Statistics Commission

# Revisions to Economic Statistics

Report by Statistics Commission

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# Preface

Whilst the world of official statistics is never far from controversy, there can be few aspects so likely to spark it as revisions to economic statistics. As this report makes clear, official statistics are mostly estimates, not immutable facts. If they were facts, like cricket scores perhaps, then revisions to the published results would suggest that the scorer was incompetent. Creating official statistics is more subtle and challenging than counting runs or wickets taken. Revisions can have many causes.

Early estimates of key economic figures are required by, and primarily intended for, relatively expert users in government and the financial world. As part of meeting this need, the figures are made public. Frequently, however, they can only tell an incomplete story. The ending to the story – the final estimate – is commonly not revealed until much later when the flow of relevant information from survey respondents has dried up and the results have been cross-checked with other information. What first appeared to be an unremarkable movement in GDP for example can grow into something more newsworthy, and or course the opposite can happen too.

One of the main conclusions of this report is that much of the public criticism that such revisions have recently stimulated is unfair. The business of collecting data, generating estimates and publishing the consequent statistics and advice is a skilled professional activity that deserves greater recognition and respect than it is afforded. Nonetheless procedures for making revisions are not perfect and should be subject to continuous review and improvement. Our report also draws attention to some areas where we believe improvements can and should be made. We trust that these will be addressed urgently by the relevant government departments.

None of our conclusions or proposals will dramatically reduce the need for revisions. We hope, however, that they might reduce the controversy that attends them. In the light of the report, the Statistics Commission is planning to invite leading government statisticians, politicians and journalists to discuss together with the Commission how to bring about a better understanding of the issues that the report highlights.

I should like to thank all those who contributed to this substantial report. It was produced under the guidance of a Statistics Commission project board chaired by commissioner Derek Wanless. I am particularly grateful to him, to the members of that project board and to Dr James Mitchell of the National Institute of Economic and Social Research who prepared the main Review report. I would also wish to offer our thanks to the many experts who provided their views and advice for the Review, and to the Office for National Statistics for their substantial contribution.

**DAVID RHIND**
**Chairman of the Statistics Commission**

# Executive summary and conclusions

During 2003, the Office for National Statistics and other government departments made a number of important revisions to major economic statistics. These were widely reported and heavily criticised in the news media.

The Statistics Commission perceived the combination of the revisions themselves and the media reaction to them as a potential threat to confidence in official statistics and in the organisations and organisational arrangements responsible for them. It therefore undertook to review in depth the most controversial revisions and to report publicly.

The Review was carried out by the National Institute of Economic and Social Research (NIESR) on behalf of the Commission.

It must be accepted that circumstances beyond the control of data collectors can lead to revisions after an initial estimate has been released; indeed some revisions are planned to occur at a particular time when it is known that additional information will be available – 'scheduled revisions'. But revisions can also be a consequence of correcting errors, or a reflection of procedures or data sources that were not as good as they could have been in the first place.

The Statistics Commission regards any revision due to error or to weakness in the estimation procedures, or to tractable weaknesses in the underlying data systems, as potentially 'avoidable'. In the report we use the phrase 'avoidable circumstances' to convey that meaning.

The Commission sought to establish:

- which of the recent revisions had been of most concern to the main users of economic statistics
- what had caused those revisions
- whether any of the revisions could be said to have been avoidable, in the sense explained above
- whether there might be lessons for statistical processes in the future
- in cases where regular scheduled revisions had produced unwarranted adverse media comment, whether this indicated a communication problem
- whether the procedures followed for revisions to economic statistics had been in line with the National Statistics Code of Practice and its related protocols.

Taking the conclusions outlined below together with the other findings and recommendations in the sections that follow, a coherent picture emerges. The revisions that seem to cause the most concern to users of statistics are those to early estimates of Gross Domestic Product (GDP). Over recent years, the UK's record on these revisions has in fact compared favourably with that for other countries. But three GDP revisions in 2003 were relatively large and attracted negative comment. The Review found that for the most part, the **main users** of the statistics knew that revisions should be expected, understood the reasons for them and were able to make some allowance for them when taking important decisions. In contrast, some other commentators and journalists tended to put a more critical interpretation on them. Whilst two of the revisions were found to have been unavoidable and thus did not reflect inadequacies in statistical processes, one of them partly stemmed from a problem that needs to be addressed.

This problem relates to a forecasting model for the output of the construction industry. The model is managed by the Department of Trade and Industry (DTI) but then feeds in to the GDP estimation work of the Office for National Statistics (ONS). This raises questions of quality control under such circumstances and the report looks at this issue in some detail, recommending various steps to avoid similar problems in future. The report also identifies a need for greater clarity in the National Statistics Code of Practice (and the related protocols) in relation to the precise stage at which a **public announcement** on an impending exceptional, but as yet unquantified, revision ought to be made.

## Conclusions

**1:** For most economic statistics, revisions are the norm. Users expect revisions and the relatively expert users who rely on these statistics generally have an understanding of why they happen.

**2:** The three recent revisions of greatest concern to users all related to estimates of GDP and were all made in 2003.

**3:** Two of these three major revisions were the consequence of additional information becoming available rather than 'avoidable circumstances'. But one of the three was in part attributable to avoidable circumstances, in the form of a forecasting model for construction output that could have been better than it was.

**4:** Forecasts of construction output for the first estimate of GDP are produced by DTI. This raises questions about the arrangements for quality control between ONS and DTI. Similar issues may arise in other areas where ONS rely on other departments to provide data for estimating GDP.

**5:** The UK record on revisions to GDP is as good as that in other countries, and in some respects it is better

**6:** Some other revisions in earlier years – to estimates of pension assets, to regional Gross Value Added (GVA), to certain population estimates (related to the Census), to the Average Earnings Index (AEI) and to capital stock estimates – were avoidable in the sense defined above, and have already been recognised as such.

**7:** Press comment on revisions in 2003 became increasingly critical of ONS to the point of being abusive. Pre-announced scheduled revisions to GDP were, unjustifiably, associated with difficulties from earlier years, such as the withdrawal of the regional GVA series, provoking sweeping journalistic judgements about the credibility of ONS and official statistics. This particular confusion and conflation of issues was, in the judgement of the Statistics Commission, unfair to ONS.

**8:** Communication about the likelihood of revisions does, however, need to be improved. The main communication challenge is with the more occasional users, including some journalists and commentators who are not themselves experts in the field.

**9:** Expert users of economic statistics accept and understand the need for revisions; but they do want to have ready access to fuller explanations and analyses of the revisions. ONS already provides quite a lot of information on past revisions to the key economic aggregates, including a series of articles analysing revisions to GDP that have established evidence of bias as between the early estimates of GDP and the figures published two or three years later. There would be benefit in ONS publishing even more.

**10:** There is a question over the point at which a public statement should be made where the need for a major revision is known but the likely size of the revision is not. The National Statistician took the view, in respect of the revisions for 'VAT missing trader intra-Community (MTIC) fraud', that the likely size of the revisions should be clear before he made a public statement.

In taking this view, and in the procedures followed for the release of the revisions, the National Statistician and ONS acted consistently with the existing National Statistics Code of Practice and relevant protocols. Nevertheless, the end result was a delay of six months between key users within Government and in the Bank of England being informed about the need for these revisions and a public announcement being made. The Commission regards a delay of this length as a matter of concern; the presumption must be that the need for substantial revisions to statistics will be announced as soon as practicable after the decision to proceed has been taken. We believe that this raises issues about the future interpretation of the Code of Practice revisions protocol, which ONS should initially seek to address in its statement of revisions practices. We would also invite the National Statistician to consider whether any redrafting of the protocol is needed in order to remove ambiguity.

# Introduction

1. During 2003, the Office for National Statistics and other government departments made a number of important revisions to major economic statistics. These were widely reported and widely criticised in the news media. Regardless of whether or not there was any validity in this criticism, the Statistics Commission believed that the combination of the revisions themselves and the media reaction to them was threatening to undermine confidence in official statistics and in the organisations and organisational arrangements responsible for them. It therefore undertook to look into the background to the most controversial revisions with a view to offering an assessment of why they were needed and how they might reasonably be interpreted.

2. To this end, the Commission announced a review of revisions to economic statistics. The review was carried out on behalf of the Commission by the National Institute of Economic and Social Research (NIESR).

3. The vast majority of official statistics are estimates, not 'facts'. Their quality can only be judged in terms of whether a better estimate could reasonably have been made at the time the estimate was made, either by better procedures to make that particular estimate or by improvement in the underlying information systems that feed into the estimate. The fact that a better estimate could be made at a later time does not necessarily imply grounds for criticism of the earlier estimate.

4. There are two different senses in which most official statistics are estimates. One is that many statistics are based on sample surveys and such surveys can only ever deliver an estimate of the quantity being measured. Occasionally, due to chance alone, a sample survey estimate will be misleading – in the sense of being at some distance from the true value, which of course is not known. The other is that key statistics are produced to strict timetables and if, as is commonly the case, not all the sample data have been submitted by businesses etc on time, then the estimate will be the weaker for it and may need to be revised subsequently.

5. It follows that circumstances beyond the immediate control of data collectors can lead to revisions some time after the initial estimate is released. But revisions can also be a consequence of corrections made to procedures, or data sources, that were not as good as they could have been in the first place.

6. The Statistics Commission regards any revision due to weakness in the estimation procedures, or to tractable weaknesses in the underlying data systems, as potentially 'avoidable'. In this report we use the phrase 'avoidable circumstances' to convey that meaning.

7. Whether or not a revision is due to avoidable circumstances, there can be no doubt that a large or unexpected revision creates difficulties for people who need to use the figures to inform important decisions. In that sense all such revisions are to be regretted. But revisions to economic statistical series are inevitable if early estimates are to be available to those who need to use them. In many respects revisions are a normal and expected part of the working environment and decision-makers often can, and do, make allowances for them.

8. So the key question is not whether users of statistics find the revisions problematic – they often do – but whether the revisions could reasonably have been avoided, and whether the corresponding future revision could be reduced by managerial action.

9. A subsidiary question prompted by the 2003 revisions is why some routine revisions, that is, ones that were expected by users, started being treated as a news story in themselves. This might indicate a lack of understanding on the part of the news media. The Statistics Commission is concerned that misunderstandings of this kind could lead both to unreasonable pressure on the producers of statistics, making it impossible for them to produce timely estimates, and to inhibition on the part of users, leading to less effective use of vitally important information.

10. In setting the terms of reference for the review, the Commission saw it as important to establish which of the recent revisions had been of most concern to the main users of economic statistics, and what the reasons for those revisions had been. In particular, could any of those revisions be said to have been avoidable, in the sense explained above?

11. To the extent that any revisions did appear to have been avoidable, the Commission wanted to identify whether there might be lessons for statistical processes in the future. In addition, in cases where regular scheduled revisions had produced adverse media comment, which with hindsight looked unwarranted, the Commission wanted to consider whether this should be addressed as a communication problem between those responsible for the published data and those in the media responsible for the news stories.

12. The Commission also needed to consider whether the procedures followed for the key revisions to economic statistics had all been in line with the National Statistics Code of Practice and its related protocols.

# Conclusions and recommendations

13. **The Statistics Commission's conclusions and recommendations** are summarised below.

***Conclusion 1:*** For most economic statistics, revisions are the norm. Users expect revisions and the relatively expert users who rely on these statistics know that they will happen and have an understanding of why they happen.

***Conclusion 2:*** The three revisions of greatest concern to users all related to Gross Domestic Product (GDP) estimates and were all made in 2003. GDP is continually revised, from the first quarterly estimate, produced within one month, onwards. Expert users who rely on these statistics know this and expect revisions.

***Conclusion 3:*** Two of these three revisions were the consequence of additional information and not 'avoidable circumstances'. But one of the three was in some part attributable to avoidable circumstances, in the form of a forecasting model for construction output that could have been better than it was.

RECOMMENDATION (Paragraphs 22, 48):

The Office for National Statistics (ONS) should assess more systematically the performance of the forecasting models used in compilation of the first estimate of GDP, undertake further methodological development, and make other changes aimed at greater transparency and best practice.

***Conclusion 4:*** Forecasts of construction output for the first estimate of GDP are produced by the Department of Trade and Industry (DTI). This raises questions about the arrangements for quality control between ONS and DTI. Similar issues may arise in other areas where ONS rely on other departments to provide data for the first estimate of GDP.

RECOMMENDATIONS (Paragraphs 49, 50):

ONS should reassess existing quality control arrangements in all instances where data for quarterly GDP is compiled outside ONS, especially where those data are mainly based on forecasts.

DTI should work together with ONS to consider whether production of construction forecasts for the first estimate of GDP might better be handled within ONS.

***Conclusion 5:*** The UK record on revisions to GDP is as good as that in other countries, and in some respects it is better.

***Conclusion 6:*** Some other revisions in recent years – to estimates of pension assets, to regional Gross Value Added (GVA), to certain population estimates (related to the Census), to the Average Earnings Index (AEI) and to capital stock estimates – were avoidable in the sense defined at paragraph 6, and have already been recognised by ONS as such.

***Conclusion 7:*** Press comment on revisions had last year become increasingly critical of ONS to the point of being abusive. Pre-announced scheduled revisions to GDP were associated with difficulties from earlier years, such as the withdrawal of the regional GVA series, provoking sweeping judgements about the credibility of ONS and National Statistics. This particular confusion and conflation of issues was unfair to ONS.

***Conclusion 8:*** Communication about the likelihood of revisions needs to be improved. The main communication challenge is with the more occasional users, including some journalists and commentators who need to understand the economic picture but are not experts.

RECOMMENDATION (Paragraphs 42, 44):

ONS should explore ways to influence external perceptions so that revisions are not simply equated with correction of errors, and should devote resources to assessing users' comprehension of, and reaction to, the recent revamping of the information content of First Releases.

***Conclusion 9:*** 'Expert' users of economic statistics (policy-makers, economic forecasters, some commentators) accept and understand the need for revisions; but they want fuller explanations and analyses of revisions to be readily available. ONS already provides quite a lot of information on past revisions to the key economic aggregates, including a series of articles analysing revisions to GDP that have established evidence of bias as between the early estimates of GDP and the figures published two to three years later. There would be benefit in ONS publishing even more.

RECOMMENDATION (Paragraph 24):

ONS should provide more information about past revisions in its First Releases, and should publish further analyses and information relating to the reliability of the main economic time series. (In this context, we welcome the announcement by ONS that, from 25 February, it is providing more information about revisions in First Releases.)

***Conclusion 10:*** Procedures followed in respect of the revisions for VAT missing trader intra-Community (MTIC) fraud were consistent with the Code of Practice and relevant protocols. However, there remains a question over the point at which a public statement should be made once the need for a major revision is known, but the likely effects have not been quantified. The Commission regards a delay of six months between informing key users within Government and the Bank of England and any public announcement, as happened in the VAT MTIC fraud case, as a matter of concern. The presumption must be that the need for substantial revisions to statistics will be announced as soon as practicable after the decision to proceed has been taken.

RECOMMENDATION (Paragraphs 72, 73, 75, 77):

ONS should use the opportunity offered by implementation of the ***Protocol on Revisions*** to clarify revisions policy in two ways:

- In cases where the need for 'unexpected' revisions is known but the full effects cannot be quantified for some time, revisions should normally be handled in the same way as revisions from methodological changes, ie. with a pre-announcement of the intention to make the change, together with, where possible, an indication of its likely effects.
- Interpretation of the clause in the *Protocol on Revisions* that requires, for market sensitive statistics, that the process of release of revisions must not in itself create uncertainty should be clarified. The Commission recommends that this should be interpreted as applying to the actual process of releasing revisions and not to pre-announcement of intention to make a previously unforeseen revision.

The National Statistician may want to consider whether any redrafting of the protocol is needed, in order to remove ambiguity.

## Background and scope of the review

14. The Statistics Commission was set up in June 2000 to advise on the quality, quality assurance and priority setting for National Statistics, and on the procedures designed to deliver statistical integrity, to help ensure National Statistics are trustworthy and responsive to public needs.

15. The Commission announced its intention to carry out a Review of recent revisions to economic statistics on 9 October 2003. The Review was carried out for the Commission by Dr James Mitchell of the National Institute of Economic and Social Research (NIESR), under the guidance of a project board chaired by Derek Wanless, a member of the Statistics Commission.

16. The scope of the Review was defined as follows:

- to identify the major revisions made to official statistics in the UK since June 2000 and agree with the Commission those that should be examined further
- to consider with key users of these statistics the impact of the identified revisions on decision making and on confidence in the evidence base
- to categorise the root causes of each of the revisions identified into the three categories listed below and make judgements about the questions posed against each of three categories (pre-announced changes in methodology, unforeseen additional information, avoidable circumstances)
- to research more deeply any revisions that seem to fall into the 'avoidable circumstances' category, exploring the nature of any systematic or individual failing that may have caused each revision and the steps that might be required to prevent an equivalent failing in the future
- to assess whether there is any evidence of systematic bias in sets of revisions
- to comment on the reactions of commentators and the media to all of the revisions identified – were these reactions reasonable and balanced; and in any case where they were not, to consider what prompted the reactions
- to check whether the revisions identified were managed in accordance with the National Statistics Code of Practice
- to identify any lessons for the future, including any steps that would lead to a systematic reduction in the size and frequency of controversial revisions.

17. The Review sought to identify those revisions of most concern through discussions with a range of key users. These discussions identified some 12 major revisions to official statistics in all. Of these, three revisions in particular – to GDP growth for 2003 Q2, to main macroeconomic aggregates over 1998 to 2002 for the *2003 Blue Book,* to imports and trade statistics for the effect of VAT missing trader intra-Community fraud – were consistently identified by all users. The review focused mainly on these three key revisions.

# NIESR findings and recommendations

18. The full text of the Review of Revisions to Economic Statistics by Dr James Mitchell of NIESR is appended as Volume 2 of this report. Volume 3 has three Annexes to the Review, including a submission by the Office for National Statistics (ONS) (Annex 3).

## Main findings

19. The main findings of the Review are set out below. For a fuller account, see Section 2.1 of the Review (Volume 2 of this report):

- The users interviewed expect revisions – they know that they are likely to happen and moreover have an understanding of why they happen. Users, in general, are happy with the current trade-off between the speed and accuracy of estimates.
- But the scale of revisions can nevertheless surprise on occasion – the size of the upward revision in September 2003 to GDP for Q2 2003 came as a surprise to many users, though not all.
- The UK statistical system compares favourably with those in other countries in terms of the speed of delivery of the first estimates of key macroeconomic variables such as GDP. Despite this earlier delivery of first estimates, the UK's record on revisions has been, at worst, similar to that of other countries, and over the last decade has been better than many.
- Studies have established that GDP has generally been revised upwards between the first quarterly estimate and the final estimate two or three years later, but that most of this revision can be attributed to the later stages of the process. Users are generally aware of this bias and see it as a cause for concern, whether statistically significant or not.
- There is however no evidence of upward bias between the first quarterly estimate and the initial revision two months later.
- The majority of revisions were not regarded by users as having been due to avoidable circumstances.
- The upward revision to GDP growth for 2003 Q2 was caused by a large upward revision to estimates of construction output between the first and third months (m1 and m3). Estimates of construction output growth used by ONS in compiling GDP are provided by the Department of Trade and Industry (DTI). The m1 estimate is largely based on forecasting models; the m3 estimate is derived from survey information. Revisions to construction output between m1 and m3 should therefore be expected.

- There are problems with the models and methods used for forecasting construction output for the first (m1) estimate of GDP. Had appropriate forecasting methods been in place, the m1 forecast of construction growth in Q2 would have been higher. In this sense, the subsequent upward revision to construction, and thus GDP, can be attributed in some part to 'avoidable circumstances'. (How much higher the first estimate would have been is difficult to say, given the use of "judgement" in forecasting by both ONS and DTI. But the Review concludes that 'subject to rounding this may have led to publication of an m1 estimate for GDP growth in 2003 Q2 of 0.4%, rather than 0.3%'.)

## Other findings

20. The main findings above answer most of the questions raised in the original specification for the Review. Other findings relevant to the terms of reference are:

- Policy decisions are not, in general, affected by revisions since users do expect them, and are cautious in their use of early estimates.
- The news media do not find it easy to distinguish those revisions that were avoidable, such as those to regional Gross Value Added (GVA) estimates, from revisions that were not, such as the *Blue Book* revisions to annual GDP growth. This confusion creates an unfairly bad image of ONS.
- ONS release of revisions, including delays to announcement and publication of adjustments for VAT missing trader intra-Community fraud, appears to have been consistent with their obligations under the *National Statistics Code of Practice Protocol on Release Practices.*

## NIESR recommendations

21. NIESR makes a total of 15 recommendations (Section 2.2 of the report). Eight of these recommendations relate to the use of forecasts in compiling the first estimate of GDP:

- The performance of forecasting models should be assessed more systematically.
- There should be further methodological development of techniques used to produce estimates, such as those relating to construction output, that are an input to the national accounts.
- For transparency and to promote use of best practice tools, the ONS and other data producers should make details of the models they use publicly available.
- There should be peer review of DTI/ONS models by the ONS Methodological Division or by external experts.
- Production of early construction estimates should be handled by ONS rather than by DTI.

- In periods of concern about data, ONS and other data producers should ensure that they indicate their lack of confidence in their estimates to the public.
- Various means of using information from qualitative surveys to supplement the normal statistical sources should be explored.
- ONS should consider whether quality of early GDP estimates would be improved if the UK followed the practice in Germany of producing a monthly index of construction output.

22. The first recommendation above applies generally to forecasting models used in compilation of economic statistics. The other recommendations in this group of eight mainly relate to the methods used to produce forecasts of construction output to feed into the first estimate of GDP, though some also apply more generally to any areas where the first estimate of GDP depends partly or wholly on forecasts. **The Commission believes that ONS, and other data producers where appropriate, should address the Review recommendations relating to the use of forecasts, which should increase the transparency of the role that forecasting models play in the production of key economic statistics and the systematic assessment of those models. We believe that this will serve to improve the quality of the first estimate of GDP.**

23. The remaining seven recommendations are concerned with aspects of communications with users, including the provision of more information on revisions. They are summarised below:

- ONS should provide more information about past revisions in its First Releases.
- ONS should consider grading data again according to their perceived reliability.
- Routine revisions analysis should be undertaken not just of aggregate GDP but also of its components on both the output and expenditure sides.
- ONS should maintain real-time data sets and make these publicly available.
- ONS and the Statistics Commission should consider together how best to keep users informed about revisions to economic statistics and their causes.
- ONS should devote more resources to assessing user comprehension and reaction to the inclusion of information about past revisions into First Releases.
- The Statistics Commission should consider whether, when the ONS believe data are liable to substantial revision, they should make public their concerns immediately or wait until the revisions can be quantified.

24. The first four of these recommendations propose the release by ONS of additional information relating to the reliability of the main economic time series, including further analysis and information on revisions. **The Commission believes that ONS should address these recommendations, which if followed should serve to extend knowledge and appreciation of the reliability of economic statistics among their main users. We acknowledge that the ONS has now announced that, from 25 February, it will be providing users with more information in its First Releases about revisions and we welcome this announcement**. [*Economic Trends*, March 2004. Jenkinson & Stuttard: 'Revisions information in ONS First Releases']

25. The last three recommendations are about aspects of communications with users. Two of these are directed, at least in part, to the Statistics Commission. The Commission's response on these points is given in the assessment that follows (paragraphs 40 to 45, and 60 to 77).

# Statistics Commission assessment of issues arising

## Nature of revisions

26. For most economic statistics, including all those derived from national accounts, revisions are inevitable and the norm. Users of economic statistics want early estimates. And whilst users also want statistics to be as accurate as possible, there is bound to be a trade-off between speed and accuracy. The current approach – to produce early estimates of key economic aggregates, based on partial information, which are then subsequently revised as additional information becomes available – is undoubtedly the right one.

27. Part of the remit for the Review was to categorise the root causes of the major revisions identified into three categories – 1) pre-announced changes in methodology, 2) additional information and 3) avoidable circumstances. Most revisions fall into the 'additional information' category, and are planned – the timetable for the arrival of additional information is known, and the new data are taken on board through a pre-announced schedule of updates.

28. Revisions can be said to be due to avoidable circumstances when, with hindsight, it can be seen that the original estimates were not the best that could have been made at the time. This could be because of mistakes in the estimates arising from processing errors, but also because of problems with methodologies used to produce the original estimates, including forecasting models.

29. These categories of causes of revisions are not mutually exclusive. For example, a scheduled revision may correct for an avoidable 'error' in the original estimate by replacing it with a new estimate derived from additional information not previously available.

## The causes of major revisions

30. The Review sought to identify those recent revisions to economic statistics that had been of most concern to key users. The three revisions that were consistently mentioned by the users interviewed were all made during 2003 and involved estimates of GDP.

31. A number of points about GDP revisions emerge:

- GDP is continually revised, from the first estimate of quarterly GDP that is produced within one month of the end of the quarter through to the *Blue Book* revisions two years or more down the line as a result of annual benchmarking and rebasing. Users know and expect this.

- GDP revisions follow a pre-announced schedule, and reflect both additional information and pre-announced changes in methodology. The latter are usually well trailed in advance, with an indication given where possible of the likely direction and magnitude of change to be expected.

- Of the major revisions to GDP in 2003, one – the upward revision to GDP growth for Q2 at the end of September – could be partly attributed to 'avoidable circumstances', namely the use of forecasting methods that fell short of 'best practice' in producing one component of the original estimate in July. But the main explanation of that revision was additional information.

32. Some of the other major revisions mentioned by users did clearly fall into the 'avoidable circumstances' category – for example, regional Gross Value Added (GVA) estimates that were then withdrawn, capital stock estimates that were subsequently suspended, a large revision to pension funds assets, the Average Earnings Index (AEI), which was the subject of a major inquiry. But most of these revisions were only mentioned by one or two users, out of the dozen or so that were interviewed. And none had occurred in 2003 – all referred back to 2002 or earlier (the AEI to 1999).

## The UK record on revisions and presentation of revisions

33. The Review finds that the UK record on revisions to GDP is no worse than that in other countries, and in some respects is better. The overall revision to GDP growth appears to have got markedly smaller since 1989, and the UK comes out well in comparisons with other countries if the 1980s are excluded. Revisions to the first estimate of GDP appear to be on average smaller than for the US – the only other country that produces a first estimate of quarterly GDP as early as the UK – at least when measured over the mid- and later 1990s.

34. A number of the Review's recommendations call for the publication by ONS of more information on past revisions to the key economic aggregates, eg more information in First Releases, routine revisions analysis of GDP and its main components, readily available real-time data sets. This is not to deny that ONS already publishes quite a lot of information of this kind. A number of analyses of revisions to GDP have been published, most recently last December. [*Economic Trends*, December 2003. Richardson: 'Revisions Analysis; a time series approach']. This was followed in February by an article by the National Statistician [*Economic Trends*, February 2004. Cook: 'Revisions to Statistics; their role in measuring economic progress'], which sought to place revisions to economic statistics in context. And, starting with the February release of UK Output, Income and Expenditure for Q4, ONS is now providing users with more information about revisions in its First Releases.

## Press comment on revisions

35. The Review looked at the reactions of commentators and the media to the revisions identified and asked whether those reactions were reasonable and balanced. The Review surveyed a selection of newspaper articles commenting on revisions to economic statistics over the year to October 2003, and concluded that press comment had become increasingly critical. In particular, the release of the quarterly national accounts at the end of September, which saw both a significant upward revision to GDP for 2003 Q2 and the release of (higher) *Blue Book*-consistent GDP data for 2002, resulted in a number of articles that were critical of ONS to the point of being abusive.

36. A frequent theme in these and earlier articles was to link the latest just-announced revisions (to GDP at end September) to what were perceived as being previous ONS errors. There was usually no attempt to look into the causes of revisions or to identify those that were in some sense avoidable. In some cases pre-announced revisions to GDP were set alongside other statistical announcements – such as the withdrawal of the regional GVA series, and some that have no link with revisions (eg Network Rail classification) – so as to appear to offer support to sweeping judgements about the credibility of ONS and National Statistics. As the Review observes, 'this confusion obviously creates an unfairly bad image of ONS'.

37. Another frequent theme in newspaper reports is to make references to Bank of England (and Treasury) 'anger' about revisions. Whether such remarks are based on views expressed in private by Bank officials, or are just speculation about what such officials might be thinking, is not generally clear. But the Review observes that 'the newspapers' view that the Bank were "fuming" about the 2003 Q2 (GDP) growth revision is, at the very least, inconsistent with what the Bank has indicated to us in the course of this Review.'

38. To the extent that there is an established pattern of unreasonable media comment, it is not clear that there is any simple remedy. The Review comments that 'increased public awareness about the reasons for revisions … could create a more understanding climate in which revisions … are received.' Steps recently taken by ONS, including the publication of the National Statistician's article on revisions and the introduction of more information on revisions into first releases, may indeed help but are unlikely to have a dramatic effect. The Statistics Commission will, where appropriate, defend ONS against unreasonable and inaccurate media comment. It will seek opportunities to set the record straight and to challenge unreasonable comment where it can.

## Issues arising for the Statistics Commission

39. The remainder of this report considers the issues arising in three areas:

- communication with users of economic statistics, particularly the less expert users – raising awareness of revisions and their nature, making full information and analysis available
- improving early estimates of GDP through better forecasting and lessons from the revisions to construction output
- compliance with the National Statistics Code of Practice and communicating to users information about unanticipated one-off revisions.

## Communications with users

40. One of the Review recommendations invites the ONS and Statistics Commission to 'think about how best to keep users informed about revisions to economic statistics and their causes'. Communication about the likelihood of revisions should be improved. ONS should 'explore means of changing the climate in which statistics are used, so that the public comes to understand that revisions to economic statistics are the norm, and should not be seen as corrections of previous mistakes'.

41. The main communication problem in relation to revisions is with the more occasional users, including some of the media and those who need to understand the economic picture but are not experts. There does not appear to be any major communication difficulty with more 'expert' users of economic statistics (policy-makers, economic forecasters, some commentators). These users accept and understand the need for revisions; what they want from ONS is for full information about revisions – explanations and analyses – to be readily available. ONS already provide quite a lot of information; the Review makes some recommendations as to how what is provided might be further improved.

42. **The Statistics Commission endorses the desirability of 'changing the climate in which statistics are used', so that revisions are not simply equated with correction of errors.**

43. One possible route is to look again at how information about revisions is presented in First Releases, and in subsequent releases when data are revised. One of the principles of the *Code of Practice Protocol on Revisions* is that 'a statement explaining the normal effect of revisions will accompany the release of all key outputs subject to regular revisions'. ONS has now announced that, from 25 February 2004, it will be providing users with more information in its First Releases about revisions to time series, as a contribution towards implementation of the revisions protocol. The Commission welcomes this announcement.

44. However it cannot be assumed that everybody who comments on economic statistics will get their information from First Releases and other official statements; there is a need to look for other opportunities to get messages across. In this context, **the Commission would endorse the Review's recommendation that, following any revamping of the information content of First Releases, the 'ONS devote resources to assessing user comprehension and reaction.**' The 25 February announcement provides an opportunity to take this forward.

45. The Commission welcomes the article on revisions by the National Statistician [*Economic Trends*, February 2004]. Such articles can serve a useful purpose in raising awareness about the nature of revisions. Nevertheless, it is not possible to make that article compulsory reading for anyone proposing to comment publicly on a statistical revision. It may be that the message from recent experience on revisions is that once reputational damage to a statistical office has been suffered, any subsequent changes to published numbers are likely to be seized upon as evidence of further problems, whether that is justified or not.

## Improving early estimates of GDP through better forecasting

46. The upward revision to 2003 Q2 GDP from the first estimate published in July to the second estimate published in September was much larger than usual. Less than half of the total first estimate of GDP comes from actual data; the remainder comes from forecasts. As the Review observes, the large revision to the Q2 estimate was mainly a consequence of a monthly forecast of construction output that turned out to be wrong.

47. In the Review, NIESR have analysed the models and processes used to forecast construction output for the first estimate of GDP, and concluded that the forecasting models used are not ’best practice’. On this basis, the Review argues that the revisions to Q2 GDP reflected in some part ‘avoidable circumstances’. The Review recommends that forecasting models used in the compilation of key statistics should be systematically assessed along the lines followed in the Review, and makes a number of further recommendations, aimed primarily at improving the models and processes used to forecast construction output.

48. **The Commission endorses the Review recommendations in this area and urges ONS (and other data producers where appropriate) to address them.** The Commission has already addressed the use of forecasting in the national accounts in an earlier report [*Statistics Commission Report No 12*, December 2003. ‘Forecasting in the National Accounts at the Office for National Statistics’.] That report found that ‘forecasting plays an essential role in the production of timely estimates of aggregate variables’ and endorsed the ONS use of forecasting methods to that end. Two of the recommendations in that report are particularly relevant and are repeated below:

- ‘Communication between ONS and users about the role of forecasting in the production of data could be improved…..’
- ‘Where forecasting models are used to produce estimates of numbers which are subsequently published the models …. should be made available to the public….’

49. A particular feature of note here is that the data for construction output used in compilation of quarterly GDP, both the month 1 forecasts and the month 3 survey-based estimates, are supplied to ONS by DTI. This raises issues of quality control, especially for the month 1 forecasts, which are not published separately in any form and for which ONS is the sole customer. **The Review regards this as a matter of some concern, and recommends that the production of construction estimates (forecasts) at month 1 should be handled by ONS rather than by DTI. The Commission can see the case for this, and recommends that DTI and ONS should address the issue together.**

50. The review also draws the Commission's attention, in the same recommendation, to the fact that some other components of quarterly GDP are compiled outside ONS. We believe that construction is probably unique among these non-ONS components in its particular combination of size and volatility. Nevertheless there will always be a potential for quality control problems when responsibility for compilation of data feeding into key national accounts aggregates is located outside of ONS. **The Commission therefore recommends that ONS should reassess existing quality control arrangements in all instances where data for quarterly GDP is compiled outside of ONS, especially where those data are mainly based on forecasts.**

## Code of Practice and revisions protocol issues

51. One of the recommendations of the Review invites the Statistics Commission to consider whether, when ONS believes data are liable to substantial revision, it should make its concerns public immediately or wait until the revisions can be quantified. This is a reference to the events surrounding the announcement of revisions to imports and GDP in respect of VAT missing trader intra-Community (MTIC) fraud.

52. ONS announced substantial upward revisions to imports on 7 July 2003, alongside release of the monthly trade figures for May. These reflected the introduction of an adjustment for VAT MTIC fraud, which, it had been ascertained, was resulting in under-recording of imports (but not exports) in the trade figures. A full explanation of the changes was posted on the National Statistics website. It was also announced that the revisions to imports would have an impact on GDP, and an approximate quantification of these effects was given. However the full revised GDP dataset was not released until the quarterly national accounts release in September.

53. On the same day that the imports revisions were announced, the National Statistician wrote to the Chairman of the Statistics Commission, setting out the background to these revisions. That letter made clear that HM Treasury and the Bank of England had prior knowledge both of the fact that revisions were forthcoming and of the magnitude of the revisions to imports. Treasury Ministers (and the Bank) were informed in December 2002 that revisions for VAT MTIC fraud would be made, and were subsequently informed in April 2003 of the magnitude of the revisions to imports. At this point, however, no estimates were available of the impact on GDP; release of the revisions to imports was held back until estimates of the impact of GDP were available and could be released at the same time.

54. This raises issues for the Commission in two important areas:

- compliance of the arrangements for announcing and releasing these revisions with the National Statistics Code of Practice and its protocols;
- the process for telling users about forthcoming revisions to key economic statistics.

## Compliance with the Code and protocols

55. The National Statistician's letter of 7 July set out at some length how the procedures followed in this case had been compliant with the Code of Practice, and its relevant protocols (those on revisions, release practices, and consultation between the National Statistician and Ministers).

56. *The Protocol on Revisions* states that 'the standards and rules on publication set out … in the Protocol on Release Practices will also apply to revisions except where this is impractical, for example in the case of pre-announcement'. This appears to have been done for the VAT MTIC revisions to imports. The revisions were released as part of the First Release of the monthly trade figures for May, arrangements for which followed the standard ONS model for release of market sensitive statistics.

57. The general principle in the *Protocol on Revisions* with respect to 'unexpected' revisions is that 'they will be released as soon as practicable and in an open and transparent manner'. However the protocol also states that 'for market sensitive statistics the process of release of revisions must not in itself create uncertainty'. The National Statistician's decisions (a) not to pre-announce the ONS intention to make substantial revisions in respect of VAT MTIC fraud, and (b) not to release any revisions until in a position to quantify the impact of the fraud on all the key statistics affected, were based on a judgement that to do either was very likely to create uncertainty.

58. The early warning that Treasury and the Bank nevertheless received of these forthcoming revisions was given under the *Protocol on Consultation Arrangements between the National Statistician and UK Government Ministers*. This requires, in respect of 'errors and technical changes', that, where the National Statistician 'judge(s) that a change will have significant policy implications, the view of the relevant Minister must first be considered', with the 'Governor of the Bank of England … included when appropriate'. The *Protocol on Revisions* states that 'consultation, as specified in the *Protocol on Consultation Arrangements between the National Statistician and UK Government Ministers*, will apply as practicable'.

59. **The Statistics Commission agrees with the National Statistician's assessment in his letter of 7 July that the procedures followed in respect of the revisions to key economic statistics for VAT MTIC fraud were consistent with the Code of Practice and relevant protocols.**

## Telling users about 'unexpected' revisions

60. The Review acknowledges that ONS acted consistently with the Code of Practice and protocols in respect of the VAT MTIC fraud revisions, but expresses some concern about the long delay between first telling Ministers, under the consultation arrangements, that revisions were needed and making any public announcement of the revisions.

61. The issue here is one of interpretation of the protocols, and the resolution of situations where different parts of the Code and protocols point to different actions, and judgement needs to be applied. One of the principles embodied in the *Protocol on Revisions* requires release of 'unexpected' revisions 'as soon as practicable and in an open and transparent manner'. Yet in the case of revisions for VAT MTIC fraud there was a gap of over six months between Ministers being informed of a forthcoming revision and any public announcement concerning the revisions.

62. The delay was explained by the need to comply with the *Protocol on Revisions,* which requires that the process of release for market sensitive revisions must not in itself create uncertainty. The Review agrees that, in the case of VAT MTIC fraud, 'ONS did have good reasons for keeping this information private, and for sharing it with selected users only'. Nevertheless one of its recommendations invites the Statistics Commission to 'consider whether when the ONS believe data are liable to substantial revision they should make public their concerns immediately or they should wait until the revisions can be quantified'. **The Commission believes a delay of six months between informing key users within Government and any public announcement is a matter of concern. The presumption must be that the need to make substantial revisions to statistics will be announced as soon as practicable after the decision has been taken to proceed.**

## Revisions to market-sensitive statistics

63. The Review floats the idea of a 'running commentary' on the ONS website of issues that are of sufficient importance to justify a letter to Ministers under the consultation arrangements. This could be very helpful to non-government users if it did indeed cover all issues with respect to economic statistics on which there had been 'consultation'. But it seems unlikely that the existence of an ONS 'running commentary' would have made any difference in the VAT MTIC fraud case – unless it led to ONS interpreting the clause in the *Protocol on Revisions* regarding the process of release of revisions to market sensitive statistics in a very different way. More likely is that ONS would have simply left this particular revision out of its 'running commentary', on the grounds that its inclusion might create uncertainty regarding some market sensitive statistics.

64. The key here is the last sentence of paragraph 4(c) of the *Protocol on Revisions*: 'for market sensitive statistics, the process of release of revisions must not itself create uncertainty'. As it stands, this could be used to block practically any pre-announcement of revisions to statistics that are classed as market sensitive. In practice it is not so used. Methodological changes that will have an impact on market sensitive data are pre-announced, together with an indication of their likely effects. The introduction last year of chain linking for GDP at constant prices is a good example. This is in line with the principle in the Code of Practice that 'substantial methodological changes will be announced before the release of statistics based on the new methods'.

65. But pre-announcement of revisions affecting market sensitive statistics is not just confined to methodological changes. ONS announced in January that there will need to be some revisions to GDP in respect of over-estimation of contributions to pension funds, without giving either precise estimates of the effects or a clear timetable for the forthcoming revisions. A closer parallel to the VAT MTIC adjustments is provided by the introduction of estimates of alcohol and tobacco smuggling, which similarly impacted on a number of key economic aggregates in both national accounts and the balance of payments. The intention to introduce these adjustments for the *2001 Blue Book* was announced, without any numbers, several months in advance; it was for example mentioned in an article over four months before publication [*Economic Trends*, May 2001. Tse: 'ONS plans for the 2001 and 2002 Blue and Pink Books and Supply & Use Tables'].

66. The Code of Practice and protocols were not in force in 2001; it may be that, if they had been, the outcome would have been no pre-announcement of the alcohol and tobacco smuggling revisions. But that would suggest that the introduction of the Code and protocols has reduced 'openness and transparency' in respect of pre-announcement of revisions, which would be a worrying conclusion.

## Clarifying interpretation and operation of the revisions protocol

67. The Statistics Commission places substantial weight on the principle embodied in the *Protocol on Revisions* that revisions should be released in an open and transparent manner, and is concerned that other requirements of the protocol appear to be leading to a reduction in openness and transparency of the process. We think that there is a strong case for clarification of the circumstances, if there are any, under which a delay to the public announcement of forthcoming revisions can be justified under the *Protocol on Revisions.*

68. **The Commission believes that the requirement that, for market sensitive statistics, the 'process of revisions should not by itself create uncertainty' should be limited to the detailed process of releasing numbers** – where there may on occasion be a need to delay revisions to individual series in order to simultaneously release a comprehensive set of revisions from the same cause, so as to protect against a drip feed of series by series revisions increasing market uncertainty. **It should not apply to announcement of an intention to make a future revision**, where the principle should be that announcement of intention to make a change should follow as soon as practicable after the decision is taken to proceed.

69. Such an interpretation of the protocol would be consistent with how the revisions for alcohol and tobacco smuggling were handled and also with the handling to date of the prospective revisions to GDP in respect of the possible over-estimation of contributions to pensions funds (see para 65). We would also suggest that the principles enshrined in the Freedom of Information Act (which comes into force in January 2005) will require that a presumption of openness should be made.

## Implementation of the Protocol on Revisions – an opportunity for clarity

70. The Commission believes that the immediate issue here is about the interpretation of the *Protocol on Revisions* rather than about redrafting that protocol. What is most needed is a clear set of guidelines as to how this protocol should be interpreted in the face of 'unexpected' revisions that impact on market sensitive statistics.

71. Although a draft for consultation was published a year ago, the final version of the protocol has only recently been published (February 2004). Along with other government departments that produce National Statistics, ONS is now considering its implementation. A requirement of the protocol is that each organisation responsible for producing National Statistics will publish and maintain a general statement describing its practice on revisions.

72. **The Commission would urge ONS to take the opportunity that this provides to clarify some aspects of the operation of the protocol with respect to 'unexpected' revisions.** The guiding principle should be the one embodied in the protocol that revisions should be released in an open and transparent manner. In this context, the Commission has two specific recommendations to ONS in regard to its revisions policies.

73. Firstly **the Commission recommends that, in cases where the need for 'unexpected' revisions is known but the full effects cannot be quantified for some time, ONS should normally aim to handle these revisions in the same way as revisions from methodological changes, ie with a pre-announcement of the intention to make the change, together with – wherever possible – an indication of its likely effects.**

74. The introduction into the data of adjustments for criminal activity that was previously unrecorded, such as VAT MTIC fraud, is a form of methodological change. It represents a change in method of compilation. We recognise that, in certain specific cases, there could be good reasons related to market sensitivity for not offering any indication of likely effects before the revisions are actually released. In such cases, however, the Commission believes that the appropriate response is to announce the intention to revise, preferably along with a provisional date for release of the revisions, without providing any quantification.

75. Second, as set out in paragraphs 67 and 68, **the Commission believes that ONS should clarify the interpretation of the clause in the *Protocol on Revisions* that requires, for market sensitive statistics, that the process of release of revisions must not itself create uncertainty. The Commission recommends that this should be interpreted as applying to the actual process of releasing revisions, especially where there is a series of linked revisions, and not to pre-announcement of intention to make a previously unforeseen revision.**

76. The Commission believes that incorporating these two recommendations into the ONS statement of revisions practice would improve the openness and transparency of the process of revisions to key economic statistics.

77. In the longer term, it may be necessary to revisit the drafting of the Code and protocols in a few areas, with the aim of removing any ambiguity about the interpretation of specific phrases. **The Commission would invite the National Statistician to consider whether any redrafting of the *Protocol on Revisions* is necessary** in the areas discussed in the foregoing paragraphs.