$  and  $P_x$  various different kinds of averages have been suggested, simple arithmetic or harmonic averages, or more complex trade weighted averages.
  - c. The third possibility is to deflate the current balance by some general price index not derived from foreign trade; for example, the price index for gross domestic final expenditure, or the consumer price index. An advantage of a general price index not derived from foreign trade (such as the price index for gross domestic final expenditure) is that it incorporates real exchange rate gains and losses in addition to terms-of-trade gains and losses.
- 18.20118.205 The failure to agree on a single deflator reflects the fact that no one deflator is optimal in all circumstances. The choice of deflator may depend on factors such as whether the current balance of trade is in surplus or deficit, the size of imports and exports in relation to GDP, etc. On the other hand, there is general agreement that it is highly desirable and, for some countries vitally important, to calculate the trading gains and losses resulting from changes in the terms of trade. In order to resolve this deadlock it is recommended to proceed as follows:
  - a. Trading gains or losses, as defined above, should be treated as an integral part of the SNA;
  - b. The choice of appropriate deflator for the current trade balances should be left to the statistical authorities in a country, taking account of the particular circumstances of that country;
  - c. If the statistical authorities within a country are uncertain what is the most appropriate general deflator P to be used, some average of the import and export price indices should be used, the simplest and most transparent average being an unweighted arithmetic average of the import and export price indices. (This is referred to in the specialist literature on the subject as the Geary method.)
- 18.20218.206 These proposals are intended to ensure that the failure to agree on a common deflator does not prevent aggregate real income measures from being calculated. Some measure of the trading gain should always be calculated even if the same type of deflator is not employed by all countries. When there is uncertainty about the choice of deflator, an average of the import and the export price indices is likely to be suitable.

# 3. The interrelationship between volume measures of GDP and real income aggregates

48.203<u>18.207</u> The usual way to calculate real income figures is to start from real GDI and then follow the normal sequence of income aggregates, but with every intervening adjustment deflated to real terms. This is
#### illustrated as follows:

- a. Gross domestic product in volume terms;
- plus the trading gain or loss resulting from changes in the terms of trade;
- b. equals real gross domestic income;
- plus real earned incomes receivable from abroad;
- minus real earned incomes payable abroad;
- c. equals real gross national income;
- *plus* real current transfers receivable from abroad; *minus* real current transfers payable abroad;
- d. equals real gross national disposable income;
  - minus depreciation and depletion in volume terms;
- e. equals real net national disposable income.
- 18.204<u>18.208</u> The transition from (a) to (b) is the trading gain from changes in the terms of trade explained immediately above. The steps needed in order to move from (b) to (d) above involve the deflation of flows between resident and non- resident institutional units, namely, <u>earned incomes</u> and current transfers receivable from abroad and payable to abroad. There may be no automatic choice of price deflator, but it is recommended that the purchasing power of these flows should be expressed in terms of a broadly based numeraire, specifically the set of goods and services that make up gross domestic final expenditure. This price index should, of course, be defined consistently with the volume and price indices for GDP.
- 18.20518.209 Each step in the process should first be calculated for adjacent years in additive volume terms and longer series derived as chain indices.
- 18.20618.210 A possible alternative approach is to move from GDP in volume terms to net domestic final expenditure in volume terms and then make a single adjustment for the impact on purchasing power of the current external balance using the deflator for net final domestic expenditure to reduce the current external balance to real terms. The advantage of this alternative is a single numeraire, the set of goods and services making up net domestic final expenditures being used throughout. It may be easier, therefore, to grasp the significance of real net national disposable income as this deflator is explicit.
- 18.20718.211 However, the alternative framework measures the trading gain or loss by using the deflator for net domestic final expenditures as the general deflator P, for the trading gain or loss from changes in the terms of trade whereas it can be argued that P ought always to be based on flows which enter into foreign trade. On balance, therefore, the original framework presented above is to be preferred.

#### E. Volume and price measures for particular products or industries

- 18.20818.212 For most products and industries, the methods discussed in Section C of this chapter can be used to derive volume and price measures that are appropriate for national accounts. There are, however, several products that have somewhat unusual characteristics for which more specific guidance may be helpful. For a few particular products, this section provides a brief discussion of some of the challenges that arise for these products and explains some methods that some countries use to address these challenges. For further guidance on volume and price measurement for particular products or industries, please refer to handbooks on this topic, such as Eurostat, Handbook on Prices and Volume Measures in National Accounts, 2016 edition and the other references cited in this section.
- 1. Agricultural output

**Commented [ED12]:** New section - Issue X.22 -Recommends adding new section on measuring prices, volumes for specific products.

**Commented [ED13]:** New subsection based on section 5.3.1 of Eurostat, *Handbook on Prices and Volume Measures in National Accounts*, 2016 edition.

18.20918.213 As discussed in paragraphs 7.148-7.150, the output of agriculture, forestry, and fishing is complicated by the fact that the process of production may extend over many months, or even years. For many crops the growing season will span three quarters of the year, with the harvest taking place in the third quarter, and preparation of the fields taking place in the last quarter of the preceding year.

18.21018.214 To derive volume measures of crop output, it is recommended that for each type of crop, the compilers distribute forecasts of the value of harvest output across the quarters in proportion to the input costs in each quarter. An alternative method is to assume that output in those quarters with no production of finished goods is equivalent to input costs. The alternative method avoids the necessity of deriving forecasts of the value of harvest output but could distort the quarterly pattern of output by assuming that the net operating surplus or net mixed income is entirely attributable to the quarter when the crop is harvested.

18.21118.215 When calculating the volume of quarterly agricultural output, the main difficulty is to decide which price index to use. Theoretically, the price to be applied should be the price prevailing during the period of production, but in practice the prices prevailing during quarters out of the harvest season might be rather unsuitable due to the scarcity of the crop outside of the harvest season. In such circumstances, it may be better to substitute prices related to the basic price forecast for final harvest output in place of the price prevailing in other quarters. If the alternative method discussed in the previous paragraph is used, it is important that one should continue to use a forecast of the product price as a deflator, since deflation by a price index for inputs would only generate the volume of inputs.

#### 2. Large construction projects

- 18.21218.216 For construction, compilers are encouraged to avoid input cost methods and endeavor to develop output price indices that can be used for deflation. Compiling output price indices can be challenging, though, because each construction project tends to be unique in certain respects, so repricing identical models each period is challenging. For smaller projects, such as houses, small apartment buildings and small office buildings, it may be possible to collect information from construction enterprises on prices over time for a standardized "model" product, such as a typical family house with specified characteristics. For larger projects, such as large factories, highways, and reservoirs, the model pricing approach is not likely to be feasible and other methods must be considered.
- 18.21318.217 Specification pricing may be another possibility if it is possible to break down the attributes of the construction project into identifiable elements. This approach requires that the elements should be separately identifiable, their qualities and impact on the performance of the structure should be quantifiable, and prices for each element should be available in different periods. This approach has the advantage that it allows more flexibility than a standardized model, but in practice it may be difficult to identify the key elements of a project and to collect prices for each of those elements. A related method is the hedonic method, which also requires identifying characteristics that are thought to determine the price of the project, but uses regression methods rather than direct data collection to determine the price for each element.
- 18.21418.218 Although generally not the preferred method, the use of input prices may be acceptable when projects are so unique that it is not possible to use either specification pricing or the hedonic method to derive a price index.

#### 3. Digital goods and services

18.21518.219 As discussed in chapter 22, digital products include assets that exist only in digital form and services that are supplied over a computer network. Examples of digital assets include crypto assets, data and software. Examples of digital services include wholesale and retail e-commerce distribution services, priced and free services of online platforms, audio and video streaming, and digital financial and payment services such as mobile money services. Their production and consumption are enabled by ICT equipment, software, and data and databases along with ICT consumer durable goods, and mobile and fixed line digital communication services. As an example, this section considers the volume and price measurement of software and databases.

18.21618.220 Volume and price measurement challenges are common for products affected by digitalization

**Commented [ED14]:** New subsection based on sections 2.5 and 4.6 of Eurostat, *Handbook on Prices and Volume Measures in National Accounts*, 2016 edition.

**Commented [ED15]:** New section per DZ.1, DZ.3, DZ.8. These topics are covered in detail in chapter 22.

because innovation leads to rapid changes in the characteristics and sources of supply of digital products. New digital products regularly disrupt existing ones, new models or service contracts frequently embody quality improvements, digital intellectual property products and services with no physical units of measurement are growing in importance, and free products often appear or cease to be free.

18.21718.221 To deal with these rapid changes, the samples used to calculate the price indexes for digital products subject to frequent quality improvements need to be regularly refreshed to keep them representative of current consumption patterns. In addition, the appearance of new models and the exit of obsolete models must be handled in a way that reflects the value of the quality changes. In some cases, the prices of new characteristics may be observable from the price differences associated with various options that the seller offers to consumers. Another way of handling these quality changes is through explicit estimation of quality changes through hedonic methods.

18.218/18.222 These general issues and specific examples of volume and price measurement of digital products, including cloud computing and free products, are discussed in detail in section E of chapter 22. The example of software and databases is considered here.

- 18.21918.223 When deriving volume estimates of the capital formation of software and databases it is advisable to decompose software into three components: packaged (or off-the- shelf), custom-made and own account and to deflate them and databases separately. There are several reasons for doing this.
  - The three components of software and databases vary in the extent to which price data are available to compile price indices.
  - b. It is likely that their prices and volumes grow at different rates, particularly between packaged software, the other two software components and databases.
  - c. Despite the previous point, price indices for packaged software may be used to construct price indices for the other two software components if more appropriate price indices are unavailable.
  - d. Volume estimates of the items are useful indicators in their own right.
- 18.22018.224 Packaged software is purchased on a very large scale, generally via licences-to-use and there is an abundance of price data available. The challenge is to construct price indices free of the effects of changing specifications and any other aspects of quality change.
- 18.22118.225 Custom-made software is also sold on the market, but each custom-made software product is a one-off, which presents an obvious problem for compiling price indices. Although each custom-made product is different, different products may share common components, or a strategy used to develop one product may be able to be used for another. This not only suggests a possible way of compiling a price index, but also suggests means by which productivity gains could be made that would put downward pressure on prices. In sections B and E the use of model pricing is outlined for measuring price changes of custom-made buildings. A similar approach may be applied to custom-made software, or hedonic methods might be applied.
- 18.22218.226 Methods for compiling price indices for heterogeneous groups of products and products whose specifications are changing rapidly are described in the Handbook on Hedonic Indices and Quality Adjustments and in Producer Price Index Manual: Theory and Practice, (the International Labour Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, Economic Commission for Europe and the World Bank, 2004).
- 18.22318.227 A substantial proportion of software in gross fixed capital formation is undertaken on own account. Hence, it is not possible to derive a true output price index for such software. It is then a matter of choosing between a pseudo output price index and an input price index, obtained by weighting together price indices of the inputs. As already noted, input volume estimates used as a proxy for output do not reflect any productivity growth and so this is not recommended. In the absence of a better alternative, the most obvious option is to use the price index for custom- made software.
- 18.224<u>18.228</u> Databases are generally heterogeneous products with a small market since most databases are made for in-house purposes. Volume and price measures for data are discussed in section E of chapter 22. For

Formatted: Font: (Default) +Headings CS (Times New Roman), 10 pt, Font color: Auto, Complex Script Font: +Headings CS (Times New Roman), 10 pt, Don't snap to grid, Not Highlight own-account software, it is difficult, if not impossible, to develop a true output price index and once again the choice is between a pseudo output price index and an input price index though a pseudo output index may be difficult to envisage.

| 4.  | Passenger transport services and price discrimination  |  | Commented [ED16]: Discussion of price discrimination is    |
|---|--|--|--|
| 18.225  | 18.229 It is not unusual for two airline passengers sitting in adjacent seats to pay very different prices for     |  | based on section 2.1.4 of Eurostat, Handbook on prices and |
|   | the same transport services. In some cases, there may be differences in the bundle of services provided with       |  | volume measures in national accounts (2016 edition).       |
|   | the ticket (for example, one ticket may provide for a refund if the ticket needs to be cancelled), but in other    |  |  |
|   | cases there are no meaningful differences in products characteristics. Rather, the difference in price may be      |  |  |
|   | explained by price discrimination.   |  |  |
| 18.22618.230 As explained in paragraph 18.71 price discrimination occurs when groups of purchasers who differ |  |  |  |
| 10.220  | in their willingness to nay for a product are charged different prices by a seller who is able to segment the      |  |  |
|   | market and charge different prices based on those differences in willingness to pay. Price discrimination          |  |  |
|   | occurs more often in the provision of services than goods because goods can be retraded (and are thus              |  |  |
|   | subject to arbitrage), whereas services generally are not retraded. Other examples of services for which price     |  |  |
|   | discrimination may be common include electricity distribution, financial services, education and health.           |  |  |
| 18 227  | 18.231 With respect to price and volume measurement, there are two key issues. The first is whether the            |  |  |
| 10.227  | recess truly are homogenous or whether there are subtle differences in quality between items that annear to        |  |  |
|   | be identical (except for a difference in price). For example, an airline can charge more for economy class         |  |  |
|   | seats that offer more leg room than other economy class seats and that difference should be treated as a           |  |  |
|   | difference in quality rather than price. It could also charge a different price for a seat purchased immediately   |  |  |
|   | before a flight than one purchased several weeks in advance. The compiler of the price index should try to         |  |  |
|   | hold such subtle differences in characteristics constant when specifying the description of the ticket that is     |  |  |
|   | being priced. But when price discrimination leads to different prices being charged for two products with          |  |  |
|   | no differences in quality, the differences should be attributed to price rather than volume.                       |  |  |
| 10 220  | 19.222 One way to answe that differences in price due to price discrimination are not mixed in with                |  |  |
| 10.220  | volume would be to divide the outcomers in pince due to pince discrimination are not initized in while             |  |  |
|   | on a specific route the passengers may be grouned into first class, premium economy, and economy class             |  |  |
|   | For each group, the pushing is measured by the number of passengers taking the trip and the price is the           |  |  |
|   | average price paid by passengers within each group. This decomposition could then be applied to a                  |  |  |
|   | representative sample of flights travelling on various routes to obtain price and volume indices for air           |  |  |
|   | transport services.  |  |  |
|   |  |  |  |
|   |  |  |  |
| 5.  | Output of the central bank   |  | Commented [ED17]: New subsection reflecting issue note     |
| 18 220  | 18 233 As explained in chapter 7 central banks provide a variety of financial services, including monetary         |  | X.3 and Issues note on action point A.9 (AEG meeting July  |
| 10.22)  | noicy services services related to promoting financial stability services related to managing international        |  | 10–13, 2023).  |
|   | reserves and navment systems and services related to acting as banker to government. In general, these             |  |  |
|   | services are provided for free, or at prices which are not economically significant, for the benefit of society    |  |  |
|   | as a whole. These services of central banks are considered non-market output provided to the society as a          |  |  |
|   | whole (i.e., collective services), and total output is to be valued at the sum of costs. Unless an indicator of    |  |  |
|   | productivity is available (which is unlikely because the services of central banks generally cannot be             |  |  |
|   | observed), the most appropriate volume measure is the deflation of the inputs.                                     |  |  |
|   |  |  |  |
|   |  |  |  |
| 6.  | Implicit financial services on loans and deposits  |  | Commented [ED18]: New subsection based on issue note       |
| 18.230  | 18.234 As described in 7.179–7.188, implicit financial services on loans and deposits are implicit charges         |  | X.10; also draws on Eurostat, Handbook on prices and       |
| 10.250  | paid by depositors or borrowers to a financial institution such as a bank for the services associated with         |  | volume measures in national accounts (2016 edition).       |
|   | intermediation. These charges are indirect because they are derived from the interest rates associated with        |  |  |
|   | the loans and deposits in relation to a reference rate of interest and are not explicit fees charged for services. |  |  |
|   | Thus, traditional methods of deflation are not available for these services and alternative methods must be        |  |  |
|   | 1 nus, traditional methods of defiation are not available for these services and alternative methods must be       |  |  |

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used.

- 18.23118.235 Two main approaches have been used for volume and price measures of implicit financial services on loans and deposits. The *deflated stoicks approach* involves deflating the stocks of loans and deposits using a general price index and applying the previous year's (or base year) reference rates to arrive at borrower implicit financial services and depositor implicit financial services in volume terms. The *output indicators approach* focuses on indicators of specific services that <del>that</del> the financial institution provides to borrowers and depositors, such as debit and credit card transactions, automatic teller machine transactions, and cheque transactions, which serve as proxies for the volume of financial services provided by the financial institution.
- 18.23218.236 The output indicators approach is attemptingattempts to decompose the services provided by a financial institution such as a bank into the distinct activities that it undertakes on behalf of its customers. Advantages of this approach are that the indicators may directly reflect the provision of services that customers value and provide insight into the activities undertaken by the bank. In practice, this approach has also encountered several obstacles and disadvantages. Indicators may not be available for all the specific services provided by banks, and the omission of services that are poorly measured could bias the rate of growth of the overall volume measure. The approach requires that the various output indicators should be weighted, and because there is no observable price or revenue for these services, deriving appropriate weights can be a difficult and complex task. The data burden of compling the output indicators and their associated weights is likely to be high, and the indicators and weights may tend to become outdated in the face of technological changes and increased digitalization of financial services. In general, it may also be difficult to maintain such a measure and keep the weighting and list of indicators current in the face of rapid changes in the ways that financial services are provided and paid for.
- 18.23318.237 The more commonly used method is the deflated stocks approach, in which the stocks of deposits and loans are deflated using a general price index. Rather than decomposing the specific activities undertaken by banks, the deflated stocks approach takes the broader view that intermediation services are ultimately related to allowing the borrower or depositor to engage in deposit and loan transactions, either in the current period or in a future period. The stock of loans or deposits is related to the capacity to engage in transactions, and those transactions are best measured in volume terms using a general price index. In applying the deflated stocks approach, compilers should apply a general price index appropriate for the country and apply the previous year's reference rates to arrive at borrower implicit financial services and depositor implicit financial services in volume terms. Furthermore, because different kinds of loans or deposits have different margins between their interest rate and the reference rate, each type of loan or deposit should be deflated separately, and then the various types of loans and deposits should be aggregated using a price index formula (such as the Paasche price index or Fisher price index that have been discussed in this chapter). The general price index used for deflation should, if possible, exclude implicit financial services on both conceptual grounds (the transactions supported by loans and deposits do not include implicit financial services) and practical grounds (the inclusion of these services would create a circularity in the calculation of the overall index, which could be problematic). Stocks associated with exports of implicit financial services should be deflated using a general domestic price index, while for imports the appropriate country price indices should be used (along with exchange rate adjustments if the stocks are held in a different currency of that of the domestic economy).
- 18.23418.238 In view of its relative simplicity, the deflated stocks approach is generally preferred for calculating volume measures of implicit financial services on loans and deposits. Countries should select a general price index for deflation that is accurate and appropriate for the types of transactions that are most often supported by loans and deposits in the country. The output indicator approach could also be used to calculate volume measures of implicit financial services.

#### 7. Services of owner-occupied dwellings

18.235 18.239 As discussed in 7.126-7.128, households that own the dwelling they occupy are treated as owners of unincorporated enterprises that produce housing services consumed by those same households. When well-organized markets for rental housing exist, the output of own-account housing services can be valued using the prices of the same kinds of services sold on the market in line with the general valuation rules.

**Commented [ED19]:** New subsection based on section 4.12.2 of Eurostat, *Handbook on Prices and Volume Measures in National Accounts*, 2016 edition and paragraphs 11.87 to 11.102 of *Consumer Price Index Manual*, 2020 edition adopted for goods or services produced on own account. In other words, the output of the housing service produced by owner occupiers is valued at the estimated rental that a tenant would pay for the same accommodation, taking into account factors such as location, neighbourhood amenities, etc., as well as the size and quality of the dwelling itself. Due to the absence of an explicit price for these services, indirect approaches must be used to derive volume and price measures.

- 18.23618.240 The stratification approach is generally recommended by Eurostat's Handbook on Prices and Volume Measures in National Accounts, 2016 edition. In a benchmark year (or annually if the necessary data and resources are available), compilers match actual rents paid by those renting in particular strata to similar dwellings used by owner occupants in equivalent strata to derive their rental equivalente value. The benchmark estimate makes use of detailed data on the housing stock broken down between owner-occupied and rented property and by the attributes of these properties that influence the rent, such as floor area, number of rooms, number of bathrooms, etc. This method is known as the 'stratification method' because it is based on the stratification of dwelling attributes and rent. The approach can be seen as providing price and quantity data at a detailed level for the estimation of output for a particular year.
- 18.23718.241 Estimates for years other than the benchmark year are estimated by projecting forward the housing stock and rents with indicators that reflect the development of these variables over time. The indicators are chosen to reflect adequately the three components of change: the change in price, change in the quantity of the stock, and change in the quality of the stock.
- 18.23818.242 If the stratification method cannot be used, then price indices or volume indicators need to be constructed. The Consumer Price Index Manual, 2020 edition, paragraphs 11.87 to 11.102, discusses ways to estimate a price index for the services of owner-occupied dwellings that are broadly consistent with the concepts used in the SNA. The index can be calculated, for example, from a sample of rented housing units that are weighted to reflect the current composition of owner-occupied units. This approach requires that a country have a transparent rental market and reliable information on rents by type of accommodation, location and other rent-determining factors. In general, if the volume of the services of owner-occupied dwellings is to be calculated by deflation, care should be taken to ensure that the concepts and coverage in the deflator match the concepts and coverage used to measure the value of those services in the accounts.
- 18.23918.243 Whether the stratification method or the price index method is used, subsidized and controlled prices should not be used in calculating the owners' equivalent rental series, though they should be used in calculating the prices of rented units.
- 18.24018.244 Another consideration in deriving price and volume measures of the services of owner-occupied dwellings is the growing importance of owners subletting part or all of a dwelling to tourists or travelers. In particular, new digital marketplaces for subletting have made it easier to sublet a dwelling and have led to substantial growth in this activity. Traditional housing surveys may have considered this type of subletting to be too unimportant to measure, which may lead to omission or undercounting of these transactions. For the volume measure of the services of owner-occupied dwellings, if the value of the services is based on the rental equivalence of similar rented dwelling that is not sublet, the value of the subletting needs to be deducted from the rental equivalence of the owner-occupant's unit to avoid double counting the services of the unit (as explained in paragraphs 7.127 to 7.128).

#### 8. Education services

- 18.24118.245 In section C.5 of this chapter, the general principles for measuring volumes and prices of nonmarket output are explained. Here an example is provided of how the volume of output of non-market education services might be estimated in practice. The handbooks, Eurostat, Handbook on Prices and Volume Measures in National Accounts, 2016 edition and OECD, Towards Measuring the Volume Output of Education and Health Services: A Handbook, 2009, provide more detailed guidance on these services.
- 18.24218.246 For primary and secondary education, educational output can be measured based on the amount of teaching received by the students for each type of education. This can be measured as the number of student-hours, or if this measure is not available, the simple number of students or pupils can be used provided the hours of instruction remain broadly stable over time. For higher education, and especially for specialized schools, such as medical schools, there may be other aspects of training that are more resource intensive

**Commented [ED20]:** New subsection based on Eurostat, Handbook on Prices and Volume Measures, and OECD, Towards Measuring the Volume Output of Education and Health Services. and would not be captured by the hours of instruction. For those types of education, additional stratification and other indicators may need to be added.

#### 9. Health services

18.24318.247 As for education services, we refer to section C.5 of this chapter for an explanation of the general principles for measuring volumes and prices of non-market output. Here an example is provided of how the volume of output of non-market health services might be estimated in practice. The handbooks, Eurostat, Handbook on Prices and Volume Measures in National Accounts, 2016 edition and OECD, Towards Measuring the Volume Output of Education and Health Services: A Handbook, 2009, provide more detailed guidance on these services.

- 18.24418.248 Health services are characterized by substantial heterogeneity in the conditions that are being treated and in the types of treatment that are appropriate for each condition. Because the treatment of a condition may involve a bundle of services provided over a period of time, including medical services, laboratory services, and in some cases hospital services, it may not be possible in practice to capture the full treatment of the condition. For hospital services, data may be classified based on the international classification of diseases (ICD) or on diagnosis related groups (DRG), which are systems used to classify medical conditions into relatively homogeneous categories.
- 18.24518.249 For market output of hospital services, a PPI or CPI that is representative and controls for quality may provide a good deflator. For non-market output of hospital services, volume estimates may be calculated on the basis of direct output measures such as number of discharges by ICD or DRG category weighted by appropriate cost or revenue weights. These methods should be applied at a detailed level to avoid mixing different types of treatments. The most used alternatives are either a unit cost index or a direct volume index, depending on data availability.

## F. Estimating labour and multifactor productivity

#### 1. <u>Labour productivity</u>

- 18.24618.250 Volumes of output per hour worked (or per person employed) are described as measures of labour productivity. However, this is a somewhat unsophisticated measure because changes in this measure can reflect a number of factors other than just the number of hours of labour employed. In particular, increases in the amount of capital used can affect this ratio as can changes in the composition of the labour input over time. Volume measures of labour input are discussed in detail in section D of chapter 16, and the topics of labour, capital and multifactor productivity are discussed in detail in *Measuring Productivity*.
- 18.24718.251 Labour productivity shows the time profile of how productively labour is used to generate output in volume terms. Changes in labour productivity reflect the joint influence of changes in capital, intermediate inputs, as well as technical, organizational and efficiency change within and between enterprises, the influence of economies of scale, varying degrees of capacity utilization and measurement errors.
- 18.24818.252 Neither the number of employed persons nor full-time equivalent numbers on labour input are ideal measures for use in productivity studies. The series for total hours actually worked is preferred by many because it is a reasonable compromise between these cruder measures and data-intensive measures that adjust for differences in the qualifications, skill levels and composition of labour.
- 18.24918.253 Using total hours actually worked as the input measure for calculating labour productivity changes over time implicitly assumes that each hour worked is of the same quality. As discussed in paragraphs 16.95 to 16.97, it is possible to produce a quality-adjusted measure of the labour inputs that takes account of changes in the mix of workers over time by weighting together indicators of quality for workers with different levels of skill or education.
- 18.25018.254 Whichever labour measure is used in calculating productivity, it is very important to ensure that the coverage of the labour data is consistent with that of the national accounts. In other words, the labour inputs must be estimated within the same production boundary and using the same criteria for residence that are used in the national accounts. Typically, the topics that cause most difficulty are residence (particularly

**Commented [ED21]:** New subsection based on Eurostat, Handbook on Prices and Volume Measures, and OECD, Towards Measuring the Volume Output of Education and Health Services.

**Commented [ED22]:** New section that mostly draws from chapter 19, section E of the 2008 SNA, along with some material from pp. 14-18 of OECD, *Measuring Productivity*.

Formatted: Font: (Default) + Headings CS (Times New Roman), 10 pt, Font color: Auto, Complex Script Font: +Headings CS (Times New Roman), 10 pt, Don't snap to grid, Not Highlight with border workers), defence force and diplomatic personnel (who are commonly not covered by the labour force surveys used to provide the basic data) and obtaining details of unpaid hours (for example, unpaid overtime) or of some self employment (for example, contributing family workers).

- 18.25118.255 Analysts are often interested in measuring productivity on an industry basis as well as for the economy as a whole. Calculating industry employment and working time by industry adds an additional degree of difficulty to the estimation process. Among other advantages, using hours worked overcomes the problems involved in measuring employment by industry when a worker has two or more jobs, not in the same industry.
- 18.25218.256 Labour productivity, including industry productivity, and multifactor productivity (see below) are all valid measures of an economy's performance. From a practical viewpoint, it is important to ensure that the employment and hours worked underlying these sets of estimates are consistent with each other as well as with output measures when calculating the productivity estimates.

#### Data consistency

- 18.253 Examining the relative productivity performance of different industries is of interest to many analysts. In practice, the labour input estimates for the whole economy can be estimated either "bottom up" or "top down". In the former case, the totals for the economy as a whole will be completely consistent with the industry estimates because they are summed to derive the total labour estimates. However, in the case of a top-down approach, a range of different data sources may be used to obtain the disaggregation by industry. In such cases, it is important to ensure that the sum of the industry estimates is consistent with the national totals.
- 18.254/18.258 Classifying labour input by industry is not always straightforward. The main issue is to ensure that the employment estimates for each industry are as consistent as possible with the national accounts values and volumes so that the productivity estimates are reliable. One particular problem that arises is where staff are recruited via an external recruitment agency. Maintaining consistency with the industry output means that employment should be classified to the industry of the establishment that legally employs the workers. In practice, this will be the establishment that pays the employees wages and any associated social contributions, which will usually be the employment agency and so the employees will be classified to industry class 7491 *Labour recruitment and provision of personnel*. The output of this industry includes the revenue derived from the activity of hiring out staff to those establishments that need the staff; generally, those establishments will be in other industries. The establishments by the "using" establishments will be recorded as part of intermediate input for the using industry.
- 18.25518.259 Ideally, for productivity purposes both the output attributable to these staff and the hours they work would be recorded in the industry in which they are actually working rather than in the industry "Labour recruitment and provision of personnel". However, in practice, it is unlikely that the data can be collected to enable the output and hours worked to be classified this way. It may be useful for some purposes for the staff hired out by employment agencies to be allocated to the industries that actually use the staff. If such an allocation of labour input is performed, similar adjustments to intermediate consumption and value added of the relevant industries would also be required. However, any such allocation should be presented in a supplementary table and not in the main accounts.

#### 2. <u>Capital productivity</u>

- 18.25618.260 Measures of capital productivity, calculated by dividing the volume of output (or volume of value added) by a volume index of capital services provided, suffer from similar drawbacks to labour productivity since they do not capture the effects of the amount of labour employed and the efficiency and composition of the capital inputs.
- 18.25718.261 The capital productivity index shows the time profile of how productively capital is used to generate value added or output. Capital productivity reflects the joint influence of labour, intermediate inputs, technical change, efficiency change, economies of scale, capacity utilization and measurement

Formatted: Font: (Default) +Headings CS (Times New Roman), 10 pt, Font color: Auto, Complex Script Font: +Headings CS (Times New Roman), 10 pt, Don't snap to grid, Not Highlight errors. Like labour productivity, capital productivity measures can be based on output volume or valueadded volume.

18.25818.262 The index of capital services is related to the capital services for the total economy, as shown in chapter 17, table 17.11. Volumes of capital services for the individual asset types and industries need to be aggregated using a Laspeyres or Fisher index to form an index of capital services for the total economy.

#### 3. <u>Multifactor productivity</u>

- 18.25918.263 A measure that takes account of the contributions of both labour and capital to growth in output is multifactor productivity (MFP), which is sometimes referred to as total factor productivity (TFP). The advantage of using MFP as the measure of productivity is that it includes effects not included in the labour and capital inputs. This topic is discussed further in chapter 20 and in *Measuring Capital*.
- 18.26018.264 Capital-labour MFP is calculated as a volume index of value added divided by a volume index of combined labour and capital input. Capital-labour MFP indices show the time profile of how productively combined labour and capital inputs are used to generate value added. Conceptually, capital-labour productivity is not, in general, an accurate measure of technical change. It is, however, an indicator of an industry's capacity to contribute to economy-wide growth of income per unit of input. In practice, the measure reflects the combined effects of disembodied technical change, economies of scale, efficiency change, variations in capacity utilization and measurement errors.
- 18.26118.265 The productivity model can be extended to include other factors such as the energy and materials used in production. The abbreviation "KLEMS", standing for capital (K), labour (L), energy (E), materials (M) and purchased services (S), is often used for this extended productivity model. This can be extended to producing productivity estimates at the most detailed level of the supply and use tables. KLEMS MFP is calculated as a volume index of output divided by a volume index of combined inputs, including different types of labour, capital, energy, materials and services, each weighted with its share in total output. KLEMS MFP shows the time profile of how productively combined inputs are used to generate output. Conceptually, the KLEMS productivity measure captures disembodied technical change. In practice, it also reflects efficiency change, economies of scale, variations in capacity utilization and measurement errors.
- 48.26218.266 An example of such work can be found in the EU-KLEMS project, which can be found on the project site https://www.rug.nl/ggdc/productivity/eu-klems/.

#### G. International price and volume comparisons

#### 1. Introduction

- 18.263\_18.267 Users want to compare GDP and its components not only over time for a given country or countries in analyzing economic growth, for example, but also across countries for a given time period in analyzing relative economic size. A commonly used method of making such comparisons is to adjust national accounts values to a common currency using exchange rates, which has the advantage that the data are readily available and completely up to date. This is adequate if users need a ranking of a country's relative spending power on the world market. However, it is not adequate for comparisons of productivity and standards of living because it does not adjust for the differences in price levels between countries and thus does not give a measure of countries' relative sizes in the volume of goods and services they produce.
- 18.26418.268 Purchasing power parities (PPPs) are used in producing a reliable set of estimates of the levels of activity between countries, expressed in a common currency. A purchasing power parity (PPP) is defined as the number of units of B's currency that are needed in B to purchase the same quantity of individual good or service as one unit of A's currency will purchase in A. Typically, a PPP for a country is expressed in terms of the currency of a base country, with the US dollar commonly being used. PPPs are thus weighted averages of the relative prices, quoted in national currency, of comparable items between countries. Used as deflators, they enable cross-country comparisons of GDP and its expenditure components.

18.26518.269 This section first examines the index number issues in aggregate comparisons of prices and

volumes across countries. The ICP produces internationally comparable economic aggregates in volume terms as well as PPPs and price level indices (PLIs). Established in 1968, the ICP has grown to cover all regions of the world <u>in combination</u> with the OECD/Eurostat PPP program.

18.26618.270 Compiling PPP-based data is a costly and time-consuming exercise, so it is not possible to make such comparisons as a matter of course. Worldwide coordination is required to collect the data and compile the PPP-based estimates. However, national accountants in participating countries need to understand the basic principles of the comparison and the practical demands that are made on them for data to compile PPP indices and thus GDP volume comparisons. This material is the subject of the last part of this section.

#### 2. Index number issues

18.26718.271 The theory of index numbers developed in a time series context cannot be applied mechanically to international comparisons simply by replacing the term "period" by the term "country." International comparisons differ in a number of respects.

- a. Time series are ordered by the date of the observation, but countries have no such a priori ordering. In consequence there is no predetermined way to order countries when compiling chain indices.
- b. For international price comparisons different price collectors will be reporting on the prices of the items in different countries. There thus is a need for flexible but detailed structured product descriptions (SPDs) for each item so that only the prices of like items are compared, either by comparing the prices of exactly the same item specification drawn from the SPD in both countries, or by adjusting the prices of different specifications drawn from the SPD for quality differences.
- c. International comparisons are conducted on a less regular basis, in part because they present a large scale coordination challenge, involving the statistical offices of all participating countries as well as international organizations.
- 18.26818.272 At the heart of the PPPs are price comparisons of identical or closely similar product specifications. The 2005 ICP round used SPDs to define these specifications and to ensure the quality of the detailed price comparisons. For each item there is a specification describing the technical characteristics of the item in detail so a price collector can precisely identify it in the local market. Besides the technical characteristics, the specification also includes other variables that need to be considered when pricing the item, such as the terms of sales, accessories and transportation and installation costs. The database formed from these structured descriptions and the prices collected for them permit more precise matching of items between countries.

#### Representativity versus comparability

- 18.26918.273 Two critical criteria in selecting products to be priced for calculating PPPs are "representativity" and "comparability". Representative products are those products that are frequently purchased by resident households and are likely to be widely available throughout a country. Representativity is an important criterion in the ICP because the price levels of non-representative products are generally higher than those of representative products. Therefore, if one country prices representative products while another prices non-representative products in the same expenditure category, then the price comparisons between the countries will be distorted. On the other hand, comparability relates to the physical characteristics of a product. Products are considered to be comparable if their physical characteristics, such as size and quality, and economic characteristics, such as whether candles are used as a primary source of light or are primarily decorative, are identical.
- 18.27018.274 In practice, difficult trade-offs are involved in selecting products that are both representative and comparable to use in calculating PPPs. The product lists for calculating PPPs are developed in a way that balances the competing aims of within-country representativity and cross-country comparability. In this respect, they are generally quite different from the products that would be priced by any individual country to compile its price indices (such as the consumer price index or any of a range of producer price indices) and which are used in producing the deflators used to calculate volume estimates in the time series national

accounts. In the case of time series within a country, representativity is the key criterion in selecting the products to be priced while comparability with other countries is unimportant. Once a representative product is selected for pricing, the important issue is to price the same product in subsequent periods so that price changes in the product can be measured over time. For the ICP, representativity is required only at a point in time and not over time

#### Aggregation

48.271<u>18.275</u> PPPs are calculated and aggregated in two stages: estimation of PPPs at the level of basic headings and aggregation across basic heading PPPs to form higher-level aggregates. The estimation of basic heading level PPPs is based on price ratios of individual products in different countries. Typically no information about quantities or expenditures is available within a basic heading and, thus, the individual price ratios cannot be explicitly weighted when deriving PPPs for the whole basic heading. Two aggregation methods dominate PPP calculations at this level, the GEKS method (described below) and the Country Product\_Dummy (CPD) method. A description of these methods can be found in chapters <u>4 and 5</u> of <u>Measuring the Real Size of the World Economy</u>. Weights are of crucial importance at the second stage when the basic heading PPPs are aggregated up to GDP. The main approaches used in the aggregation are summarized in the paragraphs below.

#### Binary comparisons

48.27218.276 As outlined in section C, the monetary value of GDP, or one of its components, (*I<sub>r</sub>*) reflects the combined differences of both price and quantities, that is: *LP PQ IV* or *LQ PP IV*. Price and volume indices may be compiled between pairs of countries using the same kinds of index number formula as those used to measure changes between time periods. A Laspeyres-type price index for country B compared with country A is defined as:

$$L_{p} = \sum_{i=1}^{n} \left( \frac{p_{i}^{B}}{p_{i}^{A}} \right) S_{i}^{A} \equiv \frac{\sum_{i=1}^{n} p_{i}^{B} q_{i}^{A}}{\sum_{i=1}^{n} p_{i}^{A} q_{i}^{A}}$$
(20a)

and a Paasche-type index as:

$$P_{p} = \left[\sum_{i=1}^{n} \left(\frac{p_{i}^{A}}{p_{i}^{B}}\right)^{-1} S_{i}^{B}\right]^{-1} \equiv \frac{\sum_{i=1}^{n} p_{i}^{B} q_{i}^{B}}{\sum_{i=1}^{n} p_{i}^{A} q_{i}^{B}}$$
(20b)

where the weights  $s_i^A$  and  $s_i^B$  are component shares of GDP at current values of countries A and B.

- 18.27318.277 Given the complementary relationships between Laspeyres and Paasche price and volume indices noted earlier, it follows that a Laspeyres-type volume index for B compared with A can be derived by deflating the ratio of the values in B to A, each expressed in their own currencies, by the Paasche-type price index (20b). A Paasche-type volume index is similarly derived by deflating the ratio of values of B to A by a Laspeyres-type price index (20a).
- 18.274<u>18.278</u> The differences between the patterns of relative prices and quantities for two different countries tend to be relatively large, compared with those between time periods for the same country. The resulting large spread between the Laspeyres- and Paasche-type intercountry price and volume indices in turn argues for an index number formula, such as Fisher, that makes symmetric use of both country's price and quantity information.

#### **Multilateral comparisons**

48.275<u>18.279</u> The need for multilateral international comparisons may arise, for example, to determine GDP aggregates for blocks of more than two countries or rankings of the volumes of GDP, or per capita GDP,

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for all the countries in a block. It is desirable that such rankings are transitive.

#### Transitivity

**18.276**<u>18.280</u> Consider a group of *m* countries. As binary comparisons of volumes and prices may be made between any pair of countries, the total number of possible binary comparisons is equal to m(m-I)/2. Let the price, or volume, index for country *j* based on country *i* be written as *ilj*. A set of indices is said to be transitive when the following condition holds for every pair of indices in the set:

 $_{i}\mathbf{I}_{j} \mathbf{x} \,_{i}\mathbf{I}_{k} = _{i}\mathbf{I}_{k}$  (21)

This condition implies that the direct (binary) index for country k based on country i is equal to the indirect index obtained by multiplying the direct (binary) index for country j based on country i by the direct (binary) index for country k based on country j. If the entire set of indices is transitive, the indirect indices connecting pairs of countries are always equal to the corresponding direct indices. In practice, none of the standard index formulae in common use, such as Laspeyres, Paasche or Fisher, is transitive.

18.277<u>18.281</u> The objective is to find a multilateral method that generates a transitive set of price and volume measures while at the same time assigning equal weight to all countries. There are four quite different approaches that may be used. The first approach achieves transitivity by using the average prices within the block to calculate the multilateral volume indices. The second approach starts from the binary comparisons between all possible pairs of countries and transforms them in such a way as to impose transitivity. The third method uses regression techniques to estimate missing prices by using price relatives for other products on a country-by-country basis. The fourth method is a multilateral chaining method based on linking bilateral comparisons such that countries that are most similar in their price structures are linked first.

The block approach

18.27818.282 The most widely used form of the block approach uses the average prices of the block to revalue quantities in all countries in the block. This automatically ensures transitivity. The volume index for country B relative to country A is defined in the first expression in equation (20) as:

$$GK_Q = \frac{\sum_{i=1}^{n} \bar{p}_i q_i^B}{\sum_{i=1}^{n} \bar{p}_i q_i^A} = \frac{\sum_{i=1}^{n} \bar{p}_i q_i^C}{\sum_{i=1}^{n} \bar{p}_i q_i^A} x \frac{\sum_{i=1}^{n} \bar{p}_i q_i^B}{\sum_{i=1}^{n} \bar{p}_i q_i^C}$$
(22)

and can be seen to be transitive. The average price  $p_i$  for each individual good or service is defined as its total value in the block, expressed in some common currency, divided by its total quantity:

$$\bar{p}_{i} = \frac{\sum_{j=1}^{m} c^{j} p^{j} q_{i}^{j}}{\sum_{j=1}^{m} q_{i}^{j}} \text{ where } \sum_{j=1}^{m} q^{j} = \sum_{j=1}^{m} \frac{v_{i}^{j}}{p_{i}^{j}}$$
(23)

18.27918.283 The most common block method is the Geary Khamis (GK) method in which the currency converters used in (23) are the PPPs implied by the volume indices defined by (20). In this method, the average prices and PPPs are interdependent being defined by an underlying set of simultaneous equations. In practice, they can be derived iteratively, initially using exchange rates as currency converters for average prices, for example. The resulting volume indices are then used to derive the implied set of PPPs, which are themselves used in turn to calculate a second set of average prices, volume indices and PPPs, etc.

18.28018.284 The advantages of a block method such as the GK method include:

a. The block of countries is recognized as an entity in itself;

- b. The use of a single vector of prices ensures transitivity and the volume measures are additively consistent and can be presented in value terms using the average prices of the block (it is possible to present the results for a group of countries in the form of a table with countries in the columns and the final expenditure components in the rows, in which the values add up in the columns as well as across the rows); and from them a set of m-1 transitive indices that resemble the original Fisher indices as closely as possible, using the least squares criterion. Minimizing the deviations between the original Fisher indices and the desired transitive indices leads to the so-called GEKS formula, proposed independently by Gini, Elteto, Koves and Szulc.
- c. It is possible to compare ratios, such as the shares of GDP devoted to gross fixed capital formation, because the same vector of prices is used for all countries.
- 18.281\_18.285 However, comparisons between any two countries, based on the multilateral block results, may not be optimally defined. It was shown in the description on transitivity that best practice price and volume comparisons between countries A and B should make symmetric use of information on their prices and quantities. If A's relative prices are higher than average and B's are lower, the use of average prices decreases A's expenditures expressed in average international prices and increases those of B relative to a country whose prices are close to the international average. Such a disparity is often noted in the case of services between developed and developing countries. Consequently, when using the GK method, PPP\_based expenditures are generally overstated for poor countries.

#### The binary approach

- 18.282
   18.286
   An alternative approach to the calculation of a set of multilateral volume measures and PPPs is to start from the binary comparisons between all possible m(m-1)/2 pairs of countries. If each binary comparison is considered in isolation, the preferred measure is likely to be a Fisher index.
- 18.28318.287 Fisher indices are not transitive but it is possible to derive and the summation is over the *m* different countries in the block. The term *cj* in expression (23) is a currency converter which could be either a market exchange rate or a PPP used to convert each country's expenditure on item i, *vi pi qi* into the common currency.
- **18.284** The GEKS index between countries *i* and *k* is the geometric average of the direct index between *i* and *k* and every possible indirect index connecting countries *i* and *k*, in which the direct index is given twice the weight of each indirect index. Transitivity is achieved by involving every other country in the block in the GEKS index for any given pair of countries.

#### 18.28518.289 The GEKS index:

- a. provides the best possible transitive measure for a single aggregate between a pair of countries, in much the same way as a chain Fisher index may provide the best possible measure of the movement of a single aggregate over time;
- b. gives equal weights to the two countries being compared; and
- c. is not affected by the relative sizes of the countries, a desirable attribute.

However, the consequences are similar to those for chain indices in a time series context. It is not possible to convert the <u>GEKS</u> volume indices for an aggregate and its components into a set of additively consistent values. This is in contrast to the GK method.

#### Ring comparisons

18.28618.290 The outline of the above methods assumes that there is one set of comparisons comprising all the countries in a block. As the number of countries participating increases, it becomes difficult to administer them as a single group. Moreover, it is difficult to find items that are both nationally representative and globally comparable at the same time for countries far apart both geographically and in their level of

development. There are thus advantages to a regionalized approach to the compilation of PPPs. Product specifications are prepared for each region and independent sets of PPPs prepared for countries on a region by region basis.

- 18.28718.291 While this approach probably improves the quality of PPPs at the regional level, there is still the need to combine the regions to obtain a global comparison. Traditionally, a "bridge country" was chosen to provide the link between regions. The bridge country participated in the price surveys of more than one region. The ring approach extends this idea and identifies a subset of countries in each region to act as "ring countries". These countries comprise a synthetic "region" that intersects with all of the regions whose comparisons are to be linked together. A global core list is added to the regional lists of goods and services for the main price survey on household consumption. This common list provides the basis to link the within-region PPPs across regions. Each region decides which elements of the core list will be part of its regional data collection. Thus, every country's data is used to estimate the between-region linking factors.
- 18.28818.292 The method chosen depends on a number of factors including the purpose of the analysis, level of aggregation, sparseness of data, whether the aggregation is within regions, across ring countries, or for the whole data set and the importance attributed to additivity and symmetric treatment of countries.

#### 3. Practical considerations for national accountants

#### PPPs and the national accounts

- 18.28918.293 One of most important uses of PPPs is to calculate comparable estimates of GDP and its major components, expressed in a common currency where the effects of differences in price levels between countries are removed. The national accounts are integral to PPP estimates in <u>three</u> ways. In the first place, the national accounts provide the weights that are used to aggregate prices from a detailed level to broader aggregates, up to GDP itself. Secondly, the national accounts provide the volumes (also referred to as "real expenditures") expressed in a common currency that enable GDP and its expenditure components to be compared between countries. <u>Thirdly, comparisons can be made of aggregates below the level of GDP.</u>
- 18.29018.294 The PPP exercise also produces comparative price level indices (PLI). A PLI is the ratio of the PPP for a country relative to the official exchange rate, both measured with respect to a reference currency. PLIs are generally expressed on a base of 100, with the base being either a single reference country or a regional average.
- 18.29118.295 If a country has a PLI less than 100, then its price level is lower than the numeraire country (or region). Similarly, any pair of countries can be compared directly. If one has a PLI less than the other, then the country with the lower PLI would be considered "cheap" by the other country, regardless of whether its PLI is above or below 100.
- 18.292<u>18.296</u> In practice, PPPs do not change rapidly over time and so a large change in a country's PLI is usually due to a large change in exchange rates.
- 18.29318.297 PPP-based volumes are often expressed as "time series", which they are not. Each year is a comparison between countries in isolation from other years. It is important that the volumes in the ICP not be confused with the time series volumes described earlier in this chapter because they are different measures, although there are some similarities in that they are both designed to measure values that have had the direct effects of price differences removed from them. In a time series of volumes, the effects of price changes from one period to another are removed to produce the volume measures from which rates of economic growth are calculated. In the case of an intercountry comparison, which is the basis for PPP- based volume measures, the effects of differences due to exchange rates and those due to different price levels within each country are removed from the national accounts values to provide a comparison between the volumes in the countries concerned.
- 18.29418.298 The lowest level for which PPPs can be compared across all countries involved in a comparison is referred to as the "basic heading" and it is also the lowest level for which national accounts values are required as weights. In effect, the national accounts values provide the weights to aggregate the basic heading level data to broader national accounting aggregates, including GDP itself. The basic heading is

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also the level at which product specifications are determined, with a number of products representative of the expenditure within each basic heading being specified for pricing.

- 18.29518.299 Expenditure-based estimates of GDP have been used in most PPP-based comparisons during the past half-century or so because the prices for final expenditures are more readily observable than those for outputs and inputs, which would be required for a comparison of the production- based estimates of GDP. Consistency in the national accounts is critical in producing comparable estimates across countries so the SNA has played an important part in PPP-based comparisons by providing the framework for obtaining consistent estimates of GDP and its major aggregates.
- 18.29618.300 The ICP is the broadest-based project to produce PPPs; the volume estimates produced from the ICP present a snapshot of the relationships between countries from all over the world, expressed in a common currency. The ICP is a very expensive and resource- consuming project and so it provides benchmarks at infrequent intervals. As a result, PPP benchmarks from the ICP have to be extrapolated using time series from the national accounts of the countries involved. It is interesting to compare the outcomes of an extrapolated series do not tie in exactly with the benchmarks and there are several reasons for the differences that arise. An important one is the issue of the consistency between the prices used in the time series national accounts and those used in calculating PPPs as explained in the section on representativity and comparability earlier. Further, the price and volume structure may change significantly over time in a way not picked up in the extrapolation techniques.

#### Why ICP growth rates differ from national growth rates

- 18.297<u>18.301</u> The method commonly used to extrapolate PPPs from their benchmark year to another year is to use the ratio of the national accounts deflators from each country compared with a numeraire country (generally the United States of America) to move each country's PPPs forward from the benchmark. The PPPs derived are then applied to the relevant national accounts component to obtain volumes expressed in a common currency for the year in question.
- 18.29818.302 Theoretically, the best means of extrapolating PPPs from a benchmark year would be to use time series of prices at the individual product level from each country in the ICP to extrapolate the prices of the individual products included in the ICP benchmark. In practice, it is not possible to use this type of procedure in extrapolating PPP benchmarks because the detailed price data needed are not available in all the countries. Therefore, an approach based on extrapolating at a macro level (for GDP or for a handful of components of GDP) is generally adopted. Leaving aside the data problems involved in collecting consistent data from all the countries involved, a major conceptual question arises with this process because it can be demonstrated mathematically that it is impossible to maintain consistency across both time and space. In other words, extrapolating PPPs using time series of prices at a broad level such as GDP will not result in a match with the benchmark PPP-based estimates even if all the data are perfectly consistent.
- <del>18.299</del>18.303 \_One of the reasons for differences between GDP time series and PPP benchmark comparisons stems from the definition of a product. As explained in paragraphs 18.66 to 18.67, location is an essential product characteristic in the national accounts whereas the PPP comparisons use average prices of the whole country. Another problem is that the weighting patterns underlying the deflators in the time series national accounts will differ from those in the PPP benchmarks over time. In addition, as noted above, the products priced for the PPPs will differ from those underlying the time series because of the requirements in spatial price indices for representativity within each country and comparability between countries, while in time series the main requirement is for consistency over time. Generally, many more products will be priced for a country's price indices than it is possible to price for calculating PPPs. Finally and often most critically, the prices underlying the deflators in the national accounts are adjusted to remove changes in quality over time and the methods of making such quality adjustments can differ significantly between countries. In particular, the extent of using hedonic methods for adjusting products whose characteristics change rapidly varies significantly from country to country. Electronic products (such as computers) feature prominently in hedonic quality adjustment, although some countries also use hedonics to quality adjust products such as clothing and housing. Comparing price changes in a country that uses hedonics in quality adjusting the price indices underlying its national accounts deflators with those in one that does not do so will lead to potentially

Formatted: Font: (Default) +Headings CS (Times New Roman), 10 pt, Complex Script Font: +Headings CS (Times New Roman), Don't snap to grid, Highlight large inconsistencies between the benchmarks and the extrapolated series.

18.30018.304 Possibly the single biggest factor that affects the difference between extrapolated GDP series and PPP benchmark results is due to exports and imports. GDP volume measures in the national accounts are unaffected by changes in terms of trade whereas they influence real GDP in spatial comparisons directly. For example, an increase in energy prices results in an increase in nominal GDP. In a spatial comparison, the outcome will be an increase in GDP volumes for energy exporting countries relative to other countries because the net trade PPPs are based on exchange rates, which do not respond to a change in the terms of trade to a significant extent in the short term. The result is that the increase in the terms of trade is treated as a volume effect in the PPP-based benchmark. On the other hand, in the national accounts of energy exporting countries, GDP volumes remain unchanged if the same amount of energy is exported and so the increase in the terms of trade is treated as a price effect, which is observed in the GDP deflator used as the price extrapolator.

#### Non-market services

- 18:30118:305 Another area that leads to consistency problems between countries' PPP-based volumes is the group of so-called "comparison-resistant services". They are predominantly (although not exclusively) non-market services, with government services being a major part of the non-market services that have to be priced for PPP projects. The main problems in pricing non-market services relate to the quality of the services being produced and the productivity of the labour used in producing them. One of the conventions used in producing the estimates for the government sector in most countries' national accounts is that the value of output is measured as the sum of the labour and material inputs used in producing the service(s), which involves an assumption that an increase in costs translates into an equivalent increase in output. In addition, when output indicators are not available, an assumption that is <u>sometimes</u> made in the national accounts is that the productivity of the labour involved in producing such services does not change over time either. A similar assumption, that productivity is identical in all the countries in a comparison, generally has to be made between countries in calculating PPPs. It is a reasonable assumption when countries at roughly the same level of economic development are involved in the PPP comparison. However, when countries at very different levels of economic development are being compared then the validity of the assumption breaks down.
- 18:30218:306 The choices faced by the compilers of PPPs are either to assume that productivity levels are identical across countries, even when they are at very different stages of economic development, or to adjust the non-market services estimates in some way to account for productivity differences. Apart from the problems involved in determining an appropriate conceptual approach to adjust for productivity differences between disparate economies, obtaining the data required to make such adjustments also proves problematical particularly when the method involves adjustments based on relative levels of capital intensity in the countries involved. Despite the problems involved in doing so are rather less than the consequences of assuming equal productivity in all the countries in a comparison.

#### Conclusion

18.30318.307 PPP-based comparisons of activity levels between countries are an important use of national accounts. Despite the conceptual and empirical difficulties, PPP-based volumes provide a much firmer basis for international comparisons than the commonly used alternative of converting national accounts aggregates to a common currency using exchange rates.

#### 4. **Productivity comparison across countries**

18.30418.308 Productivity growth is often expressed in percentage terms and comparisons across countries are made in terms of these percentages. Assuming similar methods have been used to compile the estimates for the countries being compared, and that they have roughly comparable levels of productivity, this sort of comparison is interesting and much simpler than the alternative of comparing levels. Measuring the relative

**Commented [ED24]:** New subsection drawn from paras. 19.74-19.75 of 2008 SNA.

levels of production (for example, the volume of GDP or of GDP per capita) or productivity between countries is more complicated because it is necessary to convert the national accounts data to a common currency. The best means of doing so is to calculate purchasing power parities (PPPs), which measure the rate of currency conversion that would be required to equalize the prices of a common basket of goods and services between the countries concerned. In practice, PPPs adjust for differences in price levels between countries as well as differences in exchange rates.

 18.305
 The PPP International comparisons of productivity below the level of GDP, such as by industry, are problematic. PPPs are calculated using the expenditure-based estimates of GDP so there are no PPPs for the individual industries that contribute to GDP. Therefore, it is necessary to make an assumption that the PPP for a single aggregate such as GDP is applicable to all industries. Examining the differences in the PPPs for the various expenditure components shows they can vary significantly so this is unlikely to be a very good assumption. Making robust international comparisons of productivity at disaggregated levels is thus a very demanding exercise, though considerable progress has been made in recent years.



# National Statistician's Committee for Advice on Standards for Economic Statistics

NSCASE October 2024 – Chapter 18 NSCASE Meeting Minutes

# 4. System of National Accounts 2025: Chapter 18: Measuring Prices, Volume and Productivity

- 1. The Chair and Nick Vaughan led the discussion on this paper.
- 2. The Chair invited Cliodhna introduce the chapter.
- 3. Cliodhna informed the Committee that the ONS were broadly happy with chapter 18. One of the key areas where ONS provided feedback was on the measurement of real income and analysis of real income using a consumption-based deflator but generally, the ONS was happy with the changes. She outlined some of the changes to the chapter, which included more additional detailed information about hedonic measures of price changes and discussion of depletion of natural capital. She added that natural capital was a cross-cutting issue that was relevant across many chapters, but here was specifically related to its volume measure. The chapter included additional information about implicit financial services on loans and deposits, a discussion of owner-occupied dwellings, and the deflation of those, as well as education and health services.
- 4. She highlighted that this chapter included more discussion on productivity measures compared to the previous SNA, which the ONS perceived as helpful. However, they did provide feedback on Chapter 16: Labour Accounts. The ONS would have liked to have seen labour accounts and productivity accounts discussed more closely as one of the main benefits of labour accounts was to facilitate productivity measures. The chapter also discussed changing measurement of the central bank output.
- 5. The Chair expressed that he expected the chapter to include a section on new products and disappearing products as suggested in paragraph 18.4; however, this did not exist. He noted he would have preferred clear guidance on this issue as economists have completed significant work on this. He recognised that this was also omitted from the SNA2008 so appreciated it would be a challenge to have this included now.
- 6. Cliodhna thanked the Chair for these comments and invited NSCASE's comments on such topics to inform wider ONS work on implementation and economic standards. She noted this would be likely to be relevant again in the digitalisation chapter.
- 7. The Chair invited Nick to add his comments and thoughts on the chapter.
- 8. Nick pointed the Committee's attention to the information on volume measures of taxes and subsidies. He noted that the ONS historically had measures of GDP and GVA growth rates that would be different. Then, it was pointed out that taxes



and subsidies cannot change quantities so the ONS had constrained GVA and GDP to grow at the same rate. He was unaware if things had changed again. He appreciated the inclusion of double deflation but believed it was covered in passing and countries should be more explicitly encouraged to implement this.

- 9. He agreed with the Chair's comments on the numeraire. He believed the point on how income measure could not be put into volume terms could be strengthened and that the chapter neglected the issue of GDP at factor costs. The chapter did not cover taxes and subsidies on production but only discussed products. Generally, he did not identify any major areas of contention where the ONS might be advised to deviate.
- 10. The Chair thanked Nick for his points. He suggested that it could be useful if the Committee forwarded their annotated drafts to the Secretariat so the ONS could view all comments. Cliodhna noted these would be welcomed.
- 11. David asked how much the ONS used hedonics in price indices.
- 12. Grant answered that the ONS used hedonics models for house prices, private rents and a handful of items on the CPI/H. He noted they would feed into National Accounts indirectly when used for deflation but ONS did not use hedonic methods for commercial real estate estimates.
- 13. Robert added that he believed the lack of discussion on real estate price indices to be a gap in the chapter. He noted that there had been tremendous progress on residential and commercial real estate price methodology in the international community since 2008. He added that section 7 of the chapter discussed stocks of fixed assets, and was surprised that there was no discussion of real estate prices here.
- 14. Cliodhna highlighted that the chapter did provide extra information on the measurement of prices for the services of owner-occupied dwellings. In particular it discussed the use of market rental rates for similar properties with similar characteristics as way of deriving local imputed rent. She asked Robert to clarify whether he was referring to something separate in terms of measurement of house prices for assets.
- 15. Robert stated he was. He noted that section 7 was titled 'volume and prices for stocks of fixed assets'. The section stated buildings were fixed assets but did not discuss real estate price indices when measuring asset prices.
- 16. The Chair argued that equation 9 in paragraph 18.32 should be represented in logarithmic form for clarity. He also raised a drafting issue that the references seemed to go round in circles, which should be easily rectified in the editing process.
- 17. Nick also noted that the chapter could be strengthened if it referred to progress made in other prices manuals, such as the 2016 Eurostat manual, which was mentioned in the chapter. He added that the chapter did not sufficiently cover prices for second hand capital. He highlighted that investment goods, such as



lorries, trucks, diggers, and planes tended to be resold and questioned why the emphasis remained on the price of new capital.

- 18. Mairi Spowage raised that many of the draft chapters they were discussing had been published in June and asked how different the final draft would be at this late stage. She highlighted the comments submitted by other NSIs and questioned how far the AEG could have taken these on board.
- 19. Cliodhna answered that communication from the UN indicated that the majority of changes resolved inconsistencies between chapters, and that there was likely to be little to no change to the conceptual issues. She highlighted that the 2024 UNSC involved a vote on the outlines of changes to the SNA and the only element that was rejected was branding assets. Thus, this was presumed to be an endorsement of the conceptual changes as they were.
- 20. Robert replied to Mairi's point, that the UN had published the papers for the AEG meeting at the end of October which synthesised the global comments to each chapter. On chapter 18, he noted the UN indicated only one substantive issue was raised which recommended that the volume indicators be tested with the aid of experts in the domain prior to their incorporation into the international accounts and referenced specific paragraph numbers for discussion at the meeting. Robert suggested that this paper would be of interest to NSCASE, as it would provide insight into what AEG discussed in response to the global consultation.
- 21. Philip Wales noted that the information on productivity was welcomed but had questions on implementation. Firstly, he asked if the ONS had a view on if any of the changes implied anything on measurement of government output, especially in the COVID years, where a number of large products emerged and disappeared rapidly. Secondly, he recollected that Eurostat guidance on hedonics was narrower than what was covered in this chapter. He considered whether, depending on how the UK retained elements of ESA10, adopting this framework would lead the UK to more use of hedonics. He asked whether this was perceived, from an implementation perspective, as a large change or a small change.
- 22. Cliodhna noted that on his first point, the issue of quality adjustment of public services was taken to NSCASE previously and advice was given that public services should be measured with a quality adjustment. This was a break from ESA. When discussions came up about public services and measuring of outputs, the ONS would appreciate NSCASE's thoughts on if the SNA update would affect their decision on that matter. She added that though the ONS had not looked at this from a COVID perspective, the public service output figures had adjustments and covered the Track and Trace programme, for example. She was unaware of anybody that believed the guidance would change ONS' current position on that but noted this was part of Steve Drew's work on categorisation of the SNA changes. On Philip's second point, Cliodhna answered that hedonics were not her area of expertise and was not aware that ONS was looking at them in that light.
- 23. The Chair added that he believed chapter 18 was consistent with NSCASE's previous advice on public service quality adjustment. David added a caveat that



their previous discussion agreed that the issue of collective services was not dealt with well in the SNA. The Chair noted that he understood the potential value of reopening the folding measures of the various health services during the pandemic. He questioned whether there was guidance on how to handle goods that disappeared once no longer needed and suspected that things were done quickly and in difficult circumstances. He noted that if the ONS felt inclined, the Committee could review this.

24. Nick asked Robert to circulate the link to the AEG paper that he had referred to. The Chair asked that the Secretariat circulate via email any papers mentioned during the meeting. The Secretariat agreed to do this.

# Chapter 19: Summarizing, integrating and balancing the accounts (revised title and revised content)

## (OLD Chapter 16: Summarizing and integrating the accounts)

## A. Introduction

- 19.1 This chapter provides a synthesis of the sequence of <u>economic</u> accounts presented in chapters 67 to 1314 and shows how they relate to the tables in chapter 23. It shows how the most common aggregates in the SNA, GDP, NDP, and GNI and NNI are related to the balancing items in the various accounts. It shows the impact on national aggregates of transactions undertaken between a resident unit and <u>aone</u> resident in the rest of the world. It <u>also</u> describes the articulation of the accumulation accounts. <u>The chapter ends with a section on balancing the accounts.</u>
- 19.2 The chapter lays the groundwork for greater elaboration of the accounts, in both manners of presentation and further analysis that form the subject matter of later chapters.

# **B.** Integrating the accounts

- 19.3 The tables presented in <u>the previous</u> chapters <u>7 to 14</u> use a format very common in published tables; the items representing <u>resourcesrevenues</u> are shown in the right-hand side of the table and the items representing <u>usesexpenditures</u> in the left-hand side of the table. This format is flexible because it allows a multiple number of columns to be shown for both parts of the table and even for the two parts to be shown on different pages if the columns are sufficiently numerous. However, there is another format for the tables that is particularly useful for explanatory purposes, the T account.
- 19.4 In a T account, only one set of descriptive headings (stubs) is shown in the middle of the table with values representing <u>resourcesrevenues</u> in columns to the right and values representing <u>usesexpenditures</u> in columns to the left. An example of a T account is given in table <u>1619</u>.1. The rows in the table show the rows from tables <u>67</u>.1, <u>78</u>.1, <u>79</u>.2, <u>89</u>.1 and <u>910</u>.1 at a high level of aggregation. Data for the individual sector accounts are not shown but the total for the economy as well as for the rest of the world and the total of both these are shown. In addition, the column for the goods and services account is retained.

## Table <u>1619</u>.1: Summary of the current accounts in the sequence of <u>economic</u> accounts

## 1. Summarizing the current accounts

19.5 The current accounts included in table <u>1617</u>.1 consist of the production account and accounts showing the <u>primary</u>-distribution of income, the <u>secondary-re</u>distribution of income and the use of income. In addition to these accounts, table <u>1619</u>.1 begins with imports and exports of goods and services, the entries from the rest of the world account that show the value of goods and services that <u>reachenter</u> the national economy from the rest of the world and those that are produced in the national economy but are provided to the rest of the world.

## The production account

19.6 The immediately following rows show the main entries from the production account<sub>27</sub> output andas well as taxes less subsidies on products not already included in the value of output (see paragraph 7.59 ff) on the resourcerevenues side and intermediate consumption on the useexpenditures side. The balancing item for the production account, value added, appears next, also on the useexpenditures side as the closing item of the production account. Value added is the basic building block for determining GDP.

## The generation of earned income account

19.7 The next few rows correspond to the generation of <u>earned</u> income account. This is the first part of the <u>primary</u> <u>distribution of earned</u> income account. Value added, the balancing item from the production account, appears as the only entry on the <u>resourcesrevenues</u> side of the account. The entries on the left-hand side of the account under <u>usesexpenditures</u> show how much of value added is generated by labour in the form of <u>compensationremuneration</u> of employees and how much of the value of output is payable to government in the form of taxes on product<u>ions</u> less subsidies on product<u>ions, including taxes on products less subsidies on products</u> not already included in the value of output. The balancing item<del>s,</del> operating surplus-and mixed income, represents the contribution of the contribution of labour input of self-employed persons and the contribution of capital to the value added of unincorporated enterprises.

## The allocation of primaryearned income account

- 19.8 In the allocation of <u>primaryearned</u> income account, these contributions to value added appear as <u>resourcesrevenues</u> of the relevant sectors; <u>compensationremuneration</u> of employees to households, taxes less subsidies to government and operating surplus and mixed income to the sectors containing the relevant production units. In addition, however, the allocation of <u>primaryearned</u> income account shows how much of each of these three items is payable to non- resident units and where comparable items generated in non-resident units are payable to resident sectors.
- 19.9 In the course of production, producers may have made use of financial and non-produced <u>non-financial</u> assets belonging to other units. The payments for the use of these assets are shown as property income. Property income may be payable by residents or non-residents and may be receivable by residents or non-residents. Once the values for three of them are known, the value of the last is necessarily determined. For example, property income receivable by residents must be equal to property income payable by both residents and nonresidents less property income receivable by non-residents. Thus property income receivable by both residents and non-residents (shown under <u>resourcesrevenues</u>) must be equal to property income payable by both residents and non-residents (shown under <u>usesexpenditures</u>).
- 19.10 The balancing items from the generation of earned income account, operating surplus and mixed income, are recorded Value added as a resource revenue on the allocation of earned income account. plus Together with the resource revenue entries of compensation remuneration of employees, operating surplus, mixed income, taxes less subsidies on production and property income, less the corresponding entries for these items as uses expenditures leads to the balance of primary earned incomes. This is the balancing item for the allocation of primary earned income account shown as an use expenditure, and the first item, a resource revenue, of the secondary distribution of income transfers other than social transfers in kind account.
- 19.11 From the balance of <u>primaryearned</u> incomes, another key aggregate of the SNA, national income, is derived. Value added is determined by the criterion of residence; all resident units and only resident units contribute to the total. For the balance of <u>primaryearned</u> income, however, the focus changes not just from production to income but to the residence of the units receiving the income generated by production rather than the residence of the producing units themselves. Further discussion of national income appears below in connection with the discussion of the rest of the world account.

# The secondary distribution of income transfers other than social transfers in kind account

19.12 The secondary distribution of income transfers other than social transfers in kind account shows how primarycarned income is transformed to disposable income by the payment and receipt of current transfers. Various factors stimulate redistribution of income between sectors of the economy. One of these is the role of government in levying current taxes on income and wealth; one is the role played by social insurance schemes in redistributions by current workers to retirees; another is the role of insurance in

providing a mechanism whereby small regular payments by many units are channelled to a few units suffering predefined sorts of losses. Among other types of current transfers, the role of purely voluntary transfers is of increasing interest. Such transfers may provide the main source of finance for NPISHs, in the form of international cooperation between governments, or may be between resident and non-resident households in the form of workers' remittances.

- 19.13 Current transfers payable by resident and non-resident units must be equal to current transfers receivable by both resident and non-resident units, and thus total uses and resources are equal as is the case for property income.
- 19.14 Disposable income is an important balancing item in the accounts since it shows<u>disregarding the impact of capital transfers</u>, how much can be consumed without the need to run down assets or incur liabilities. It thus corresponds to the economic theoretical concept of income.

## The use of income accounts

- 19.15 The use of disposable income account shows how much disposable income is in fact used for <u>final</u> consumption and how much is saved. When looking at the sector accounts, the adjustment for the change in pension entitlements has to be made to ensure that these form part of the saving of households and not of pension funds. However, in the aggregate only flows relating to pension entitlements involving non-resident employees or resident employees of non-resident enterprises appear.
- 19.16 Table <u>1619.1</u> does not include the redistribution of income <u>invia transfers in</u> kind account and the use of adjusted disposable income <u>adjusted for social transfers in kind</u> account but these could be inserted either in place of, or as a complement to, the <u>income transfers other than social transfers in kind account and the</u> use of disposable income account.

## 2. Summarizing the accumulation accounts

19.17 Table <u>1619</u>.2 presents a summary of the accumulation accounts and balance sheets with the same degree of detail as used for the current accounts in table <u>1619</u>.1. In this case, the titles given to the right- and left-hand columns are changed; the columns to the right are described as changes in liabilities and net worth, and those to the left show changes in assets.

#### Table 1619.2: Summary of the accumulation accounts and balance sheets

#### The capital account

- 19.18 The first items appearing on the right-hand side of the capital account are saving and the current external balance. Also appearing as resourcesrevenues are capital transfers receivable. By convention, capital transfers payable also appear under resourcesrevenues but with a negative sign. For the economy as a whole, including transactions with the rest of the world, capital transfers receivable and payable exactly offset one another in the same way that property income and current transfers do. However, this equality is not generally true for the total economy excluding the rest of the world nor for individual sectors within it.
- 19.19 Together, saving plus <u>receivable</u>, <u>minus payable</u>, <u>capital transfers</u> (net) show how much is available within the economy to acquire non-financial capital, primarily capital formation but also non-produced non-financial assets. This total is shown as a special aggregate called changes in net worth due to saving and capital transfers. It is not a balancing item but has the same characteristic of being an analytical construct of particular interest.
- 19.20 The <u>usesexpenditures</u> shown in the capital account are the acquisition, <u>less disposals</u>, of produced <u>non-financial assets</u> and non-produced non-financial assets, <u>both excluding natural capital</u>, as well as acquisitions, <u>less disposals</u>, of <u>natural capital</u>. The balancing item of the capital account is net borrowing or lending. When there is net lending, it shows the extent to which the sum of saving and capital transfers is actually used to

finance the acquisition of non-financial assets and how much is lent to the rest of the world. When there is net borrowing, saving plus capital transfers are insufficient to finance all the acquisition of non-financial assets and borrowing from the rest of the world is necessary.

## The financial account

- 19.21 The financial account shows exactly how net lending or borrowing takes place by showing all the transactions in financial instruments. Transactions in financial assets shown as changes in assets exactly balance the amounts shown as changes in liabilities and net worth because when all transactions of resident units with either other resident units or non-resident units are taken into account, there can be no net lending or borrowing left unexplained.
- 19.22 Because the financial account does not introduce any new balancing items and only explains how net lending or net borrowing is effected, and because it requires quite different data sources and understanding of the data sources, this account is not always compiled by national accountants. However, without the financial account, the compiler cannot be certain that the estimates for the other accounts are fully consistent and complete. Just as the national accountant must have an understanding of the balance of payments system and ensure that the transactions relating to the rest of the world are fully captured in the accounts, so there is a need to have an understandingappreciate the implications of systems of monetary and financial statistics. Two later chapters, chapters 2629 and 2733, discuss the relationships with these other statistical systems in more detail.

## 3. The goods and services account

- 19.23 Throughout the sequence of accounts, each transaction line is balanced. For the distributive and redistributive transactions, this is automatically the case if the data are fully reconciled since whatever is shown as payable by one unit must be shown as receivable by another. However this is not obviously the case for the transactions relating to goods and services. In order to preserve the balancing nature of the accounts, a column headed "goods and services" is included on each side of the accounts. In every case where there is a transaction relating to goods and services, an entry in the goods and services column on the other side of the account is made.
- 19.24 Ultimately the entries on the left-hand side of the account show the value of all goods and services supplied to the economy, either as productiondomestic output or imports, plus the taxes on products less subsidies not already included in the value of outputpaid on them. On the right-hand side of the account, the use of the goods and services is shown, as intermediate or final consumption, capital formation or exports.
- 19.25 Clearly, ex post the total amount of goods and services supplied to the economy must be equal to the total use made of those goods and services. Setting the entries in the left-hand goods and services column equal to those in the right-hand side column gives the familiar goods and services account, described in chapter <u>1415</u>:

Output + imports + taxes less subsidies on products

= intermediate consumption + final consumption + exports + capital formation

- 19.26 The equation reflects the notion that goods and services produced in the current period are used either to generate more goods and services in the current period (intermediate consumption) or to generate more goods and services in future periods (capital formation) or to satisfy human wants immediately (final consumption). However, because no economy is entirely closed, it is necessary to allow for those goods and services supplied from outside the economy (imports) and those goods and services used by other economies (exports).
- 19.27 This identity comprises the goods and services account. *The goods and services account shows the balance between the total goods and services supplied as resources to the economy as output and imports (including the value of taxes less subsidies on products not already included in the valuation of output) and the use*

of the same goods and services as intermediate consumption, final consumption, capital formation and exports.

#### 4. The accounts for the rest of the world

19.28 The entries in the integrated accounts for the rest of the world correspond to the entries in the balance of payments as laid out in  $BPM_{--}^{-6}$ . Table <u>1619</u>.3 shows the entries for the rest of the world in the structure of the balance of payments accounts.

Table 1619.3: Entries for the rest of the world using the BPM76 structure of accounts

- 19.29 There are threefour current accounts; one for goods, one for and services, one for primarycarned income and one for secondarytransfer income. Each of these has a balancing item but, unlike the accounts in the SNA, the balancing items do not carry down from one account to the next. However, other balancing items that do match those in the SNA are allowed for. Thus the external balance of goods, services and primarycarned income is the sum of the [external] balance of goods, the [external] balance of and services and the [external] balance of primarycarned income for the total economy. When this item is added to the external balance of secondarytransfer income, the current external balance is derived which corresponds to saving for the total economy. In this respect, it should be noted that all balancing items in the external account have an opposite sign compared to the accounts of the rest of the world in national accounts. While the national accounts record flows and positions between residents and non-residents from the perspective of non-residents, the external accounts record the relevant flows and positions from a domestic point of view.
- 19.30 In the capital account of the rest of the world, the only entries are for capital transfers receivable from and payable to the rest of the world and acquisition less disposals of non-produced non-financial assets involving non-resident units. These give the [external] capital externalaccount balance. When this is added to the current external balance, the result is net lending to or borrowing from the rest of the world.

## 5. Integration of stock and flow data

## Linking the opening and closing balance sheets

- 19.31 The balance sheets are an integral part of the SNA. An understanding of the articulation of the balance sheets with the flows relating to assets in the capital, financial and other changes in assets <u>and liabilities</u> accounts is fundamental to understanding the role capital accumulation plays in the SNA.
- 19.32 The basic accounting identity linking the opening and the closing balance sheet values for a single type of asset can be summarized as follows:

The value of the stock of a specific type of asset in the opening balance sheet valued at the prices prevailing at the date the balance sheet refers to;

*plus* the total value of the assets acquired, less the total value of those disposed of (including consumption of fixed capital<u>depreciation and depletion</u>, where appropriate), in transactions that take place within the accounting period;

*plus* the value of other positive or negative changes in the volume of the assets held (for example, as a result of the discovery of a subsoil resource or the destruction of assets as a result of war or a natural disaster);

*plus* the value of the positive or negative nominal holding gains accruing during the period resulting from a change in the price of the asset;

*equals* the value of the stock of the asset in the closing balance sheet valued at the prices prevailing at the date the balance sheet refers to.

- 19.33 The value of the non-financial assets acquired, less the total value of those disposed of, in transactions that take place within the accounting period is recorded in the capital account and the value of transactions in financial assets (and liabilities) in the financial account. The value of other positive or negative changes in the volume of the assets (and liabilities) held is recorded in the other changes in the volume of assets and liabilities account. The value of the positive or negative nominal holding gains accruing during the period resulting from a change in the price of the asset (or liability) is recorded in the revaluation account. This means that the value of each entry in the closing balance sheet can, in principle, be constructed by taking the value in the opening balance sheet and adding to it the entries relating to the same asset (or liability) in each of the four accumulation accounts.
- 19.34 A nominal holding gain may be decomposed into a neutral holding gain and a real holding gain. The nominal holding gain indicates by how much the value of an asset has increased over the period. The neutral holding gain indicates the increase that would have been necessary for the asset to exactly maintain its purchasing power over the period. If the nominal holding gain is larger than the neutral holding gain, the owner of the asset has a real holding gain (equal to the difference between the nominal and neutral holding gains). If the nominal holding gain, then the neutral holding gain, is less than the neutral holding gain, then the owner suffers a real holding loss.
- 19.35 The identity linking the opening and closing balance sheets and the accumulation account is valid even in the case of assets that are held only temporarily within the accounting period and that do not appear in either the opening or the closing balance sheets. For example, an asset may be acquired in a period, increase in price due to a holding gain and then suffer some destruction before being sold again before the end of the period.
- 19.36 The nominal holding gains and losses shown in the revaluation account include both realized and unrealized holding gains and losses but the realized holding gains and losses are incorporated in the value of transactions of the assets, leaving only the unrealized holding gains and losses in the closing balance sheet.
- 19.37 The link between the balance sheet and flow accounts in respect of financial assets and liabilities is often recognized and presented. Less attention has been focused on the links for non-financial assets though<sub>2</sub>, <u>aAs</u> chapter 2017 on capital services makes clear, it is no less important, especially as regards an understanding of productivity growth in the economy.

## Net worth

- 19.38 The balancing item on a balance sheet is equal to the sum of all the assets less all the liabilities and is called net worth. The change in net worth between the opening and closing balance sheet can be shown to be composed of three items.
  - a. The first of these is the change in net worth due to saving and capital transfers. This comes from the capital account and is the item shown as the total of <u>resourcesrevenues</u> on that account.
  - b. The second item is the change in net worth due to other changes in the volume of assets and <u>liabilities</u>, and is the sum of all the entries for assets, less all the entries for liabilities, in the other changes in the volume of assets and <u>liabilities</u> account less all the entries for liabilities.
  - c. The third item is the change in net worth due to nominal holding gains and losses. This is the sum of the entries for nominal holding gains and losses for all assets<u>recorded in the revaluation account</u> less the entries for nominal holding gains and losses on all liabilities<u>as recorded in the revaluation account</u>. This can be broken down into the change in net worth due to neutral holding gains and losses and the change in net worth due to real holding gains and losses in an obvious manner.

### Asset accounts

19.39 The identity linking opening and closing balance sheets holds for assets (or liabilities) in total, for every separate class of asset (or liability), and indeed for every individual asset (or liability). An asset (or liability) account describes the changes in the stock of an asset (or liability) or class of assets (or liabilities) from one balance sheet to the next, itemizing which changes are due to capital transactions, which to financial

transactions and which to other changes in volume and revaluation. Asset accounts are described in chapter  $\frac{1314}{12}$ .

### 6. Consolidating the accounts

19.40 Although it is not usual to present the accounts in a fully consolidated form, it is useful from a pedagogical point of view to consider what results from a full consolidation of the accounts.

## Consolidating the current accounts

- 19.41 All the items in table <u>1619</u>.1 relating to the distribution and redistribution of income appear on both sides of the account. Their inclusion permits the derivation of significant balancing items but it is also possible to consider what entries are left if they are eliminated by consolidation. In fact what remains are the entries in the goods and services columns plus the entries for saving and the current external balance. This result can be seen from the following:
  - a. ResourcesRevenues
  - Imports 499;
  - Output 3 604;
  - Taxes on products 141;
  - Subsidies on products -8;
  - Total 4 236;
  - b. Uses Expenditures
  - Exports 540;
  - Intermediate consumption 1 883;
  - Final consumption 1 399
  - Saving 427;
  - Current external balance -13;
  - Total 4 236.
- 19.42 The current external balance (-13) is equal to the external balance of goods and services (-41) plus the <u>external</u> <u>balance of earned and transferflows of</u> income coming from the rest of the world (28). If imports, exports and the external balance of goods and services are removed from the consolidation just described, the following result can be derived:

Output 3 604

plus taxes on products 141

minus subsidies on products 8

minus intermediate consumption 1 883

(result 1 854)

equals

final consumption 1 399

plus saving 427

plus external balance of earned and transfer income from the rest of the world 28.

19.43 The first part of this identity is the definition of income generated in the economy. If the <u>external balance of</u> <u>earned and transfer</u> income from the rest of the world is regarded as an analogue to saving generated within the domestic economy, this identity can be seen as the simple economic concept that income is equal to consumption plus saving.

#### Consolidating the accumulation accounts

19.44 When the capital and financial accounts are consolidated, all the entries in the financial account are eliminated and the entries for net lending or borrowing that appear in each account cancel. All that is left is:

acquisitions less disposals of produced assets (= capital formation) (414)

*plus* the acquisition less disposals of non-produced assets (0)*equals* saving (427) *plus* the current external balance (-13).

Consolidating the rest of the world account

19.45 Looking only at the capital and financial account of the rest of the world:

the current external balance (-13)

plus the acquisitions less disposals of non-produced assets (0)

plus capital transfers receivable (4)

minus capital transfers payable (1)

equals net lending or borrowing (-10).

19.46 Combining this identity with the previous one reduces to:

the acquisitions less disposals of produced assets (= capital formation) (414) *plus* the acquisitions less disposals of non-produced assets (0) *equals* saving (427) *plus* net lending or borrowing to the rest of the world (-10) *minus* capital transfers payable to the rest of the world (4). *plus* capital transfers receivable from the rest of the world (1).

In other words investment is equal to saving generated from within the total economy or drawn in from the rest of the world.

# C. The macroeconomic aggregates in the SNA

## 1. The GDP identities

19.47 Rearranging the order of items appearing in the goods and services account leads to the most familiar definitions of GDP:

Output (3 604) *minus* intermediate consumption (1 883) *plus* taxes less subsidies on products (141 - 8) *equals* final consumption (1 399) *plus* the acquisitions less disposals of produced assets (= capital formation) (414) *plus* exports (540) *minus* imports (499) *equals* GDP (1 854).

There are thus two separate ways in which GDP can be defined:

- a. the production measure of gross domestic product (GDP) is derived as the value of output less intermediate consumption plus any taxes less subsidies on products not already included in the value of output,
- b. the expenditure measure of gross domestic product (GDP) is derived as the sum of expenditure on final consumption plus gross capital formation plus exports less imports.
- 19.48 The production measure of GDP can also be expressed as value added adjusted to ensure all taxes less subsidies on products are included. As described in chapter 78, value added can be viewed as the elements comprising income: compensationremuneration of employees, operating surplus, mixed income and other taxes less subsidies on production. If separate estimates are available of these components, then a third way of compiling GDP is possible, that is, from the income side. Because other taxes less subsidies on production are included and taxes less subsidies on products are to be included also, the two tax items can be replaced by the term that is the sum of them both, taxes less subsidies on production and imports.

GDP (1 854)

equals

compensation<u>remuneration</u> of employees (1 150)

plus gross operating surplus (452)

plus gross mixed income (61)

plus taxes less subsidies on production and imports (191).

The third way in which GDP can be defined is thus

c. the income measure of gross domestic product (GDP) is derived as <u>compensation</u> <u>remuneration</u> of employees plus gross operating surplus plus gross mixed incomes plus taxes less subsidies on both production and imports.

## 2. A note on the valuation of output

- 19.49 In chapter 67, it is explained that the preferred measurement of output in the system is basic prices. At basic prices, the value of output excludes all taxes on products and includes all subsidies on products. It includes all other taxes on production and excludes all other subsidies on production. However, the data sources in some countries may not permit this valuation to be followed. In this case, output will be valued at producers' prices. All taxes on both products and production (possibly excluding any VAT type taxes) will be included in the value of output and all subsidies on both products and products and production will be excluded.
- 19.50 For this reason, the definition of GDP from the production side given above includes the phrase "plus any taxes less subsidies on products not already included in the value of output". When output is valued at producers' prices, there will be no further taxes on products to add in (except possibly VAT type taxes); they will be already included in the measure of output (and similarly subsidies on products will already be deducted). In this case, GDP may be defined as *the production measure of gross domestic product (GDP) is derived as the value of output at producers' prices less intermediate consumption.* When output is measured at basic prices (as preferred in the SNA and as followed in the numerical example) the definition can be rephrased as *the production measure of gross domestic product (GDP) is derived as the value of output at basic prices less intermediate consumption plus taxes less subsidies on products.*

## **3.** Gross and net domestic product

- 19.51 While the third definition of GDP is correct both economically and statistically, it is held not to be the best measure of income. Income is usually defined as the amount that can be consumed while keeping the level of capital intact. (For further discussion on this see <u>paragraph 9.25</u>the introduction to chapter 8.) It is for this reason that the items <u>consumption of fixed capitaldepreciation and depletion are is</u> so important in the accounts and appears in every account as the difference between balancing items on a gross and net basis. To measure domestic production on a net basis, it is necessary:
  - a. to deduct <del>consumption of fixed capital<u>depreciation</u> and <u>depletion</u> from the production measure of GDP,</del>
  - b. to replace gross capital formation by net capital formation, and subtract depletion, in the expenditure measure of GDP,
  - c. to replace gross operating surplus by net operating surplus and gross mixed income by net mixed income in the income measure of GDP.
- 19.52 Each deduction from GDP is equivalent because the difference between gross and net capital formation is the consumption of fixed capitaldeprecation, while depletion is explicitly subtracted as a stand-alone item. Both items also representas is the difference between the sum of operating surplus and mixed income on a gross basis as opposed to a net basis. Thus, net domestic product (NDP) is defined as gross domestic product (GDP) less the consumption of fixed capitaldepreciation and less depletion.

NDP (1 632)

equals

GDP (1 854)

minus consumption of fixed capitaldepreciation (222)

minus depletion (...).

## 4. Gross and net national income

19.53 In some countries, border or seasonal workers may have a significant effect on the amount of compensationremuneration of employees that is either payable abroad or receivable from abroad. CompensationRemuneration earned abroad but repatriated to the country where the employee is resident (as opposed to where he or she works) adds to the income of households available for consumption. The concept of national income as opposed to domestic production is thus another key aggregate of the SNA. As well as labour income from abroad in the form of <u>compensationremuneration</u> of employees, income earned abroad on capital, especially financial capital, in the form of property income, is included in national income as well as any taxes <u>less subsidies on production and importson products</u> payable by non-residents. Similar payments flowing out of the total economy to the rest of the world have to be deducted from GDP to reach national income.

19.54 Gross national income (GNI) is defined as GDP plus <u>compensation</u> of employees receivable from abroad plus property income receivable from abroad plus taxes less subsidies on production receivable from abroad less <u>compensation</u> of employees payable abroad less property income payable abroad and less taxes plus subsidies on production payable abroad. In the terms of an equation,

GNI (1864)

equals

GDP (1 854)

plus compensationremuneration of employees receivable from abroad (6)

plus property income receivable from abroad (44)

plus taxes less subsidies on production and imports receivable from abroad (0)

minus compensationremuneration of employees payable abroad (2)

*minus* property income payable abroad (38)

minus taxes less subsidies on production and imports payable abroad (0).

19.55 As mentioned above, an income concept is better measured after deducting consumption of fixed capital depreciation and depletion, so Net national income (NNI) is defined as GNI less the consumption of fixed capital depreciation and depletion.

NNI (1 642)

equals

GNI (1864)

*minus* consumption of fixed capital<u>depreciation</u> (222)

minus depletion (...).

## 5. National disposable income

- 19.56 A further step in examining the impact of the rest of the world on the national economy is to consider current transfers receivable from abroad and those payable abroad. Transfers receivable from abroad include remittances from nationals working abroad for long enough (more than one year) to be treated as resident elsewhere. However, like <u>compensation\_remuneration</u> of employees payable from abroad, these transfers from non-residents can have a major impact on the resources available to the national economy. Overseas assistance, other than development assistance for capital projects, is also shown here. As before, transfers payable abroad must be deducted in moving from national income to national disposable income.
- 19.57 National disposable income, more often than domestic product and national income, is usually shown on a net basis. *Net national disposable income (NNDI) is defined as net national income (NNI) plus current transfers receivable from abroad less current transfers payable abroad*. In equation terms,

NNDI (1 604)

equals

NNI (1 642)

plus current transfers receivable from abroad (17)

minus current transfers payable abroad (55).

## D. An example set of integrated economic accounts

19.58 The T accounts shown in table <u>1619</u>.1 and <u>1619</u>.2 can be extended to cover all the sectors of the economy and as much detail as required in the accounts. Such an extended presentation is referred to as <u>the sequence</u> set of (integrated) economic accounts. An example is tables <u>1619</u>.4 and <u>1619</u>.5 which show, simultaneously, the general accounting structure of the SNA and present a set of data for the individual institutional sectors, the economy as a whole and the rest of the world.

Table 1619.4: Summary current account with sector details - uses expenditures

Table <u>1619</u>.4 (cont): Summary current account with sector details – <u>resourcesrevenues</u>

Table <u>1619</u>.5: Summary of the accumulation accounts and balance sheets with sector details – assets and changes in assets

Table <u>1619</u>.5 (cont): Summary of the accumulation accounts and balance sheets with sector details – liabilities, net worth and changes in them

The table brings together in one presentation:

the institutional sector accounts,

the rest of the world accounts, and

the goods and services account.

19.59 In order to simplify this table while still having it comprehensive, classifications of sectors, transactions and other flows, assets and liabilities are at the highest level of aggregation compatible with understanding the structure of the SNA. However, columns and rows can be subdivided to introduce subsectors or more detailed classifications of transactions and other flows, assets and liabilities.

## 1. Institutional sector accounts

## **Current accounts**

- 19.60 As an example of the institutional sectors current accounts, consider the column for non-financial corporations.
- 19.61 The production account shows output (2 808) on the right-hand side, intermediate consumption (1 477) and value added (1 331 gross, 1 174 net, the difference referring to consumption of fixed capital depreciation and depletion (157), on the left-hand side). Value added, the balancing item of the production account, appears again in the same row as a resourcerevenue of the generation of carned income account.
- 19.62 The <u>usesexpenditures</u> of the generation of <u>earned</u> income account (<u>compensationremuneration</u> of employees (986) and other taxes (88) less subsidies on production (35)) are shown on the left-hand side, the balancing item being net operating surplus (135), which appears again as a <u>resourcerevenue</u> of the allocation of <u>primaryearned</u> income account.
- 19.63 In the allocation of <u>primarycarned</u> income account, property income receivable (96), along with operating surplus is recorded on the right-hand side, and property income payable (134) is recorded on the left-hand side. It also shows, as a negative item related to rent, the reallocation of depletion to the legal owner of natural resources in proportion to its economic ownership of the resources. The balancing item is the net balance of

primarycarned incomes (97), which appears again as a resourcerevenue of the secondary distribution of income transfers other than social transfers in kind account. The secondary distribution of income transfers other than social transfers in kind account shows current transfers, payable (98) and receivable (72), leading to the balancing item of net disposable income (71). This item, which can also be described as the undistributed income of non-financial corporations, appears as a resourcerevenue in the use of income account.

- 19.64 The only transaction appearing in the use of income account for the corporations sectors is an entry for the change in pension entitlements. In this case the entry has a value of zero so the balancing item of the use of income account, saving, has the same value as disposable income.
- 19.65 The accounts for other institutional sectors may be read the same way, the relevant transactions varying according to the sector involved.

## The use of income account

19.66 The presentation of the two ways in which disposable income is associated with final consumption, one taking account of the redistribution of incomeyia transfers in kind leading to actual consumption and the other showing final consumption expenditure to disposable income directly, is simplified in table 1619.4. The redistribution of incomesocial transfers in kind account and the use of adjusted disposable-income adjusted for social transfers in kind account are merged with the use of disposable income account as follows. Disposable income, netgross, is 317 for general government, 37 for NPISHs and 1 219 for households. Final consumption expenditure is 352 for government, 32 for NPISHs and 1 015 for households. Total consumption expenditure is 1 399. Saving is given by disposable income less final consumption expenditure.

#### The accumulation accounts

19.67 The accumulation accounts follow the sequence of current accounts for the institutional sectors. For example, net saving of households is 192. Households receive 23 and pay 5 as capital transfers. Thus the value of the changes in their net worth due to saving and capital transfers is 210. Households have 48 as gross fixed capital formationacquisitions less disposals of produced assets (25 as net fixed capital formation after deduction of consumption of fixed capitaldepreciation (23)), changes in inventories of 2, and acquisitions less disposals of valuables of 5. Their acquisitions less disposals of non-produced non-financial assets (land) are 4. The net lending of households is 174. They incur financial liabilities (net) of 15 and acquire financial assets (net) of 189. Other changes in volume of assets and liabilities are 2. The value of the assets held by households increases by 96 due to changes in the prices of both non-financial assets (80) and financial assets (16); there are no nominal gains or losses on their liabilities, which means that all their liabilities are denominated in monetary termsnominal values and probably in the national currency of the economy in question.

## The balance sheets

19.68 The balance sheets are also part of the integratedsequence of economic accounts. In order to see the relationships between the accumulation accounts and balance sheets, take general government as the example. The opening assets are 1 185 (789 non-financial assets and 396 financial assets) and the opening liabilities 687, net worth thus being 498. The total value of non-financial assets increases by 57, which results from all changes in these assets recorded in the accumulation accounts, gross fixed capital formationacquisition less disposals of produced assets (excluding natural capital) (35), consumption of fixed capital\_depreciation related to these assets (-27), acquisitions less disposals of valuables (3), acquisitions less disposals of non-produced non-financial assets (excluding natural capital) (2), acquisitions less disposals of natural capital (...), depreciation and depletion related to these assets (-...), other volume changes (0) and nominal holding gains (44). Financial assets decrease by 9 (net disposal of financial assets, 10, other volume changes, 0, nominal holding gains, 1). On the right-hand side, liabilities increase by 102, which results again

from all changes in liabilities recorded in the accumulation accounts (net incurrence of liabilities (93), other volume changes (2), revaluation of liabilities (7)). So the closing assets are 1 233 (846 + 387) and the closing liabilities are 789; closing net worth (444) shows a decrease over the year of 54. The sources of this change in net worth are summarized on the right-hand side of the account showing the change in balance sheets: changes in net worth due to saving and capital transfers (-90, see also the right-hand side of the capital account), to other changes in volume of assets and liabilities (-2, see also the right-hand side of the other changes in volume of assets and liabilities account), and to nominal holding gains or losses (38, see also the right-hand side of the revaluation account).

## 2. The rest of the world account

- 19.69 As explained earlier, the rest of the world accounts are presented from the viewpoint of the rest of the world. Imports of goods and services (499) are a resourcerevenue for the rest of the world, even though they represent an outflow from the national economy and exports (540) are an useexpenditure of the rest of the world. Thus imports appear on the right-hand side of the table and exports on the left. The external account of goods and services is shown at the same level as the production account for institutional sectors. The external balance of goods and services is -41. With a positive sign, it is a surplus of the rest of the world (a deficit of the national economy) and vice versa.
- 19.70 As explained in connection with table <u>1619</u>.3, the external balance on <u>primarycarned</u> income is -10 and on <u>secondarytransfer</u> income is 38, giving a current external balance of -13.
- 19.71 Transactions of the accumulation accounts appear in the columns for the rest of the world when relevant (mainly capital transfers and financial transactions). The rest of the world columns show the assets and liabilities position of the rest of the world vis-à-vis the national economy (external assets and liabilities account). The row "changes in net worth due to saving and capital transfers" corresponds, for the rest of the world, to the current external balance and capital transfers.

## 3. The goods and services account

19.72 In the integrated economic accounts, the goods and services account is shown in a column, not in a row. It reflects the various transactions in goods and services that appear in the accounts of the institutional sectors. Intermediate consumption and final consumption appear as uses in the institutional accounts on the left-hand side of the accounts. For the goods and services account, they appear in the right-hand side column, even though the right-hand side is generally reserved for resourcesrevenues and consumption is a use. This device of using the opposite side of the account from normal gives a balance for the row for each of the items appearing in the goods and services account. On the resources side of the table, the figures appearing in the column for goods and services are the counterparts of the uses made by the various sectors and the rest of the world: exports (540), intermediate consumption (1 883), final consumption expenditure or actual final consumption (1 399), gross fixed capital formation acquisitions less disposals of produced assets (excluding natural capital) (376), acquisitions less disposals of produced natural capital (...), changes in inventories (28) and acquisitions less disposals of valuables (10). On the useexpenditure side of the table, the figures in the column for goods and services are the counterparts of the resourcesrevenues of the various sectors and the rest of the world: imports (499) and output (3 604). On the same side taxes less subsidies on products (133) are shown directly in the column for goods and services. They are a component of the value of the supply of goods and services that has no counterpart in the value of the output of any institutional sector.

## 4. The total economy column

19.73 The columns for the total economy remain to be explained. Except for taxes less subsidies on products and gross and net domestic product, the figures in these columns are simply the sum of the corresponding figures for the institutional sectors. The production account for the total economy includes, as resourcesrevenues, output (that is, the total output of the economy (3 604)) and taxes less subsidies on products (133), the latter being the counterpart of the figure appearing on the left-hand side in the column for goods and services. The usesceptenditures side of the production account for the total economy shows intermediate consumption (1

883) and domestic product at market prices (1 854 gross, 1 632 net). The latter is the sum of value added of the various sectors and taxes less subsidies on products. Domestic product then appears on the right-hand side as a <u>resourcerevenue</u> of the generation of <u>carned</u> income account for the total economy. Taxes less subsidies on products are shown again on the left-hand side in the column for total economy and on the right-hand side as a <u>resourcerevenue</u> of government (and the rest of the world if relevant). This double routing of taxes less subsidies on products is made in order to get domestic product, gross and net, directly in the overall accounts, as explained above.

19.74 The other items in the columns for the total economy are self-explanatory. Net national income at market prices (1 642) is shown directly as the sum of balance of primarycarned incomes of the various sectors; national disposable income, national saving, etc. are also obtained directly.

# **E.** Balancing the accounts

- <u>19.75</u> As explained in more detail in section E of chapter 4, the accounting system underlying the SNA derives from the following bookkeeping principles:
  - a. <u>Vertical double-entry bookkeeping, which implies that each transaction leads to at least two entries,</u> <u>traditionally referred to as a credit entry and a debit entry, in the books of the transactor. As a</u> <u>consequence, net lending or net borrowing resulting from non-financial transactions is by</u> <u>definition equal to net lending or net borrowing resulting from financial transactions.</u>
  - b. Horizontal double-entry bookkeeping, which implies that each transaction of a certain unit leads to a counterpart transaction of another unit. As a consequence, for any transaction, total receipts of all units, including receipts of non-resident units from resident units, are by definition equal to total payments of all units, including payments by non-resident units to resident units. This also holds for total supply of goods and services and total use of goods and services, as explained in chapter 15 and, more concisely, in paragraph 19.47.
  - c. Quadruple-entry bookkeeping, which basically combines the two principles above.
- 19.76 The first principle also ensures the fundamental identity of a unit's balance sheet, that is, the total value of assets equals the total value of liabilities plus net worth, i.e., net worth equals the sum of cumulative changes in net worth due to saving and capital transfers, cumulative changes in net worth due to other changes in assets and liabilities, and cumulative changes in net worth due to holding gains and losses. It also ensures, as explained in paragraph 19.32, that for a single type of asset (or liability and net worth) the difference between the opening and the closing value can be explained by the total value of the assets acquired, less the total value of those disposed of (including depreciation and depletion where appropriate) plus the value of other positive or negative changes in the volume of the assets and liabilities plus the value of the positive or negative nominal holding gains resulting from a change in the price of the asset.
- 19.77 The system of national accounts can thus be seen as a fully consistent and closed accounting system guided by the quadruple-entry bookkeeping principle. From a conceptual point of view, all transactions and positions of a unit/sector add up, and for all transactions (stocks), total receipts (stocks of financial assets) of all agents are equal to total payments (stocks of liabilities).
- 19.78 This quadruple entry bookkeeping system is not just a theoretical notion. It provides a very powerful tool for checking the quality of the data used for the compilation of national accounts, by looking at the consistency of the source data in two ways. First, one can see whether the numbers for an institutional unit or sector are internally consistent, by checking whether they respect the traditional vertical double entry bookkeeping rules. In the national accounts, this consistency is usually checked by comparing the balancing item from the capital account with the balancing item of the financial account. The other check concerns the consistency between total payments and total receipts, for each of the transactions (and positions), including total supply and total use of goods and services.
- <u>19.79</u> The compilation of national accounts typically involves the combination of information from a large variety of data sources. The type and quality of information available will depend on the country, but all countries
use a mix of data derived from statistical surveys, administrative data sources, financial reports, etc. These data sources may relate to particular units or sectors, or may relate to particular sets of transactions, other flows or stocks. The source information available may also differ depending on the frequency (e.g., quarterly versus annual) and the timeliness of the relevant national accounts estimates.

- 19.80 These data sources used as input for the compilation of national accounts are often not fully in line with the standards of the SNA, and adjustments may need to be made before integrating the results in the framework of national accounts. These adjustments may relate to differences in industry or sector coverage, conceptual differences with regard to the recording and valuation of the flows and stocks, and items that may be missing. In some cases adjustments can be made on the basis of counterpart information available from other data sources, but in other cases assumptions have to be made to fill these gaps.
- 19.81 The next step in the compilation process is to confront and balance the various pieces of information within the frameworks of the national accounts, be it the sequence of economic accounts for institutional sectors, the supply and use tables, or the labour market tables, in order to ensure consistency in line with the above principles. As noted above, the various data sources consist of different types of information, have undergone different types of adjustments, and differ in quality. Therefore, the balancing process can be quite complex. It often involves weighting the relative quality of the various data sources, discussing possible reasons for any differences, making decisions using informed judgement on which information to use and simultaneously adjusting the information in the framework to arrive at full consistency. Often, this is an iterative process.
- 19.82 To arrive at full consistency is the ideal, but this is not the practice. Usually, countries manage to compile estimates which respect the horizontal double entry bookkeeping principle, although some countries do publish, for example, different estimates for GDP from the production perspective and GDP from the expenditure perspective (particularly for quarterly estimates), thus not fully respecting the equality of supply and use of goods and services. In addition, these countries may publish yet another estimate for GDP from an income perspective.
- 19.7519.83A more general phenomenon is that countries are not in a position to compile estimates which fully<br/>respect the vertical double entry bookkeeping principle for all, or most of, the institutional sectors. As a<br/>consequence, one can observe differences between net lending or net borrowing resulting from non-financial<br/>transactions versus net lending or net borrowing resulting from financial transactions. These differences are<br/>usually framed and published as "statistical discrepancies". If such discrepancies have a structural<br/>component, in the sense of being consistently positive or negative for a certain institutional sector, there<br/>should be continued research to resolve the inconsistencies and further improving the estimates.

# **Chapter 20: Elaborating the accounts**

(moved upwards, revised title and revised content)

## (OLD Chapter 18: Elaborating and presenting the accounts)

# A. Introduction

- 20.1 The preceding chapters explain both the accounting aspects of the SNA and the sequence of economic accounts, including supply and use tables and more detailed tables on the inputs used in the production of goods and services, labour and capital. This chapter builds on this information to describe how to elaborate the SNA in a way that better suits the needs of users.
- 20.2 Historically, the national accounts have typically been produced on an annual basis. Annual series are adequate to identify long term shifts in the economy, but to assess what is happening in the short term, higher frequency statistics typically quarterly fill the gap between short term indicators typically monthly and fully elaborated accounts and tables. Section B provides an overview of the key issues that need to be taken into consideration in producing quarterly national accounts.
- 20.3 Another important dimension of the accounts is that of regional accounts, where a region is typically a subdivision of a country. These accounts are particularly important where there are significant differences in economic circumstances between regions, and are useful for regional economic planning and development. An overview of aspects of regional accounting is provided in Section C.
- 20.4 Although no account or table in the previous chapters has illustrated it, the prime use of the SNA is in a time series context so that users of the accounts can assess how the economy is evolving and developing over time. To meet this requirement, it is essential that national accounts compilers maintain high-quality time series. Aspects associated with this are discussed in Section D.
- 20.5 A further issue to be considered in the compilation of the national accounts is that of high inflation. A method of measurement which gives acceptable approximate measures in more or less normal conditions may no longer be acceptable for countries with significant inflation. Section E describes how to handle high inflation when compiling the national accounts.
- 20.6 To explain all of the topics covered in this chapter in detail would require far more extensive discussion than is appropriate for the SNA, particularly detail regarding practical compilation issues. Accordingly, this chapter provides summary information with references, where appropriate, to manuals and compilation guidance where more detail can be found.

# **B.** Quarterly national accounts

### 1. Introduction

- 20.7 The main purpose of quarterly national accounts (QNA) is to provide a picture of current economic developments that is timelier than that provided by annual national accounts (ANA), and more comprehensive than that provided by individual short term indicators. In addition, as with the annual accounts, QNA provide a coordinating conceptual framework for the design and collection of economic source data and a framework for identifying major gaps in the range of available short term indicators.
- 20.8 The QNA adopt the same concepts, principles, definitions, and structure as the ANA. In principle, the QNA cover the entire sequence of economic accounts, including balance sheets, in the SNA. In practice, the constraints of data availability, time, and resources, including collection costs, mean that QNA are usually less complete than ANA. However, the compilation of the QNA should not be considered in isolation but should be coherent and consistent with the ANA. In this regard, the benchmarking of QNA series to the relevant ANA series, as described below, is an important feature of QNA compilation.
- 20.9 The coverage of the QNA system in a country usually evolves. In the initial stage of development, only estimates of GDP with a split by industry and/or type of expenditure may be derived. Gross national income (GNI), saving, and consolidated accounts for the economy often follow next. Extensions can be made as the use of the system becomes more established, data sources become available, and users become more familiar with the data. Additional breakdowns of GDP, institutional sector accounts and balance sheets, and supply and use tables may be added.

20.10 Detailed information on compiling QNA is available in International Monetary Fund's *Quarterly National Accounts Manual* (2017) and the material in this section is a summary of information contained in the Manual. Eurostat's *Handbook on Quarterly National Accounts* (2013) also provides guidance on the compilation of quarterly accounts.

## 2. Time of recording

- 20.11 The general time of recording principle in the SNA is the accrual basis. This principle applies to both annual and quarterly national accounts. Under the accrual principle, flows are recorded at the time economic value is created, transformed, exchanged, transferred, or extinguished. The application of accrual principles may present specific practical and conceptual problems for quarterly flows. These situations typically arise when the monthly or quarterly statistics on which the QNA are based record flows referring to economic events that accrue to periods longer (or shorter) than a calendar month or quarter. For example, wage arrears may be recorded in a particular month although they may accrue to several past payroll periods. The accrual recording is more complicated when there is a significant delay between the reporting period and the full-accrual event, which may give rise to revisions of quarterly estimates.
- 20.12 Transactions that have a fixed relation to a particular period (e.g., accrued in a previous period or accrued over a number of accounting periods) should be allocated to the periods in which they accrued. Examples are taxes on incomes and products that may be collected in a subsequent period and employee vacation leave entitlements that build up over time and are paid when the vacation is taken. If source data are on an accrual basis then adjustments are not likely to be needed, but if they are on some other basis (e.g., cash) then adjustments should be made. For example, in the case of taxes on income and production an appropriate time shift of the tax receipts may be an approach to obtain data on a quarterly basis.
- 20.13 Uncertainty in the amount to be allocated is another element that may complicate the compilation of quarterly data on an accrual basis. For example, the amount of a tax that is paid at the end of the year may not be known at the beginning of the year. In such cases, initial estimates based on the expected amounts should be calculated, and replaced when actual amounts are known, respecting the coherence between the QNA and ANA. Similar uncertainty exists in the allocation of expected crops output.
- 20.14 Work-in-progress concerns production that goes beyond one period and the measurement of such production must be split into separate periods. Because of the shorter accounting period, these difficulties are relatively more significant for the QNA than for the ANA. In the QNA, work-in-progress should be recorded for economic activities in which the production cycle goes beyond the quarter. Work-in-progress can be particularly important for industries such as agriculture, manufacturinge of ships and airplanes, and construction activities. See chapters 7 and 11 for more discussion on the measurement of work in progress.

### 3. Definitions involving a year or more

20.15 The qualifying criterion for a fixed asset is that it should be used in production for more than one year. For consistency between the QNA and ANA, this period is maintained even for quarterly accounts. Similarly, the distinction between short term and long term in the classification of financial assets remains one year in the QNA.

### 4. Coverage of quarterly national accounts

20.16 It is possible in principle to compile the whole set of accounts in the SNA, including balance sheets, on a quarterly basis. The most common sets of quarterly national accounts<u>ONA</u>, though, are for the goods and services account, the income components of value added, government expenditure, the financial account and the balance sheet for financial assets and liabilities. The quarterly goods and services account should also be compiled in volume terms.

## 5. Measuring GDP and its components

20.17 Measurement of GDP constitutes a core part of the QNA. As explained in chapter 19, there are three approaches to measuring GDP: (a) the production approach, (b) the expenditure approach, and (c) the

income approach.

- 20.18 The various approaches use specific source data and allow a distinct perspective on development and level of GDP by providing different breakdowns of GDP. They also facilitate cross-checking of data as, conceptually, the three measures should provide the same estimate of GDP. Therefore, it is recommended that countries estimate quarterly GDP using at least two of the three approaches.
- 20.19 The production approach is widely used for measuring quarterly GDP, in part because of a traditional focus in many countries on short term statistics on indicators of production, which can be used as inputs for QNA compilation. This approach involves calculating output, intermediate consumption, and value added at current prices as well as in volume terms by kind of economic activity. In most countries, output data are reasonably well covered for manufacturing, but the coverage of construction and services is usually less comprehensive. Components missing from output, intermediate consumption, and value added are typically estimated using ratios that reflect fixed coefficients; for example, intermediate consumption may be assumed to be a in a fixed proportion to output in the short term. Single indicator-based estimates will be biased to the extent that the ratios vary with factors such as seasonal effects, capacity utilisation, input composition, technological change, and productivity trends.
- 20.20 The expenditure approach usually has two strong pillars of quarterly data: namely, merchandise trade and government consumption. The other categories-in particular, household final consumption-are often less well covered. The major components of external transactions are usually available from the balance of payments and through merchandise trade statistics that often have a strong basis in comprehensive data collection for customs purposes. Data on government consumption can be derived from government administrative data, but directly observed data on fixed capital formation and, in particular, changes in inventories may be lacking. Nevertheless, it may still be possible to derive a useful split of GDP by categories of expenditure. For example, if GDP is estimated using the production approach and the compiler can estimate key expenditure components using available sources, then the missing components may be presented as a residual. These could be reduced over time if more expenditure data becomes available. One such missing component may be changes in inventories, because quarterly source data are often unavailable, or otherwise incomplete or inadequate. Although not an independent check of the GDP estimates, incomplete estimates of GDP by categories of expenditure (i.e., with some components derived as a residual) are useful for analysis in addition to providing some plausibility checks of GDP.
- 20.21 The expenditure approach provides particularly useful data for business-cycle and macroeconomic policy analysis and for forecasting. Also, this approach is typically most useful for policy reasons because, over the short term, demand can generally be more easily influenced than supply.
- 20.22 The income approach avoids some of the problems that may arise in using the production and expenditure approaches, such as the reliance on fixed ratios used in production data. The income approach may have a sound underpinning in statistics on the remuneration of employees or in administrative data on this remuneration (for instance, for social security purposes). Quarterly observations of operating surplus/mixed income are often unavailable although the increasing use of business accounting software is leading to the wider availability of income data on a quarterly basis, even for many small businesses in the formal sector. Even if income data are incomplete, it may still be possible to derive an income split where one of the categories (usually gross operating surplus) is derived as a residual. The distribution of income from GDP provides a useful alternative perspective on economic development. The income approach also provides necessary data for compiling the income accounts in the sequence of economic accounts.
- 20.23 The weaknesses of the various methods for compiling quarterly GDP can be mitigated by combining production and expenditure data using the <u>commodity product</u> flow method. This method is based on the fundamental national accounting identity shown in the goods and services account and supply and use tables (SUTs). The compilation of SUTs on a quarterly basis using the structures derived from the annual <u>supply and use tablesSUTs</u> provide a coherent framework for estimating quarterly GDP in both current price and volume terms. However, not all the required data are likely to be available on a quarterly basis and various assumptions using fixed ratios are required. Nonetheless, quarterly SUTs can provide a key tool for the compilation of the QNA or, as a minimum, a validation tool to help improve the QNA. SUTs are described in detail in chapter 15.
- 20.24 Compilers of quarterly GDP should ensure that the informal economy is covered, although it may not be well represented in source data. A common assumption in the QNA is that informal activities move together with formal ones. This assumption is not always plausible across time, particularly in countries with large shares of informality undergoing rapid changes. In such cases, compilers should periodically

reassess the ratio between informal and formal activities.

20.25 As discussed in chapter 1, NDP measures are conceptually superior to measures of GDP, but they may be more difficult to compile in practice because of the need for estimates of depreciation and depletion. Nonetheless, compilers of QNA are encouraged to compile estimates of NDP in addition to GDP. Even when separate quarterly estimates of depreciation and depletion are unavailable, the extrapolation and interpolation of statistics discussed below can be applied to annual estimates. As these components tend to be reasonably stable in the shorter term, they lend themselves quite readily to this approach.

### 6. Quarterly accounts by institutional sector

- 20.26 Countries are encouraged to compile quarterly institutional sector accounts. These could be introduced simultaneously or, more commonly, be gradually developed in several stages. Accounts for the general government and the financial corporations sectors may be introduced first because of the availability of source data, the analytical usefulness of the statistics, and the desirability to have the data in a national accounting framework that would allow these sectors to be linked to the rest of the economy.
- 20.27 On the other end of the spectrum, separate quarterly data for the households and NPISHs sectors are usually more difficult to obtain, and these sectors may be combined in the QNA. In the absence of direct data, indicators, such as retail sales, can be used to estimate particular components. In the absence of any source data of sufficient quality, these sectors could initially be calculated as a residual. However, given the importance of the household sector, particularly household income accounts, for the analysis of economic well-being, compilers are encouraged to develop data sources that would enable the compilation of quarterly household sector for at least the income accounts.
- 20.28 Financial accounts by institutional sector may be easier to implement than the income and capital accounts, because data on transactions and stocks of financial assets or liabilities by counterpart sectors are often available as a by-product of regulation or monitoring of the financial sector.
- 20.29 A helpful principle in compiling institutional sector accounts is making use of counterparty information: that is, in any transaction involving two parties, information can be collected from the party from which it can be most efficiently collected. For instance, data on interest payable by government to households can be obtained from one or a relatively small number of government agencies, rather than many households. Counterparty information becomes particularly important in a quarterly context when there are more likely to be gaps in data. One issue to be considered is that data providers may not always be able to provide data on the institutional classification of the counterparts so some estimation may be required.
- 20.30 As previously mentioned, the income approach to measuring GDP is a foundation for the income accounts by institutional sector. The availability of data on GDP by income component and by institutional sector enables the earned income accounts to be completed by institutional sector. Thus, countries that compile quarterly estimates of GDP using the income approach typically have better-developed quarterly accounts by institutional sector.
- 20.31 Data for estimates of capital formation by institutional sector should be collected from the purchaser rather than the supplier of the capital, as the supplier may not know what institutional sector is acquiring the assets. These estimates are an important component of the capital accounts. For institutional sector data, it is necessary to cover the second-hand assets; while for the total economy, transactions in existing assets largely cancel out (except for transactions with non-residents, which can be obtained from trade and balance of payments statistics, and sales of used vehicles from businesses and governments to households). The same considerations apply to the stocks of non-financial assets for balance sheets. Similar to the stocks for the whole economy, they are likely to be stable in aggregate, although transactions in second-hand assets may be a more significant issue.
- 20.32 The financial accounts and the financial components of the balance sheets are usually among the more complete institutional sector data. Balance sheet data are often already collected from financial corporations. If the counterparts in each transaction, or financial asset or liability position are classified by institutional sectors, there is a strong basis for compiling the data for all the sectors, not only the financial corporations themselves. In addition, data from the balance of payments and the international investment position (IIP) would show transactions and financial asset and liability positions between non-residents and residents, which provide another critical element in institutional sector financial accounts.

- 20.33 Attention should also be paid to financial transactions and stocks of assets and liabilities not included in financial sector and balance of payments data, such as household equity in corporations, as well as other accounts receivable/payableor particular types of liabilities of non-financial corporation. In these casesFor example, stock exchanges and security holding databases mayean provide additional information about particular types of liabilities of non-financial corporations.
- 20.34 If the accounts are derived independently, net lending/net borrowing for both the capital and financial accounts will act as checks on each other. Alternatively, if only one account is available, the balancing item can be used as a starting point for compiling the other. For a more general discussion on this point, see chapter 19.

# 7. Source data issues

- 20.35 QNA data sources are generally more limited in detail and coverage than those available for the annual estimates. QNA data sources need to be more timely than the data for the annual estimates, a factor that could affect data availability and may increase data collection costs. As a result, QNA compilation may rely on indicators that best capture the movements in the target variable in the past and in the future. Therefore, the basic principle in selecting and developing sources is to obtain indicators that best reflect the economic activity being measured. In some cases, source data are available in a form ready for use in compiling QNA with little or no adjustment. In other cases, the source data may differ substantially from the ideal and will need to be adjusted. These adjustments may typically be established determined using ratios established in benchmark years for which additional data sources—such as the results of more comprehensive and detailed surveys or censuses—may be available. In these cases, the QNA estimates are anchored to these main benchmark years and the regular source data are used as indicators to update the benchmark estimates (extrapolation). See section D for more information on extrapolation.
- 20.36 The choice of a suitable indicator is based on the assumption that it is able to reflect the changes in the target variable. However, these indicators should be reviewed on a regular basis because the economic conditions (e.g., production relationships or price relationships of the variable) may have changed over time. The suitability of an indicator must first be assessed qualitatively by examining the similarities and differences with the target variable in terms of scope, definitions, frequency, coverage, and so forth. The most desirable indicators differ only slightly from those used in ANA, for example, by being based on a sound sample but with less detailed data. Less satisfactory are indicators that cover only a part of the total, such as the key products or a subset of producers in an industry. However, if these indicators display growth rates that are consistent with the variable being measured, then they could be quite useful. Even less satisfactory are indicators that measure a variable related to the process or population of the target variable, but less directly, such as labour inputs as an indicator of the output of <u>market</u> services.
- 20.37 Indicators that apply past trends or measure a variable that is connected to the target variable only by a behavioural relationship or statistical correlation should be avoided, because the underlying relationships can be expected to be less stable than is the case of an indicator with a direct intrinsic relationship to the target variable.
- 20.38 The quality of source data for QNA can be assessed by comparing growth rates derived from the sum of four quarter estimates compiled using the QNA source data with those derived from annual estimates (when the annual estimates are compiled from independent, higher-quality, source data). This should be done before the quarterly estimates are benchmarked to the annual estimates, as discussed below. If there are significant discrepancies, then ways of making improvements to the source data, or improvements in the way the source data is used in the QNA compilation should be considered. This is especially important where indicators that are used to measure a target variable by way of a ratio derived from historical relationships, as these relationships can change over time as economies evolve.

# 8. Volume and price measures

20.39 For consistency reasons, ANA and QNA volume data should be derived using the same formula index. Conceptually, a superlative index, such as the Fisher index, is the preferred formula for aggregating elementary price and volume indices in the QNA. An acceptable, and likely more practical, alternative is to use a Laspeyres formula for volumes with the implicit Paasche formula for prices. If Fisher indices are used, quarterly indices should be calculated using quarterly weights and chain-linked using the one quarter overlap technique. The quarterly chain Fisher series should be benchmarked to the corresponding annual chain Fisher series.

- 20.40 When the Laspeyres volume index is chosen, quarterly volume measures should be derived using annual weights from the previous year. Quarterly volume measures based on the Laspeyres formula can be chain-linked using either the one-quarter overlap, typically using the fourth quarter of the previous year as the overlap quarter, or the annual overlap technique. The one-quarter overlap technique is the best choice to preserve the time-series properties of the volume series, but should always be used in conjunction with benchmarking to remove inconsistencies with the annual chain-linked data. Instead, the annual overlap technique can be used to derive quarterly volume measures that are automatically consistent with the corresponding annual ones. When the annual overlap technique is preferred, tests should be run to verify that there are no artificial steps between years in the chain-linked series.
- 20.41 Because chain volume data in monetary terms are typically not additive, the discrepancy between chainlinked components and chain-linked aggregates should not be removed.
- 20.42 The expenditure split is generally the most practical to measure quarterly GDP in volume terms because there is a relatively clear concept of price and volume for each demand category. In contrast, the price and volume dimensions of value added are more complex because value added cannot be directly observed and quarterly data on outputs and, more probably, intermediate consumption may not be available. The income approach is not suited for price and volume measures, although some analysts may be interested in deriving estimates of real income (see chapter 18 for a description of the measurement of real incomes.) For a more comprehensive discussion of volume and price measure see chapter 18.

# 9. Seasonal effects

- 20.43 QNA series will display seasonal variations when they measure economic flows that are influenced by weather conditions, administrative reasons, trading day variations or other recurrent within-a-year patterns. These factors are often predictable. ANA variables, in contrast, do not contain seasonal patterns because the seasonal movements disappear when the quarterly data are aggregated into annual data.
- 20.44 Because users are often interested in removing predictable variation in order to highlight other changes in the series, it is common practice for QNA compilers to produce seasonally adjusted data based on well-established seasonal adjustment procedures that are described in the IMF's *Quarterly National Accounts Manual* (2017) and Eurostat's *ESS Guidelines on Seasonal Adjustment* (2015) and *Handbook* <u>on Seasonal Adjustment (2018)</u>. Seasonally adjusted data retain the long term trend, the business-cycle movements, and the irregular effects in the series, but exclude seasonal and calendar effects. Simply adjusting for the number of days, or even trading days, in each period is not a substitute for seasonal adjustment as this technique does not take account of the impact of other seasonal affects.
- 20.45 Unadjusted data can also be useful in econometric models to exploit the information contained in the seasonal component of the series in modelling the dynamic relationship among the variables. In the context of QNA compilation, unadjusted series may be better suited for balancing purposes when the seasonal component is significant.
- 20.46 Seasonal adjustment procedures require that seasonal effects are <u>relatively</u> stable and <u>consistent for</u> <u>several years</u>; <u>usually atypically a</u> minimum of <u>three-five</u> years<u>data is required to produce quarterly</u> <u>seasonally adjusted estimates</u>. Seasonal adjustment procedures do not produce accurate results when the seasonal component has an unstable and fast-evolving pattern<u>or</u> when it shows breaks in the seasonal pattern. Structural changes in the seasonal patterns can be handled by seasonal adjustment procedures<u>although experts may be needed to provide practical advice</u>. <u>However, C</u>eompilers should avoid that implausible or artificial seasonal effects are treated as true signals and passed on as such to the seasonal adjustment phase.
- 20.47 The seasonal pattern of QNA series should be checked and validated. In the assessment of seasonality, compilers should pay particular attention to possible breaks in the seasonal pattern. When these breaks are noted, it is necessary to investigate the causes behind these breaks and understand whether these events are temporary or permanent, which may influence their treatment in the seasonal adjustment procedure.

## 10. Consistency between quarterly and annual accounts

20.48 To avoid confusion about interpreting economic developments, it is essential that the QNA are consistent with the ANA. Differences in growth rates between QNA and ANA estimates cause confusion for users

and uncertainty about the reliability of the actual measurements. Consistency means that the sums of the non-seasonally adjusted estimates for the four quarters of the year should be equal to the annual estimates. In the situation where the ANA or ANA components are built up from the QNA, consistency is achieved by construction. The ANA may, however, be based on different sources than the quarterly estimates, and therefore, differences are expected. To overcome this issue, the non-seasonally adjusted QNA data should be aligned with the annual data using benchmarking techniques. One advantage of benchmarking is that incorporating the usually more accurate annual information into the quarterly estimates increases the accuracy of the quarterly time series. Benchmarking also ensures an optimal use of the quarterly and annual source data in a time-series context. Benchmarking is discussed further in section D.

## **11.** Compilation of early estimates

- 20.49 Compilers of QNA may produce early estimates of quarterly GDP in response to a strong demand of users for a rapid measurement of macroeconomic developments, although the level of detail may be reduced due to a greater recourse to estimation methods. These early estimates are sometimes known as "flash" estimates. Early estimates typically use a similar compilation approach to that used for later estimates of the QNA, but are generally based on a partial set of source data. In some cases, non-official data sources such as business confidence or consumer confidence might be used; however such data sources need to be used with caution as they are not direct measures of economic activity. A greater use of statistical methods and assumptions is required to estimate missing observations at the time of the early estimate. In deciding the timing of early estimates, compilers should balance the trade-off between timeliness and reliability. As discussed in Section D, revisions studies should be conducted to analyse the revision process of early estimates and assess their reliability, including any early bias in the estimates. Eurostat's *Handbook on Rapid Estimates* (2017) provides further information on the compilation of rapid estimates.
- 20.50 Related to the compilation of "flash" estimates is the emerging field of nowcasting. The advances in technology in the first part of the twenty-first century have given rise to the field of big data and the development of various data science techniques to utilize such datasets. Nowcasting involves using mathematical algorithms to estimate current trends within a short timeframe. Nowcasting high level aggregates such as GDP is fraught with challenges, but can work well when the proxy indicators are related to the target variable which might be in the case of, for example, household consumption. If nowcasting techniques are used, it is important to develop predictability analysis of the results to determine their appropriateness in compiling official statistics. However, if nowcasting techniques are not actually used in compilation, they can provide a useful tool for assessing the validity of estimates compiled using more traditional approaches.

### 12. Quarterly national accounts and short term indicators

- 20.51 The QNA are less timely than short term indicators, but they provide a more comprehensive picture of current economic developments organized in an integrated framework for analysing the data. Short term indicators such as price indices, labour market indicators, industrial production indices, and turnover data for retail trade are often available monthly, shortly after the reference period. These short term indicators provide valuable information on specific aspects of current economic developments, and may also be useful source data for compiling QNA. However, these indicators are often not based on national accounts concepts and do not provide a coherent, comprehensive, and consistent picture of the different aspects of the current economic situation. This hampers tracing the causes of current problems and identifying potential future developments. For instance, for a country facing decreasing domestic output growth, it would be helpful to identify causes such as decreasing domestic demand or falling exports and to further trace deeper causes such as income, saving, and investment patterns affecting demand categories, information on which would be available from a comprehensive set of quarterly national accounts.
- 20.52 In recent times, new non-official sources providing daily or weekly data covering specific aspects of the economy have become available. Examples include estimates of credit and/or debit card spending, road traffic data and monthly VAT collections. These so-called real time indicators are not on a national accounts basis, but can provide a very timely snapshot of particular aspects of economic activity and can be useful in compiling flash estimates.

## 13. Quarterly national accounts as time series

- 20.53 The QNA data should be presented in a time-series format. A time series is a collection of observations ordered in time. A time-series format of QNA data is essential for a number of uses, including business and trend cycle analysis, identifying turning points, studying dynamic relationships between economic variables (in particular, leads and lags) and forecasting. The QNA should be compiled and disseminated in quarterly discrete form i.e., as estimates for each quarter \_\_\_\_ and not in cumulative form. Cumulative data do not constitute time series. Observations based on cumulated series cannot be compared, because they measure periods of time with different length.
- 20.54 For time series recorded in a consistent manner over time, series of period-to-period changes (e.g., GDP quarter on previous quarter growth) or changes from the same period of the previous year (e.g., GDP growth between the third quarter of the current year and the third quarter of the previous year) are generally used to assess short term movements or annual trends from quarterly data. As the quarter to quarter growth rates may be influenced by changing seasonal and calendar effects, seasonally adjusted estimates should be used for assessing movements. On the other hand, growth rates calculated using changes from the same period of the previous years are unlikely to be noticeably impacted by seasonal factors and in this case seasonally adjusted data may not be needed to calculate these growth rates.
- 20.55 To further highlight the underlying trend-cycle, most standard seasonal adjustment packages also calculate a smoothed trend cycle series, representing an estimate of the combined long term trend and the business-cycle movements in the series. Further information on time series aspects of national accounts can be found in Section D.

# C. Regional accounts

## 1. Introduction

- 20.56 Regional accounts, also referred to as sub-national accounts, play an important role in the formulation, implementation and evaluation of regional policies. In particular, regional indicators resulting from the regional accounts are used for assessing regional disparities. Regional accounts generally make use of the concepts of the national accounts, though there are issues at a regional level for which additional guidance is needed. Furthermore, the compilation of regional accounts creates additional practical challenges, particularly in regard to the availability of source data. For these reasons they are usually more limited in scope and detail than the national accounts.
- 20.57 A particular feature of regional accounts is that each region is treated as a different economic territory. In this context, transactions with other regions are recorded as if they are external transactions. External transactions of the region must distinguish between transactions with other regions of the country and transactions with the rest of the world.
- 20.58 Detailed information on compiling regional accounts can be found in Eurostat's *Manual on Regional Accounts Methods* (2013). This section provides an overview of the main issues and preferred methods associated with regional accounting.

## 2. The regional economic territory

- 20.59 The economic territory of a country is described in paragraph 5.xx). A regional economy of a country is part of the total economy of that country. The total economy is defined in terms of institutional units and sectors. It consists of all the institutional units which have a centre of predominant economic interest within the economic territory of a country. The economic territory does not coincide exactly with the geographic territory as there may be resident institutional units that undertake production outside the geographic territory. The economic territory of a country can be divided into a so-called "regional territory" and the extra-regional territory. The former consists of that part of the economic territory of a country that can be directly assigned to a region within the geographic territory of a country, including any free zones and bonded warehouses.
- 20.60 The extra-regional territory is made up of the components of the economic territory of a country which cannot be assigned to a region and consists of:
  - a. The national air-space, territorial waters and the continental shelf lying in international waters over which the country enjoys exclusive rights.

- b. Territorial exclaves (i.e. geographic territories situated in the rest of the world and used, under international treaties or agreements between states, by general government agencies of the country, e.g. embassies, consulates, military bases, scientific bases etc).
- c. Deposits of oil, natural gas etc. in international waters, outside the continental shelf of the country, operated by resident units.
- 20.61 Because economic activity undertaken in the extra-regional territory cannot generally be allocated to a specific region, the extra-regional territory usually appears as an additional region in the regional accounts. An alternative would be to assign the extra-territorial areas to a particular region or regions on the basis of either geographic or economic attachment.
- 20.62 The regional territory will be divided into regions in a way that best supports economic analysis, taking into account the availability of data to support the compilation of regional accounts. For countries that have states or provinces, these are typically used as the basis for regional accounts. Other administrative entities, such as departments or regional councils, could also be used. However, the regions do not need to be administrative entities. For example, in the European Union (EU), regional accounts are prepared on the basis of the Nomenclature of Territorial Units for Statistics (NUTS), which divides the territory of the EU for the purpose of the collection, development and harmonisation of EU regional statistics, socio-economic analysis of the regions and framing of EU regional policies.
- 20.63 In principle, regional accounts could be compiled at any level of disaggregation of an economic territory. In practice, the more detailed the regions, the more difficult it is to compile high quality regional accounts, particularly because source data will often not readily support detailed disaggregation. There may also be issues with data confidentiality.
- 20.64 As mentioned above, a full system of accounts at the regional level implies treating each region as a different economic territory. Economic transactions of both enterprises and households may cross regional boundaries. For instance, transport services and energy supply can consist of moving goods between two or more regions. Employees can earn their wages or salaries in a region different from their home region and households can spend part of their income outside the resident region. In this context, transactions with other regions are recorded as if they are external transactions. External transactions of the region must distinguish between transactions with other regions of the country and transactions with the rest of the world.
- 20.65 A particular issue that exists in compiling regional statistics is establishing the appropriate statistical unit. Conceptually, the establishment is the preferred unit, as it should have a local presence that can be allocated to a particular region. However, establishments do not typically have the full range of information required for compiling the full set of institutional sector accounts. Even when it comes to compiling statistics on the production of goods and services, including the inputs needed for this production, it may be problematic to estimate, for example, gross operating surplus which is typically available at the enterprise level only, and not at the establishment level. This can create challenges for compilers, which are summarised where relevant in this section. For a comprehensive discussion on statistical units, see chapters 5 and 6.
- 20.66 The general principle for regional accounts is that economic activity should be allocated to the region where the institutional unit undertaking the activity is resident. For households, this typically presents less difficulties, as households can generally be allocated unambiguously to a particular region. As with accounts prepared at the national level, the determination of the residence for certain types of persons, such as students and patients, requires particular consideration, and in this regard the guidance for determining residency as explained in chapter 5 should be applied at the regional level for the purpose of regional accounts.
- 20.67 For other institutional units, the allocation of economic activity may be less straight-forward. Three cases can be distinguished:
  - a. There are units where their centre of predominant economic interest is in one region and where their activities take place in this region. This includes corporations whose establishments are all located in the region, local and state governments, and many NPISHs.
  - b. There are multiregional units where their centre of predominant economic interest is in more than one region, but does not necessarily relate to the country as a whole. Many corporations and several NPISHs are in this situation.

- c. There are units that are solely national units, which means that their centre of predominant economic interest is not located geographically even in the sense of multiregional locations (although they may undertake activities at particular locations). This is usually the case of central government and may be the case for a small number of corporations (probably public), generally in a monopolistic or quasi-monopolistic situation, such as the national railway corporation or the national electricity corporation.
- 20.68 Assigning transactions of the units with economic activity in only a single region to a specific region does not raise any conceptual problem. Assigning the transactions of multiregional units between various regions raises more difficulties. When considering deliveries between units of the same enterprise in different regions, it is necessary to apply the recommendation in paragraph 6.xx about intra-enterprise deliveries. Such deliveries are recorded only when the receiving unit assumes responsibility for making the decisions about the level of supply and prices at which their output is delivered to the market. When this is not the case, the receiving unit is regarded as providing only a processing service to the sending unit.
- 20.69 Further, some of the transactions of multiregional units simply cannot be allocated between the different regions in which they operate. This is the case for most property income and financial transactions. Likewise, interest on the public debt payable by central government cannot be geographically located. This limits the usefulness of balancing items such as saving and net lending at the regional level (other than for households).
- 20.70 The residence principle implies, for example, that gross value added from transporting goods across several regions will not be partitioned between the regions, but allocated to the region where the production unit is resident. An example for households is that household expenditures in another region will be allocated to the region of residence of the household. Another consequence is that the value added of enterprises with establishments in more than one region will be allocated to the regions where the establishments are located and will not be allocated entirely to the head office or administrative address of the enterprise.

# 3. Commuting

20.71 Persons can cross national boundaries as non-resident border workers, but it is more common for persons to cross borders between regions as commuters, particularly for smaller regions and regions around metropolitan centres. Commuters can be employees or self-employed. Self-employed persons are recorded as businesses operating from the region where the self-employed person resides. According to the residence principle, commuting employees contribute to gross value added in the country and region in which the establishment where they work is resident. Thus, the regional estimates for labour costs reflect the remuneration of employees at the place of work and not at the dwelling place of the employees. As a result, commuting affects the interpretation of gross value added and GDP per head of the population. Net commuter inflows into regions increase production beyond that possible by the resident active population. Regional GDP per capita appears will be relatively high in regions with net commuter inflows and relatively low in regions with net commuter outflows. It may be useful to compile estimates of regional GDP per person employed.

# 4. Measuring regional GDP

- 20.72 Typically, regional gross value added at basic prices is compiled on an industry basis using either the production or income approach. (See chapter 19 for a discussion of these approaches.) If possible, the use of both approaches, compiled independently, is encouraged because it enables the two sets of estimates to be compared against each other to assist in quality assuring the results. Regional GDP is derived from regional gross value added by adding regionalised taxes less subsidies on products.
- 20.73 Conceptually, regional GDP could also be compiled using the expenditure approach. However, this approach requires information on imports and exports, which at the regional level involves transactions in goods and services between regions. Collecting this information is typically difficult in practice. However, producing regional estimates of other components of the expenditure approach, such as final consumption and gross fixed capital formation expenditures, can be very useful for analytical and policy purposes.

# 5. Regional accounts by institutional sector

- 20.74 For a range of reasons, including the difficulties of allocating property income and financial flows of multiregional and national units across regions, in most cases regional accounts are limited to recording production activities and more complete accounts for institutional sectors composed of regional units, such as households, and state and local governments.
- 20.75 There are no conceptual constraints to compiling a complete set of regional accounts for households and state and local governments, namely: the production account with gross value added as balancing item; the generation of earned income account with gross/net operating surplus and mixed income as balancing items; the allocation of earned income account with the balance of earned income as a balancing item; the income transfers other than social transfers in kind account with gross/net disposable income as balancing item; the use of income account with saving as balancing item; and the capital account with net lending or net borrowing as balancing item.
- 20.76 Regional household income accounts, in particular, can be important in understanding the economic well-being of regions and can play an important role in regional policy development. Therefore, countries that compile regional accounts are strongly encouraged to compile household income accounts. This would include highly relevant regional estimates of household final consumption in the use of income account.
- 20.77 For countries that aspire to compile regional accounts for other sectors, a reasonable solution would be to introduce a kind of national "quasi-region", not allocated as such between the regions and being treated as an extra region. This national "quasi-region" may include the head offices of enterprises that have establishments located in, and assigned to, the regions, as well as national units.

### 6. Methods of regionalization

- 20.78 There are essentially two general methods for estimating regional aggregates the "bottom-up" and "topdown" methods.
- 20.79 The bottom-up or ascending method of estimating a regional aggregate involves collecting data at the local establishment level or the residence of households and aggregating these values to get a regional total. The method is called "bottom-up" because the elements for compiling the aggregate are directly collected at the regional level. This method can be used for enterprises that operate in only one region, or for establishments and households if full information is available.
- 20.80 A pseudo bottom-up method can be followed where data for establishments or the residence of households are not available. Data for establishments can be estimated from enterprise data allocated using regional indicators. The estimates can then be aggregated to obtain regional totals just as in a purely bottom-up method. This method can be used especially for multiregional enterprises.
- 20.81 A technique that sits in-between a pure bottom-up approach and a pseudo bottom-up approach can be used when partial information is available for establishments. For example, information on renumerationremuneration of employees may be available at the establishment level, but not information on gross operating surplus. In this case, the information on renumerationremuneration of employees would be used directly in a bottom-up approach, and estimates of gross operating surplus at the enterprise level could be allocated to establishments in proportion to renumerationremuneration of employees.
- 20.82 In the top-down method a national figure from the national accounts is distributed using regional indicators which are as close as possible to the variable to be estimated. For example, remuneration of employees might be allocated to regions using the regional distribution of the total number of full time equivalents of employees, multiplied by the average annual earnings per employee from a different statistical source. This results in the regional distribution of total earnings of employees, which can be used as a regional indicator for the allocation of remuneration of employees to regions. However, indicators that allocate activity to where it takes place, rather than the region where production occurs, basis, such as allocating the gross value added of rail passenger transport to regions according to the number of passengers transported in a region, should be avoided if possible.
- 20.83 In terms of quality and precision, the bottom-up approach is preferred, especially when the source data are available and of an acceptable quality. However, in practice, regional accounts are likely to be compiled using a mixture of bottom-up and top-down approaches depending on the availability of source data.

## 7. Volume and price estimates

- 20.84 In measuring price and volume changes, the principles applied for the national economy also apply to regions. However, there may be problems with regional data which make applying these principles to regions difficult. These include:
  - a. information on regional price changes is often not available.
  - b. if regional value added in current prices is directly estimated and not by deducting intermediate consumption from output, then double deflation of regional value added is not possible.
  - c. in the absence of regional supply and use tables, price and volume changes cannot be measured and assessed in such a framework.
- 20.85 A commonly used approach is therefore to deflate regional value added by industry on the basis of national price changes by industry. This is carried out at the most detailed level at which gross value added at current prices is available. Differences between national and regional price changes due to differences in economic structure by industry are taken into account. However, this solution is still vulnerable to major differences between national and regional price changes. Examples of such differences are:
  - a. Differences in cost structure, technological intensity and composition of outputs within one industry between producers in different regions. There can be large variations in price changes amongst regions for a single industry.
  - b. Regional differences in the price changes of major inputs, <u>for example, e.g.</u> changes in the price of labour, land and renting office space. However, the existence, for example, of national wage agreements with no regional differentiation implies that regional differences in changes in wage rates are likely small.

# 8. **Regional input-output statistics**

- 20.86 Regional input-output statistics comprise regional supply and use tables and the input-output tables based on them. The data in the tables improve the precision and add depth to regional accounts data. They describe the structure of production in the regions, relationships between economic activities and the dependence of regions on the product flows in other regions and abroad.
- 20.87 Regional input-output statistics form an integral part of regional accounts. Product flows described according to a consistent and logical framework add to the content of regional accounts data and enhance their quality. Supply and use tables describe the supply of products generated by production and imports in a region and the use of these products in the production of other goods (intermediate consumption), consumption as final products, capital formation and exports. The symmetrical input-output tables which are derived from supply and use tables describe interdependencies between economic activities. Analytical tables derived from them can be used to study the importance of the production and final use of economic activities to regional economy and employment.
- 20.88 Notwithstanding the benefits of compiling regional input-output statistics, they are data intensive and ideally require data for all components, including regional trade in goods and services. Generally, the full range of data is not available, so estimates of missing components are often derived using models. Due to the extent of modelling that may be required, regional input-output tables are often produced by organizations like universities or economic research institutes. Nonetheless, given the usefulness of regional input-output statistics, national statistical offices that produce regional accounts should investigate the possibility of producing regional input-output statistics. If, however, it is determined that they cannot be produced to the quality necessary for official statistics, or alternatively produce the statistics as experimental statistics with adequate metadata on the quality of results. Further information on supply and use tables can be found in chapter 15 and on input-output tables in chapter 36.

# D. Time series aspects of national accounting

## 1. Introduction

- 20.89 Every nation's economy fluctuates between periods of expansion and contraction. These fluctuations, which are known as the "business cycle", are caused by changes in levels of employment, productivity, and the total demand for and supply of the nation's goods and services. In the short run, these changes lead to periods of expansion and contraction, often referred to as a "recession". But in the long run, in an economy with underlying growth in potential output, the peaks will be higher each time.
- 20.90 Conceptually, the typical business cycle has four phases, which progress as follows:
  - a. Expansion: when the volume of GDP is increasing, and unemployment is typically decreasing.
  - b. Peak: the turning point in the business cycle at which output stops increasing.
  - c. Recession: when the volume of GDP is decreasing, and unemployment is increasing.
  - d. Trough: the turning point at which a recession ends and the volume of GDP starts increasing.
- 20.91 A major strength of the national accounts is to offer long and consistent time series, which are a necessary ingredient for monitoring the business cycle and for economic modelling and forecasting. National accounts data should be comparable over time to provide accurate measurements of short and long term economic changes. This presents two particular challenges for compilers.
- 20.92 First, high quality data sources are often available less frequently than the frequency with which the accounts are compiled. To overcome this, national accountants use data sources that are timelier, but are of lower quality. To ensure that the best use is made of source data, the higher quality data sources are introduced when they become available, and the lesser quality but more frequent data sources are integrated through a process known as extrapolation and interpolation. Underpinning this approach are benchmarking techniques, which are discussed below in sub-section 2.
- 20.93 The second challenge occurs when new concepts, methodologies etc. are introduced into the national accounts. In theory, the impact of these changes should be carried as far back as possible to avoid breaks in the series. In practice, this task is complex because the data to compile back periods under new principles may not be available or new classifications may simply not be applicable to previous periods. Consequently, it may not be possible to re-calculate back series following the same methodology used for current periods and backcasting is required. Backcasting is discussed in sub-section 3.
- 20.94 Both benchmarking and backcasting lead to revisions in national accounts series, which need to be carefully managed and explained to users. The issue of revisions is touched upon is sub-section 4.

# 2. Benchmarking

- 20.95 Benchmarking deals with the problem of combining a series of high-frequency data (e.g., quarterly data) with a series of low-frequency data (e.g., annual data) for the same variable into a consistent time series. The two series may show different levels and movements, and need to be made temporally consistent. Because low-frequency data are usually more comprehensive and accurate than high-frequency ones, the high-frequency series is benchmarked to the low-frequency one. Benchmarking is also relevant to link the data between two comprehensive revision periods, where the national accounts are comprehensively revised say every five years.
- 20.96 Benchmarking methods should be used to derive more frequent series that (i) are temporally consistent with the less-frequent benchmarks, (ii) preserve as much as possible the movements in the indicators, and (iii) provide accurate extrapolations for periods going forward.
- 20.97 The pro rata method, which is a simple method of benchmarking, should be avoided. The pro rata method distributes the temporal discrepancies—the differences between the estimates derived from the more-frequent series and those derived from the less-frequent data—in proportion to the value of the indicator. The pro rata approach produces unacceptable discontinuities from one benchmark to the next (the so-called step problem) and therefore does not preserve the movements in the indicator from the last period before the benchmark to the period following the benchmark. Techniques that introduce such breaks in the time series seriously hamper the usefulness of the time series by distorting economic developments and possible turning points. They also thwart\_hinder\_forecasting and constitute a serious impediment for

seasonal adjustment and trend analysis.

- 20.98 To avoid the <u>"step problem"</u>, proportional benchmarking methods with movement preservation of indicators should be used to derive more frequent series. The preferred solution is the proportional Denton method. The proportional Denton method preserves the movements in the more frequent series as much as possible subject to the restrictions provided by the benchmarking data. As an alternative to the Denton method, the proportional Cholette–Dagum method and its variants can also be used. These benchmarking techniques are explained in detail in Chapter 6 of the IMF's *Quarterly National Accounts Manual* (2017). As explained in the Manual, even though the chapter is focused on the quarterly-to-annual benchmarking, the principles and methods outlined apply to benchmarking of any other high-frequency to low-frequency data. Eurostat's *ESS guidelines on temporal disaggregation, benchmarking and reconciliation* (2018) also provide further information on this topic.
- 20.99 Benchmarking should be an integral part of the national accounts compilation process and should be conducted at the most detailed compilation level. In practice, this may imply benchmarking different series in stages, where data for some series—which have already been benchmarked—are used to estimate other series, followed by a second or third round of benchmarking. The actual arrangements will vary depending on the particularities of each case.
- 20.100 To avoid introducing distortions in the series, incorporation of new benchmarking data will generally require revision of previously published higher frequency series for several years. As noted above, benchmarking methods with movement preservation (like the Denton method and the Cholette–Dagum method) minimize the impact of revisions on the historical movements of the higher frequency series.

### 3. Backcasting

- 20.101 The term "backcasting" (or "back-calculation") relates to all the steps undertaken to reconstruct backward data using current measurement standards. The objective is to provide the user with long and consistent time series that maintains the economic history of a country. In the national accounts, a backcasting exercise is typically required at the time of a major revision for introducing methodological changes, new accounting standards, new concepts, new classifications, new benchmark years or base years, or new data sources. These revisions may lead to breaks in the time series when they cannot be applied for the entire length of the national accounts. These breaks can hamper the comparability between observations in the pre- and post-revision periods.
- 20.102 There are two general backcasting approaches: (i) the micro approach and (ii) the macro approach. The micro approach aims at recompiling the historical estimates starting from the source data at the elementary level of detail. The micro approach guarantees the most accurate results as the micro data are processed and aggregated using the new concepts, definitions, classifications etc. However, the necessary source data may not exist, or it may not be feasible to rerun the entire compilation process with available resources and time constraints.
- 20.103 In contrast to the micro approach, the macro approach aims at backcasting at more aggregate levels. The macro approach comprises statistical techniques and estimation methods that make a greater use of assumptions about how new concepts principles etc. apply to the past. These methods can make use of previously published series, indicator series or intermediate series calculated in the various steps of the national accounts compilation process. As results may differ according to the aggregation level of the data; compilers should choose the preferred detail level considering the complexity of the backcasting exercise and the quality of the recalculations. Ideally, backcasting methods should be applied at the most detailed level of the national accounts compilation.
- 20.104 In practice, countries should adopt a mix of backcasting methods that best suit their specific circumstances and needs of the particular backcasting exercise.
- 20.105 Splicing (or linking) is the simplest and most common macro backcasting method. Splicing can be used to link the new series with the old published national accounts series. The only requirement is to have an overlap between the old and new series for at least one period. The old and new series should measure as much as possible the same concept. Back data are obtained by multiplying the values of the old series by the ratio between new and old levels in the overlap period. In the case of quarterly series, the overlap period can be either the first quarter or the first year in the new series. In the former case, the new series will show the same quarter-to-quarter rates of change of the old series in the backward period. With annual splicing, the adjustment ratio is taken from the whole year; in this case, the spliced series will preserve the old annual rate for the overlap year.

- 20.106 The assumption underlying basic splicing is that the impact of the changes in the overlap period remains the same in the backcasting period. If this assumption is unlikely to hold true, alternative methods, as discussed below, should be used.
- 20.107 Quarterly splicing is the preferred approach as it provides the smoothest transition between the old and new series. However, compilers should be aware that quarterly splicing may introduce a break in the seasonal pattern if the new series presents seasonal effects that are different from those in the old series. Annual splicing could be preferable when there is a need to preserve the annual movements in the overlap period.
- 20.108 Another splicing possibility is to link gradually the old series to the new series. This approach aims at interpolating the new level of the series with a particular point in time of the backcasting period (one year or one quarter). The rates of change in the in-between periods will change accordingly. This method can be appropriate when a particular level in the old series should be preserved. This situation could arise when it is required to maintain levels of national accounts variables that had been estimated from previous benchmark revisions.
- 20.109 More sophisticated backcasting methods may be required when the assumptions underlying basic splicing techniques do not hold. For example, a more elaborated backcasting solution should be devised when there is an update of classifications. In such cases, assuming that the new series present the same movements of the old series may lead to incorrect results. New classifications may bring out items that did not exist before, or may change the way previous items were aggregated in top-level groups. Furthermore, an additional constraint for pure classification changes is that the total should not change. Bridge tables between old and new classifications should be created to help reconstruct old indicators according to a new classification. One way to reconstruct short term dynamics of new items in past periods is to estimate regression models between national accounts series and proxy indicators for those items. This approach should be used with caution as these methods rely on behavioural relationships between national accounts variables and related information that may not hold for the entire time period.
- 20.110 Another case where the assumptions underlying basic splicing may not hold is when conceptual changes are introduced. Basic splicing may lead to estimates being created for certain items for historical periods when the items simply did not exist, for example, those relating to new technologies. In these cases, it may be necessary to set a particular historical period's value at zero, and to use interpolation techniques to estimate values for subsequent periods until actual data are available.
- 20.111 A backcasting exercise should be conducted in a coordinated manner for both annual and quarterly accounts. The benchmarking methods described above can be used to realign quarterly data to annual benchmarks that are back-calculated independently.
- 20.112 One problem of consistency that may arise from the application of backcasting techniques at all levels of compilation is the lack of additivity between components and aggregates. Backcasting at detailed level has the advantage of preserving the original information for each series. However, it will show discrepancies between components and aggregates. This problem can be solved if backcasting is applied at the component level only, while the aggregate is derived as the sum of the reconstructed components. A disadvantage of this approach is that the aggregate rates of change will differ from the original ones, which may lead to confusion and criticisms from the user. The choice will also depend on the types of revision introduced. If there is a change in classifications, components that are not affected by the classification change, such as a higher level aggregate, should be preserved. However, when new methods are introduced, the aggregate levels should not be preserved.
- 20.113 Generally speaking, compilers should implement a backcasting solution that preserves as much as possible the consistency property of national accounts and, at the same time, minimizes the changes in the economic history of a country. The new backcast results must present a a-plausible picture of the macro-economy over the entire time series. There should be a thorough evaluation of the backcast results, including verification of the individual series and balancing items, and analysis of the revisions to both levels and growth rates of key variables.
- 20.114 Backcasting is explained in more detail in Chapter 5 of the IMF's *Quarterly National Accounts Manual* (2017)

# 4. Revisions

20.115 In order to maintain high-quality, consistent time series, revisions are an essential part of good national

accounts compilation practice. They ensure that users are provided with data that are as timely and accurate as possible. Revisions are necessary to incorporate improvements in source data and methods, and the introduction of new international standards and classifications.

- 20.116 Resource constraints, in combination with user needs, cause tension between the timeliness of published data on the one hand, and reliability, accuracy, and comprehensiveness on the other. To reduce this tension, as discussed above, initial estimates are typically compiled on a timely basis, with later, revised estimates produced when more and better source data become available. Good management of the process of revisions requires the existence of a well-established and transparent revision policy.
- 20.117 It is important to emphasize that revisions are conducted for the benefit of users: namely, to provide users with data that are as timely and accurate as possible. Revisions allow new and more accurate information to be incorporated, thus improving the accuracy of the estimates, without introducing breaks in the time series. Although repeated revisions may be perceived as reflecting negatively on the trustworthiness of official statistics, delaying the incorporation of new data in the published estimates may increase the magnitude of later revisions (in particular, if these go in the same direction). Furthermore, not passing on known revisions reduces the actual trustworthiness of data even more, because the data do not reflect the best available information, and the public may know this or find this out (for instance, the public may wonder why a revision in the monthly production index is not reflected in the QNA).
- 20.118 Every so often (such as every five years), compilers of national accounts statistics, particularly compilers of QNA, should undertake a systematic analysis of the revisions that have been made to key national accounts series, such as GDP. Structural differences between initial and subsequent estimates, such as when initial estimates persistently overstate or understate later estimates, could indicate bias in the initial data sources or methods, which could be adjusted to improve the quality of the initial estimates. Significant volatility in revisions, but without a persistent pattern, could indicate that the initial data sources or methods are not of sufficient quality, and improvements to them or the use of better-quality alternatives should be investigated.
- 20.119 More information on developing a revisions policy and communicating revisions to users can be found in chapter 21.

# E. High inflation

- 20.120 Establishing meaningful national accounts in a country where high inflation prevails is indeed a challenge for national accounting. This challenge does not arise because those conditions create totally new national accounting problems. In fact, the same problems also exist conceptually in the very common situation of creeping inflation, with low rates of changes in the general level of prices. However, high rates of inflation exacerbate the problems. A method of measurement which gives acceptable approximate measures in more or less normal conditions may no longer be acceptable with significant inflation.
- 20.121 Basically, under high inflation the three classic roles of the currency are disrupted. The disruption in the currency's role as instrument of payment is minor; most transactions continue to be cleared in the national currency even though sometimes legally, more often illegally foreign currencies may be used for some domestic payments. The main difficulties are encountered in the currency's role of reserve of value. This aspect is well-known. When the annual rate of inflation is 50 per cent, for example, it is not advisable to keep any saving in the form of monetary assets, unless a mechanism of compensation against inflation is established explicitly through indexation or implicitly through high market rates of interest. Perhaps less obvious is the crisis of the currency's role as unit of account even for short periods of time. This aspect is, of course, connected with the previous one. Even within a period of one year, the value (i.e., the purchasing power) of the currency diminishes sharply when inflation is high, with the result that the sum of the values of transactions which take place at different times of the year is not at all easy to interpret. If all transactions were evenly distributed and inflation regular during the year, it could be said that the unit of account is the mid-year value of the currency. However, this condition is not fulfilled in practice. This means that under high inflation flows as conventionally measured give a distorted picture of the economic structure.
- 20.122 On certain aspects the SNA provides rules which, rigorously applied, are capable of providing correct measures. For example, rules related to time of recording transactions are essential: transactions have to be recorded at the same point in time in the various accounts in question for both transactors. Differences in the time of recording by transactors have much more serious distorting effects when inflation is high.
- 20.123 A particular and very important aspect concerns transactions and balancing items that are measured by

the difference between flows. This is the case, for example, for distribution margins measured as the difference between sales and the purchase value of the goods which are sold (the method followed in practice being very often: sales less purchases plus changes in inventories). The correct measurement of distribution margins at any point in time supposes that the purchase value of the goods sold is the price prevailing at the time the goods are sold, not at the time the purchase was actually made. In other words it means that changes in inventories have to reflect adequately the difference in value between entries to and withdrawals from inventories valued at prices at the time of entry and withdrawal, respectively (see chapter 7).

- 20.124 The measurement of value added is a very important case in point when the process of production extends over a long period of time (under high inflation "long" is usually much shorter than when inflation is low) and there is a significant lag between intermediate consumption and the recording of output. (In agriculture, for example, harvesting may even take place in a different calendar year.) In principle, the SNA provides the solution for correct measurement. It relies upon careful recording of work-in-progress. In effect, if intermediate consumption takes place mainly, for example, in the first part of the year and output (harvests or, in other cases, deliveries taken as a measure of output) is recorded mostly in the second part of the year, under high inflation value added will be overestimated. Since renumerationremuneration of employees is recorded when due or paid, the figure for operating surplus is heavily distorted. Of course, for agriculture if harvests occur mainly in the first half of the year and intermediate consumption in the second, the distortion is inverted.
- 20.125 The solution in such cases, in principle, is to record output progressively as work-in-progress. Then at the end of the process of production, the previously recorded work-in-progress is withdrawn from inventories after due revaluation, while from the other side the output of finished products is entered in inventories at the prices prevailing at this time. This solution shows that, basically, the right rule of recording output and inventories is the perpetual inventory method, careful attention being paid to the recording of work-in-progress. This is true for business accounts and national accounts as well. Departures from this ideal treatment cause more significant biases when inflation is high. In practice, the right solution may be difficult to apply, especially if business accounts do not provide adequate data. However, it should be approximated as far as possible, in order to minimize distortions.
- 20.126 Applying the SNA's solutions referred to in the previous paragraphs is a means of trying to get correct measures as far as it is feasible. However, they do not solve the difficulty related to the loss of meaning of the unit of account under high inflation. Rigorously, a unit of the currency at the beginning of the year is not additive with a unit of the currency in the last months of the same year. Strictly speaking, this holds every time the purchasing power of the currency changes, even when the rate of inflation is low. However, under normal conditions (low inflation) it is assumed that over a short period of time (one year) the loss of significance of the currency as a unit of account is limited. For longer periods, this assumption is not acceptable, and comparisons are made either in volume terms (for goods and services) or in real terms (constant purchasing power of the currency). A short period of hyper-inflation involves the same measurement problems as a much longer period of low inflation.
- 20.127 As explained above, because transactions are not evenly distributed and inflation is not regular during the year, it may not be assumed that the implicit unit of account is the mid-year currency. Consequently, the economic relations are distorted. Phenomena occurring mainly in the first part of the year have their shares understated; conversely, those occurring mainly in the last part of the year have their shares overstated.
- 20.128 In order to avoid such distortions, it would be possible to use the currency at a certain point or during a short period of time (one month, for example) as the unit of account. All transactions would then be revalued at the (constant purchasing power of the) currency at the chosen point or period by applying to current values an indicator of the change in the general price level. Applying such a procedure systematically might, of course, be burdensome, but it might be appropriate to implement it for certain flows or certain aggregates only, possibly using simplified methods of calculation.
- 20.129 Because of the difficulties in interpreting national accounts in current values, one could conclude that it is useless to establish these accounts. However, they remain necessary for use in conjunction with monetary and financial variables. Further, under such circumstances more emphasis should be given to accounts covering shorter time periods. As monthly accounts are often not feasible, except for some items, quarterly accounts covering more than just GDP and its uses would be of great value for analysis. The use of the currency as a unit of account on a quarterly basis, while subject to the general criticism in principle, provides results which are easier to interpret than annual data, at least if hyper-inflation is avoided. In addition, quarterly accounts might provide a short-cut method for determining annual

accounts, using the average value of the currency in a given quarter as the unit of account.

- 20.130 Volume estimates, which play an important role in national accounting in general, are given even more emphasis for flows of goods and services and the production account when inflation is high. As far as possible it is probably appropriate to attempt to estimate volume increases directly rather than rely on deflation methods applied to current prices. In effect, the degree of approximation in the measurement of price changes may well be of the order of magnitude of the volume changes. The danger is increased when the base period for price increases is very out of date.
- 20.131 In general, frequent rebasing of national accounts in volume terms is advisable when changes in relative prices are important. In this regard, annual chain linking is encouraged. If this is not possible, the choice of the base year, which is always a delicate one, may be especially complex under high inflation due to the fact that price adjustments are irregularly timed. Studying how relative prices move in the short-, medium- and long-term in periods of high inflation, as compared with other periods, is of particular importance.
- 20.132 To assess the effects of inflation it is not sufficient to measure only flows in the current accounts and in the capital and financial accounts of the sequence of economic accounts. This is so because inflation may redistribute wealth and because changes in real wealth due to inflation may amplify or counterbalance changes in these flows. The revaluation account, which shows real holding gains and losses incurred by institutional sectors and the rest of the world according to the types of assets and liabilities they hold, is of special importance in this context.
- 20.133 Calculating these gains and losses supposes, of course, that a country has previously established sector balance sheets. Establishing sector balance sheets for financial assets and liabilities is of prime importance because the dramatic changes in the purchasing power of the currency when inflation is high undermine its role as a reserve of value. The face value of monetary assets covers a vanishing real value of these assets. For interest-bearing monetary assets and liabilities (non-interest bearing monetary assets may hardly exist when inflation is high, except at the minimum level necessary for current payments), the decrease in their real value is generally compensated, at least in part, by explicit indexation or inclusion of an element compensating for inflation in the rate of interest. This means that nominal interest, under these circumstances, can include a component which may be viewed as an anticipated reimbursement/refund of the real value of the principal of the financial liability/asset. The higher the rate of inflation, the quicker is this process of reimbursement/refund.
- 20.134 The element of compensation for inflation should not be considered as a return to capital by the lender and a current cost by the borrower. The SNA treats these components of explicit or implicit indexation as interest received and paid in the current accounts, and this treatment does not create great difficulties when inflation is low. However, the measurement of these components is essential when inflation is high if one wants to interpret correctly figures such as government disposable income or saving (or government deficit) and the corresponding figures for creditor sectors, etc. For this reason, for countries experiencing high inflation, it is recommended to show real holding gains and losses on monetary <u>esster</u> <u>assets</u> as memorandum items to the current accounts, in particular the earned income account. Countries with high inflation would benefit greatly from following this procedure and, in addition, giving great emphasis to a careful scrutiny of holding gains and losses in the revaluation account.
- 20.135 Going one step further, countries experiencing significant inflation may want to adjust nominal interest in order to get more meaningful measures of earned incomes, disposable income and saving of the various institutional sectors and possibly the total economy. Two main approaches may be followed:
  - a. Deduct from nominal interest the amount which has been or would have been necessary in order to keep the purchasing power of the capital intact (the capital being the principal of the financial asset/liability to which the interest refers); or
  - b. Deduct from nominal interest the component of protection against inflation of the principal of the asset which is actually included in nominal interest.
- 20.136 The first approach is usually referred to as the calculation of "real interest". Real interest is the excess of nominal interest on monetary assets over the amount which has been or would have been necessary in order to fully protect the creditor against inflation. The latter amount is calculated using an index representative of the change in the general purchasing power of the currency. When nominal interest is higher than the amount necessary to keep capital intact, real interest is negative.

- 20.137 Real interest is derived from nominal interest by taking account of real holding gains/losses on the underlying assets/liabilities. For this reason, however, real interest may not be introduced in the sequence of economic accounts since it is a basic principle of the SNA that holding gains or losses should not be recorded in the current accounts of the sequence of economic accounts, but only in the revaluation account. This is true for nominal holding gains/losses (and a fortiori real holding gains/losses) on all types of assets/liabilities. Thus real interest as well as other adjustments of current incomes for real holding gains/losses may only be introduced as supplementary items, either or not in extended tables.
- 20.138 In the second approach, the component of protection of the principal of the asset against inflation which is actually included in nominal interest is deducted. Clearly the component of protection against inflation cannot, by definition, be greater than nominal interest itself; it can only be lower than or equal to nominal interest (leaving aside the service charge issue). In order to avoid any confusion with real interest from one side, and interest as currently defined in the sequence of economic accounts from the other side, let us call the excess of nominal interest over the component of protection against inflation of the principal of the asset actually included in nominal interest "interest prime". By definition, "interest prime" may be positive or zero, but never negative.
- 20.139 Real interest and interest prime serve different purposes. Interest prime takes into account the actual influence of inflation on nominal interest, by deducting from the latter the actual component of protection against inflation of the principal of the asset which it includes. Real interest takes into account the impact of inflation on the purchasing power of the underlying assets, by deducting from the nominal interest the amount which has been or would have been necessary in order to keep the purchasing power of the asset intact.
- 20.140 Reflecting their different purposes, real interest and interest prime have different roles and places in the SNA. Real interest is a very useful analytical tool; as already stated above, it may be calculated as a supplementary item, something which is recommended for countries experiencing high inflation. Although it does not go so far as real interest, interest prime allows for a possible adjustment of nominal interest in the SNA sequence of economic accounts itself in the context of significant inflation. In the case of other property income, such as dividends, the protection against inflation of the value of the underlying asset is sought through the change in the market prices of the underlying assets, such as shares, recorded in the revaluation account. This element is not included in dividends in current terms. Thus, in terms of economic significance, the meaning of "interest prime" resembles the meaning of dividends. Both "interest prime" and dividends may then be adjusted for real holding gains/losses, outside the sequence of economic accounts, in order to get real interest or real dividends (not to be confused with interest in real terms or dividends in real terms). In terms of economic significance, the sum of dividends and holding gains/losses on shares can be interpreted as parallel to nominal interest. This shows that "interest prime" actually provides a concept whose definition is closer to the definition and measure of other property income than nominal interest.
- 20.141 Real interest and interest prime only coincide when the component of protection against inflation actually included in nominal interest is strictly equal to the amount necessary in order to give the creditor full protection against inflation. In other cases, real holding gains or losses are still experienced by debtors and creditors. They may be combined with interest prime, outside the sequence of economic accounts, in order to derive real interest.
- 20.142 For further information on accounting for high inflation, see OECD Inflation Accounting: A Manual on National Accounting Under Conditions of High Inflation (2003)