

Written Contribution – ESCoE and ONS workshop: The conceptual foundations of the Household Costs Indices

Summary

The following is written from the perspective of a mathematical statistician and questions the need for a conceptual foundation particularly one based solely in economics. Martin Weale's point in his slide 21, "A suggestion" is a more statistically sound approach –

"we would do better by compiling a list of properties that we want from a CPP".

There are six broad points below with more detail in the annex.

1. *Whose index is it anyway?*

The answer is obvious for a macroeconomic index but not for a household index. The latter is arguably more of a social construct in terms of the ILO 2003 CPI Resolution. The Code of Practice subtitle of "Ensuring official statistics serve the public" also arguably implies that the public should have a role in the development of an HCI – their views need to be sought.

This is not a simple thing to do but the concepts underlying Deliberative Polls offer an established way of obtaining such empirical evidence.

2. *Legislation and public policy?*

The SOCIAL SECURITY ADMINISTRATION ACT 1992 (c. 5) S. 150 states –

2) Where it appears to the Secretary of State that the general level of prices is greater at the end of the period under review than it was at the beginning of that period...

Legislation should not be ignored. Legislation has implications for the methodology and implies a national average of prices or similar rather than subpopulation averages or entities other than prices. The HCI should not be developed in such a way that precludes the use of the index in important legislative and policy areas.

3. *Limitations of mathematical models underlying economic arguments.*

For example, there are issues with the simplifying assumptions that underlie the mathematical models in Martin Weale's presentation e.g. slide 15 "Housing and the Life-cycle" states –

Assume that i) a house depreciates fully during someone's adult life, ii) the rental rate on housing net of depreciation is the same as the mortgage rate, iii) the population is in steady state and iv) people buy houses only once, on becoming adults.

Such assumptions do not reflect reality. They are sufficient for, say, exploratory analysis but are not appropriate for making decisions on methodology for a HCI.

4. *Limitations of National Accounts concepts*

Consumption in national accounts is to a large extent driven by the production boundary – one result being that owner occupiers are counter intuitively treated as unincorporated enterprises resulting in the artificial construct of rental equivalence.

A revealing quote from SNA2008 –

*“Services of owner-occupied dwellings
6.34 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.”*

Treating owner occupiers as unincorporated enterprises is a pragmatic convenience. It is not consistent with what can be thought of as the underlying conceptual basis of national accounts. The operational implementation of the IPHRP is also at best problematic.

5. *Formulae*

The HCI is not a short term macroeconomic index but a long term household index. Therefore the short term improvement in precision of Jevons is unnecessary and the downward bias of a geometric mean needs to be avoided for a long term index.

The theoretical arguments haven't stood scrutiny and there is a lack of empirical research available to assess the precision and accuracy of the different formulae and until that is available the HCI should be calculated using both the CPI and RPI formulae.

6. *The need for more than one headline price index*

The House of Lords EAC recommended a single index which missed the key statistical issue that there is continuing priority to improve the statistical knowledge and understanding of politicians, public servants, economists, journalists, the public etc. There are two sources of crime statistics fulfilling different needs so why not more than one headline price index.

There is also the issue of the inflation target and Goodhart's Law. A single price index is more open than a collection of indices to gaming by, for example, concentrating on methodologies that give the lowest apparent inflation.

Annex

Views of the public

Statistics is a scientific discipline and the Code of Practice (Q2.1) refers to the need to base statistics on scientific principles. A prerequisite of scientific methodology is that empirical evidence should be sought.

The ILO 2003 CPI Resolution arguably implies that a household index is much more a “social” index than an economic one.

ILO CPI Resolution – first page

The nature and meaning of a consumer price index

1. The CPI is a current **social** and economic indicator that is constructed to measure changes over time in the general level of prices of consumer goods and services that households acquire, use or pay for consumption.

The ILO manual refers to *price inflation as experienced and perceived by households*.

The public for the most part know, and would be expected to know, little about price indices so asking their views is far from straightforward. However, there are techniques available including [deliberative polls](#).

A further issue is what questions do we need to ask the public - this again is not straightforward.

One issue that would benefit from seeking public views is that of OOH. For example, the question of whether rental equivalence, either as currently measured by the IPHRP or another method, is an approach that households would recognise and accept. A related question is to ask what the public experience and perceive as the costs associated with OOH.

The public view could also be sought on which variants of the HCI are most important to them and what frequency of publication is needed. For example, is a monthly national HCI to sit alongside a macroeconomic index a priority?

There are other more specialised questions, for example, whether pensioners have a need for an index that includes the cost of care both at home and in care homes – this would be different from the usual index for a pensioner subpopulation.

Such a programme of research would be expected to extend over a number of years.

Legislation and public policy

Official statistics should not be designed in such a way that they reduced the policy options available. The Civil Service Code, for example, under the heading Objectivity states –

You must: provide information and advice, including advice to ministers, on the basis of the evidence, and accurately present the options and facts

One example would be the SOCIAL SECURITY ADMINISTRATION ACT 1992 (c. 5) S. 150 which stated –

2) Where it appears to the Secretary of State that the general level of prices is greater at the end of the period under review than it was at the beginning of that period...

Legislation should not be ignored. Such legislation has implications for the methodology. The phrase “the general level of prices” – presumably taken from the 2003 ILO CPI Resolution – implies a national average of prices or similar rather than subpopulation averages or entities other than prices. The HCI should not be developed in such a way that precludes the use of the index in important legislative and policy areas.

There is an argument for including direct taxes in an index as Martin Weale has suggested in his list of desirable properties – a Tax and Price Index (TPI) has been published in the past but was arguably a technical index for experts and little more than a curiosity for the public. A national average of prices is arguably more of a priority to meet user needs than a new TPI – again a potential question for a deliberative poll.

Limitations of mathematical models underlying economic arguments.

Mathematical models tend to require simplifying assumptions to make them tractable.

There are issues with the simplifying assumptions that underlie the mathematical models in Martin Weale’s presentation. For example, slide 15 “Housing and the Life-cycle states” –

Assume that i) a house depreciates fully during someone’s adult life, ii) the rental rate on housing net of depreciation is the same as the mortgage rate, iii) the population is in steady state and iv) people buy houses only once, on becoming adults.

These assumptions would apparently underpin Martin Weale’s slide 22 view that –

“An issue is that homeowners are unaffected by increases in house prices, while prospective buyers are extremely affected.”

Prospective buyers are clearly affected but homeowners need their homes to follow price changes if they are to be able to move house, for example, in times when negative equity is an issue.

Slides 9 and 10 appear to have an implicit assumption of independence for price and quantity though it is difficult to be certain with the detail provided. Changes in price can depend on change in quantity and vice versa. There are interaction effects that would appear likely to be needed in the model. Conclusions drawn, e.g. on geometric means, would be in question.

These types of simplifying assumptions do not reflect reality. They are sufficient for exploratory analysis but are not appropriate for making decisions on methodology for a HCI.

The conceptual basis of national accounts and the weaknesses in relation to households.

The reference in the workshop invitation to “consumption expenditure” would appear to imply a conceptual basis from national accounts.

Consumption in national accounts is to a large extent driven by the production boundary – one result being that owner occupiers are counter intuitively treated as unincorporated enterprises resulting in the artificial concept of rental equivalence.

A revealing quote from SNA2008 –

*“Services of owner-occupied dwellings
6.34 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.”*

This implies that treating owner occupiers as unincorporated enterprises is a pragmatic convenience and is not necessarily consistent with any underlying conceptual basis of national accounts.

This is not to criticise the national accountants as it is a perfectly sensible approach for them to take particularly given the history.

In the early fifties [owner occupation](#) represented under a third of GB housing stock but has since doubled to just under two thirds (30% 1951, 66% 1990 and 63% 2016). In contrast in the fifties private rentals represented just over a half the GB housing stock but subsequently fell to less than one tenth before recovering more recently to one fifth (52% 1951, 9% 1990 and 20% 2016).

The ONS implementation of rental equivalence in UK price indices is also open to question.

The private rental index IPHRP is very much a case of precision over accuracy. Given the sample size precision is likely to be excellent but its accuracy – what it is actually measuring – is not really known. The IPHRP is an average over 12 months or so and ONS have so far failed to provide information on where the index is centred. The lag appears to be of the

order of six months and may not be stable.

Rent arguably consists of landlords' costs plus a profit margin and other implementations are possible when the homeowner is both landlord and tenant.

To oversimplify if an imputed rent is required for owner occupied housing then arguably this can be calculated as the owner occupiers' costs plus a profit margin. There are, for example, potential issues with opportunity costs. If the house is owned outright without a mortgage then there is a potential issue but because shelter in some form is a necessity this can arguably be ignored. As far as the margin is concerned there is again an issue of opportunity costs but as the owner occupier is both landlord and tenant it could be considered a constant and not affect the index.

The question then becomes if the approach is to be rental equivalence why not impute the rent that owner occupiers would charge themselves based on their costs rather than some average - centred 6 months or so in arrears - of commercial landlords whose cost structure, taxation etc is different.

The IPHRP will by its nature include commercial landlord's capital costs and interest. They are not the same as the owner occupiers' but provide a strong argument for including those contentious items.

This is the sort of issue that could be included in a Deliberative Poll.

Formulae

The HCI is unlikely to receive widespread support unless the formula question is addressed. A scientific approach is needed based on evidence rather than dubious theory.

The clothing problem which is essentially a problem of switching off implicit quality adjustment and non-comparable substitutions – arguably ignoring good practice – needs to be addressed but in the interim progress needs to be made. The HCI according to the National Statistician is a potential replacement for the RPI and as such needs to be constructed in way that allows comparison and that involves calculating the HCI with the formulae used in the RPI.

The HCI is not a short term macroeconomic index but a long term household index like the RPI. Therefore the short term improvement in precision of Jevons that can be argued is necessary for a macroeconomic index is unnecessary for the HCI. The downward bias that is inherent in a geometric mean needs to be avoided for a long term index which is used over decades.

The arguments deployed in the March 2018 ONS article do not stand scrutiny and were arguably at best misleading.

There is a lack of empirical research available to assess the precision and accuracy of the different formulae and until that is available the HCI should be calculated using both the CPI and RPI formulae. The arguments and models deployed in support of Jevons for a household index are unconvincing and do not stand scrutiny. What is missing is empirical evidence to support the use of either of the formulae. ONS have yet to provide the data – Dutot indices for clothing – that are missing from the March 2018 article. This brings the argument back to the Code of Practice and scientific principles.

Again the public could be asked if they believe the choice of methodology should be based on theory or evidence though it may subject any such exercise to ridicule.

The need for more than one headline price index

ONS currently have only one headline index the CPIH. This index is not widely supported. The OOH component uses a version of rental equivalence which is questionable both conceptually and in its implementation – see section above on National Accounts concepts.

The House of Lords EAC recommended a single index which missed the key statistical issue that there is continuing priority to improve the statistical knowledge and understanding of politicians, public servants, economists, journalists, the public etc. Increasing such knowledge and understanding should be a priority for UKSA and ONS.

There are two sources of crime statistics fulfilling different needs so why not more than one headline price index.

There is also the issue of the inflation target and Goodhart's Law. A single price index is more open than a collection of indices to gaming by, for example, concentrating on methodologies that give the lowest apparent inflation or seeking support for particular theories. It is possible to interpret what has happened with UK price indices post 2010 in part at least as an instance of Goodhart's Law in operation.