National Statistics Quality Review:

National Accounts and Balance of Payments

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The Office for National Statistics

The Office for National Statistics (ONS) is the executive office of the UK Statistics Authority, a non-ministerial department which reports directly to Parliament. ONS is the UK government’s single largest statistical producer. It compiles information about the UK’s society and economy, and provides the evidence-base for policy and decision-making, the allocation of resources, and public accountability. The Director-General of ONS reports directly to the National Statistician who is the Authority’s Chief Executive and the Head of the Government Statistical Service.

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National Statistics Quality Reviews

The Office for National Statistics (ONS) is committed to assuring the quality of its statistics. ONS has a number of established mechanisms for assuring quality, one of which is the programme of National Statistics Quality Reviews (NSQR).

The previous NSQR programme was put on hold in 2008 following the creation of the UK Statistics Authority and the launch of the new assessment process for Official Statistics. The first round of Statistics Authority assessments has been completed and the National Statistician has launched a new series of rolling, in-depth methodological reviews.

The review of the National Accounts and Balance of Payments is the second review in this second series of NSQRs.
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1 Executive Summary

This National Statistics Quality Review of the National Accounts and Balance of Payments was commissioned by the ONS, as some time has passed since the last review of this type. We hope that the conclusions presented in this report assist the Office for National Statistics to tackle the considerable challenges that lie ahead in the next few years. The task of producing National Accounts to a high standard in a timely fashion is far more complex than many realise. Maintaining a high standard is necessary to sustain confidence in these truly vital statistics which are relied on by policymakers and businesses alike.

The Terms of Reference for this NSQR\(^1\) are:

To identify user needs and priorities for the UK National Accounts and related statistical outputs, and to review the compilation of those outputs in light of user needs, to assess current strengths and weaknesses and to make recommendations for the future direction of work in this area. The review should:

1. Consider in scope the core National Accounts and the Balance of Payments; and also other related areas such as the public finance statistics, if and as necessary.

2. Identify user needs for these statistics, both now and in the foreseeable future, and determine the relative priorities of those needs to enable the future development of informed and supported work programmes based on a shared understanding.

3. Assess whether the basic compilation procedures developed and put in place following the Pickford Review in 1989 meet user needs and remain appropriate in current and prospective circumstances, and make recommendations for any changes, as necessary.

4. Consider other factors and issues with a bearing on the reliability, accuracy and usefulness of these statistics, including the identification and management of risks in the coverage and collection of the underlying data, and in the subsequent production processes based on this data, and make recommendations for any changes, as necessary.

5. Have regard to the possibilities opened up by technological and other developments for new ways of collecting and obtaining data to underpin and corroborate the statistics within scope of the review.

6. Take into account previous reviews and international best practice and, in addition, the current and prospective obligations placed on the UK by European legal requirements and other international agreements, in respect of the statistics within scope of the review.

7. Take into account the existing work of the Office for National Statistics in appraising strengths and weaknesses in the compilation of these statistics, and in assessing future demands and challenges.

These terms of reference did not include any detailed examination of recent estimates of GDP levels or growth rates, and we have not attempted such an exercise. However, one of the recommendations does

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\(^1\) As announced on the ONS website:
propose that the ONS looks back at early estimates and subsequent revisions of GDP during the recent recession, to see if any process lessons need to be considered for future cycles.

**Overall Judgment**

Our overall judgment is that the ONS National Accounts are of a good standard, and ONS is undertaking a number of significant improvements which we endorse in this Review. This conclusion is based on our work, which looked at the National Accounts methods, processes and communications in some detail, but did not undertake any statistical analysis of relationships across datasets or of revisions patterns. While, compared with other countries, the ONS National Accounts may not overall be at the leading edge, there are elements which are, for example with regard to the measurement of the services sector.

But major challenges lie ahead with the introduction of ESA2010, and in addition there are new demands, for example for improved Flow of Funds data. This has been a good time for the ONS to take stock and consider how best to move forward.

Our report contains a number of recommendations, many of which relate to these future challenges rather than to the present position. We have also offered some suggestions on topics which are either less important or less closely related to our terms of reference.
Background

The starting point for this NSQR was to look back at a number of previous reviews; in particular Pickford in 1988/89, Allsopp in 2003/4 and Caplan in 2003. These considered different angles of the National Accounts, either responding to issues which had arisen or to the expectation of changed demands. Looking at the history of these reviews and their outcomes, it is apparent that changes made as a result of the Pickford and Allsopp reviews subsequently were scaled back due to financial constraints following the Gershon review in 2004. Some sample sizes were reduced, although over the recent past improvements have again been implemented, in some cases motivated by the need to implement ESA2010 (European System of Accounts 2010, due to come into effect with Blue Book 2014).

The Pickford review was especially relevant as it was motivated by concerns over the quality of national statistics, in particular the wide gap then existing between the three measures of Gross Domestic Product (GDP) then published, and the size of revisions to GDP. Major recommendations included bringing responsibility for economic statistics into one office, and several improvements to surveys.

The Allsopp review in 2003/4 looked at data requirements to support regional economic analysis and built on the recommendations of Pickford for survey improvements to reflect the changing nature of the economy. In particular it recommended improvements in the coverage of the services sector.

The main recommendations of both these reviews were implemented – although the Regional Statistician (RS) teams introduced following Allsopp were then wound down in 2011 due to the impending closure of the Regional Development Agencies (RDAs). The Pickford review led to a number of important methodological changes such as current price supply-use balancing, and the publication of a single measure of GDP for balanced years. The sector and financial accounts were also integrated.

The ONS also introduced considerable changes to surveys and rose to the challenge of better surveys for the services sector. Improvements here have continued, such as the introduction of the Index of Services (IoS) in 2007. However, as mentioned above, there were also some backward steps, of which the most significant was the suspension of the annual Purchases Survey – in 2007 the intention was to drop this for just one year, but it has not yet been reinstated.

In 2003, a further review (Caplan) set out some additional proposals for the National Accounts. Key among them were that annual GDP should be compiled using an integrated Supply and Use (SU) framework, that the National Accounts should have common deflation and that quarterly GDP should also be estimated in a SU framework. These formed the basis of the methodological and system development work at the start of the National Accounts re-engineering project. In 2007 however, systems and data issues led to these plans being scaled back.

This NSQR has taken the original Caplan recommendations and subsequent progress as an important background to our work.

It is clear from the ‘Changing Landscape’ section of this NSQR that the ONS went through a period of considerable stress in the late 2000s, with the combination of the relocation of staff to Newport, the introduction of new systems and major changes such as the move to a new Standard Industrial Classification (SIC) system, SIC 2007. Although the move is now well-embedded and a good standard of staff has been recruited in Newport, there has been some loss of institutional memory which, when systems problems and delays are added, has resulted in considerable workload pressures on some areas.
It should be noted that from 2008 the National Accounts have been regulated by the UK Statistics Authority, which assess the extent to which the National Accounts comply with the Code of Practice for Official Statistics.²

This NSQR has also taken note of the National Accounts and Related Statistics Work Plan³ published in 2013, and some of our recommendations bear on this plan. It set out the major developments which are required to move to the new international standards, ESA2010⁴ and BPM6⁵. In addition, it sets out ambitious plans for the introduction, in due course, of quarterly GDP growth using Supply and Use Tables (SUT) balanced in current and constant prices and for full Flow of Funds (FoF) data.

Statistical Programme Issues

Three key points underlie many of the recommendations in this section. The first is that the existence of the three measures of GDP is both a strength (as it prevents any erratic deviation in one measure from dominating the estimates) and a challenge, as there is no simple answer to the question of which is ‘correct’. The second is that the recent financial crisis has increased demands on National Accountants across the world for better data on the flows of funds transacted and on financial balance sheets internationally and domestically. The third is that the National Accounts comprise a closed system.

Annual National Accounts Estimates

This review agrees that the ONS needs to move towards SUT balancing at Previous Year’s Prices (PYP) on an annual basis, as now required in any case under ESA2010 by 2017. However, it is also clear that the ONS needs to undertake a number of steps in order to reach this goal. These are:

- Systems improvements in order to reduce present workload pressures
- A re-instatement of the Purchases Survey or some suitable alternative, with data on product use improved and updated periodically (this step is unfortunately not seen as essential in the current work plan in time for 2017, the first year that SUTs are balanced at PYPs).

In the meantime, the annual estimates of value added in volume terms will continue to be based on deflated GDP(E)⁶. These measures have been improved in recent years, but there are still desirable further developments.

The introduction of balanced SUT at PYP should be accompanied with the development of double deflated estimates of chained volume measures (CVM) of value-added. This is regarded as international best practice.

² The Statistics and Registration Service Act 2007 established the UK Statistics Authority as an independent body at arms’ length from government with direct reporting to Parliament and the devolved legislatures. Their statutory objective is to promote and safeguard the production and publication of official statistics that ‘serve the public good’. Further information is available on the UK Statistics Authority website here: http://www.statisticsauthority.gov.uk/about-the-authority/index.html
⁴ European System of Accounts, ESA 2010 is the latest framework. For more information: http://epp.eurostat.ec.europa.eu/portal/page/portal/esa_2010/introduction
⁶ GDP estimated through the Expenditure approach.
We also consider that the present approach of adjusting only service industries to bring the output measure of GDP into line is outdated now that the measurement of the services sector is better. A review to bring a broader set of industries into play for alignment is needed, and should be integrated into the plans for introducing regional data for Gross Value Added (GVA) at PYP.

This adds up to a considerable work programme. Partly in recognition of this, it is suggested that the goal of quarterly estimates of GDP based on a quarterly balanced system of current price and PYP SUTs is put on the backburner. Few countries use this system presently due to the complexities of implementation.

**Quarterly National Accounts**

It is important for policymakers that early estimates of the quarterly data are robust, especially at turning points in the economy. Large revisions to the 2008/09 recession quarterly path for GDP were made three years later in the 2011 Blue Book. ONS should look back at how the various processes and procedures contributed to these revisions in order to consider whether there are any lessons for future cycles.

The present programme of GDP data has three releases each quarter, with up to seven quarters open for revision. In addition, annual benchmark information is incorporated multiple times each year. This adds up to a considerable workload, and this could be reduced by exploring the possibility of having only one benchmarking activity each year, fewer quarters open for revision and working towards limiting the frequency in the GDP quarterly release programme.

**Flow of Funds and Balance Sheets**

The recent financial crisis has produced increased demand from regulators and supervisors for information on financial flows and the whereabouts of assets and liabilities across all sectors. In order to meet this requirement and develop full Flow of Funds (FoF) Whom to Whom accounts it is recommended that the ONS and the Bank of England establish a joint group to share data and expertise.

**Rest of the World – Balance of Payments and International Investment**

We note that the UK is unusual in that the rest of the world accounts are produced in the statistical office rather than at the central bank. Again, while there have been considerable improvements by the ONS in measuring services trade in particular, it is clear that challenges remain, especially with regard to the collection of trade prices data.

The ONS will need to continue to be vigilant in seeking to improve sources and estimates. Consideration should be given to using the surveys organised by the IMF to support the development of data on international financial transactions as part of the Flow of Funds development.

**Gross Fixed Capital Formation**

Data on GFCF using new methods was published in 2013 and sparked considerable debate as it indicated major changes from previously-published trends and also as the initial release included a number of errors. The ONS continues to work on this data and some refinements will be introduced for Blue Book 2014 (BB14). There is still work needed to ensure deflators are appropriate, and that revisions to past data have been based on appropriate deflators.

It is of key importance that more robust methods around some of the deflators are developed, especially for construction. The questioning of this data has led to some loss of confidence in the ONS in recent
months. However, the ONS’s discussions on GFCF and business investment data with key users has been much appreciated.

**Capital Stocks**

The ONS ceased publication of capital stocks data in 2010 and new estimates only became available very late during the work of this NSQR. We have therefore only commented on them briefly, welcoming the proposal to draw on international expertise to improve the capital stocks work. It is notable that the ONS still use linear depreciation for estimates to capital stocks, whereas other countries have moved to non-linear methods. Some service lives in the UK are also much longer than those used elsewhere.

**Deflation**

The review notes concerns about the attention given to deflators during the Quality Assurance process, and weaknesses in knowledge, in some cases, of those working on volume measures about the deflators they were utilising. In addition, the CP and CVM production processes need to retain consistency as far as possible. In moving to double deflation for annual SUT the process should be developed to attain this.

The new unit specifically focused on deflation which ONS has recently established is therefore very welcome. We also note that the UK Statistics Authority has recently launched a review of the uses of deflators. In addition, there should be a review of decisions on how deflator changes (and indeed other revisions) are pushed back into history to ensure historical data sets remain of a good standard.

**Programmes supporting National Accounts**

A number of recommendations are made with regard to the Inter-Departmental Business Register (IDBR). Greater priority should be given to identifying gaps and overlaps in the IDBR, and ensuring that all entities have their legal identities properly identified and are allocated to the correct sector.

It is also suggested that the ONS look at stratification – at present employment is the main variable for stratification, but in some cases turnover or assets might be more appropriate.

More access to administrative data in terms of identifiable micro records would help the ONS in integrating this data with their survey records, and also in identifying changing trends in how goods and services are produced and businesses organised. Micro records for both individuals and companies from Her Majesty’s Revenue and Customs (HMRC) would be particularly useful to the ONS, and also has the potential to replace some surveys and thus reduce burden on businesses. This may require legislative change and careful consideration of confidentiality – but the benefits for the ONS, its users and for businesses make a compelling case for this to be introduced. In particular, better incorporation of micro data could enable questions about the vulnerability of households to changes in the cost of debt, or about the adequacy of pension provision, to be answered at a more granular level.

**Systems**

The difficulties and challenges relating to systems constraints are generally beyond the scope of this review. However, we observe that a review of the National Accounts systems is currently underway. We suggest that the recommendations from the systems review be considered in conjunction with those from

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8 In recognition of the benefits and challenges created by the use of administrative data the UKSA has launched reviews of the quality assurance of administrative data.
Looking Ahead

The rapid pace of change in industries and in the availability of information gives statistical offices an important role in ensuring that there is still sound data available to the public. Methods of data collection also need to improve to utilise electronic collection to a greater extent. The level of detail in the industry data balanced in the National Accounts will need to be kept under continuous review to ensure it is picking up changes in the structure of the economy. This will add to the challenges of maintaining a meaningful historic data set.

Quality Assurance and Communication

Quality Assurance (QA) and communication are key parts of the ONS’s relationship with the user community. We had a number of discussions about both during the course of the review, and in both cases have noted that there has been much recent improvement. This is reflected in the comments in the body of the report.

In particular, conversations with users suggested a high degree of satisfaction with the response of ONS staff when contacted individually on specific questions. We also noted that the ONS has launched further user engagement with the start of a series of Economic Statistics Forums, and there are a number of information events planned in the run-up to Blue Book 2014.

It is also true that users can be difficult to engage in statistical issues and consultations as working pressures grow – this puts more onus on the ONS to make efforts to communicate with a wider range than just the four key users of the Office for Budget Responsibility (OBR), Her Majesty’s Treasury (HMT), the Bank of England (BoE) and the Department for Business, Innovation and Skills (BIS). This echoes the comment by the UK Statistics Authority (UKSA) in its assessment of Short Term Economic Indicators.9

For example, the website could have clearer links to methodology, and in the case of the National Accounts in particular there is no good account of how the compilation and subsequent adjustment processes of quarterly and annual data are carried out. It would also be useful to run specific training sessions on the National Accounts for more users beyond the ONS and Government Economic and Statistics Services.

Users also commented on the loss of historic data that occurred with Blue Book 2011, and the issue this creates when trying to compare with past recessions. The ONS has plans to re-instate much of this data – and while we support this, we would also caution against hasty pushing back of historic series without the necessary care. It is vital to consider whether the revised historic data makes sense compared with other indicators available at the time the data was originally released.

Quality Assurance

While carrying out the review, several improvements were proposed by the ONS in the processes around quality assurance, aimed at avoiding some of the problems that have arisen in the past two years or so.

These tightening up of procedures are welcome and should help to avert further difficulties. It might also be helpful, if it does not conflict with pre-release issues, to use more outside experts to support QA.

However, there may be occasions when the ONS is under pressure to publish data according to a pre-announced timetable, and there are good reasons not to delay (for example, if it is part of a wider data set), but full QA has not proved possible. In these cases we recommend that the ONS is transparent about this. Generally we would suggest that users should be informed about any known shortcomings in processes which ONS has been unable to avert. Transparency helps to avoid any defensiveness by ONS if the data are queried, and over time should help to retain user confidence.

Expertise in commenting on data should be retained in the ONS economics team. However, it might be worth establishing a small team of economists, possibly based in London where there is a wider labour market for economists and possibly including some part-timers from outside the ONS, to act as a third pair of eyes after the statisticians themselves and the economists working more directly with them. In addition, ONS should consider establishing a formal external advisory team, including international experts, to consult on methods and processes as needed, to supplement the work of the existing Methodological Advisory Committee.

**Sign-off procedures**

Apart from the issues associated with the GFCF release, questions were also raised in the press after the publication of some experimental data on regional GVA(P) in December 2013. These questions could have been averted if this release had been published alongside the article which explained the data. This episode suggested that the sign-off for press releases might not always occur at a sufficiently senior level. We would recommend that the ONS looks at its processes for the approval of press releases. Releases of data, and indeed articles about data, should all face a sufficiently rigorous challenge procedure at a senior level, and adequate scope for this needs to be included in production timetables.

**Errors and Corrections**

Generally errors, once identified, are handled well. However, errors in more minor series are sometimes treated with less urgency. It would also be helpful to maintain email lists of users interested in particular data series (with their permission) so that their attention could be drawn to errors, rather than relying on them happening to look at the website.

**Website**

Many users complain about the ONS website – although it is easier to voice complaints than to produce constructive suggestions. We do however recommend some specific changes, especially with regard to the search engine, and the classification of publications. In addition, consultations could be given more prominence on the website. However, this is really out of scope for the NSQR, and a more thorough piece of user research is needed.

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10 Letter from Sir Andrew Dilnot to Bernard Jenkin, Statistics on Gross Value Added, 6 February 2014 is available here: https://www.google.co.uk/url?q=http://www.statisticsauthority.gov.uk/reports---correspondence/correspondence/letter-from-sir-andrew-dilnot-to-bernard-jenkin-06022014.pdf&sa=U&ei=sEaHU-HjJKWy7AakzIHgAg&ved=0CCsQFjAC&usg=AFQjCNFZvvh2EAN_JVCmKFc7R4BEjduxA
Resources

In carrying out this NSQR, it was noticeable that many of the ONS staff seemed to be under continuous pressure, despite recent increases in staff numbers. Workload issues are exacerbated by systems shortcomings which required workarounds. And the upcoming changes required to meet new international standards are very demanding of resources. The recently-published five-year work plan is important in setting out the range of new demands, including the need for improved Flow of Funds information to support key policymakers at the Bank of England. Changing demands also require changing capabilities, for example knowledge of business accounting is one area which could be strengthened.

Several of the recommendations above aim at reducing workload, but will not be introduced immediately. The National Accounts are of great importance to policymakers and therefore to the wider UK business and household population. It is vital that resources for the National Accounts, both in terms of finance and more importantly capabilities, are protected if not enhanced in the next public spending round.
End notes

It has been a privilege to undertake this Review for the ONS and we would like to thank Glen Watson, Director General of ONS, for commissioning us to carry it out. It would not have been possible to fulfil our remit without considerable cooperation from many individuals who work on the National Accounts. ONS staff have been patient and diligent in answering very many questions about the sources of their data, their processes and their methodology. We have been impressed by the strong commitment of all staff to producing good and robust outputs.

We also benefited from a considerable amount of user engagement: those we met are listed in ‘Annex 6.1 Stakeholder consultation’. We had discussions with key users, representatives of some user groups and several individuals – all of which were very valuable and we are grateful for their time also.

Finally, we owe a great debt of thanks to the knowledgeable and supportive review team within ONS, ably led by Adrian Chesson and supported by Priya Mistry. They have proved unfailingly helpful and good-humoured and undertook the bulk of the work of looking back at earlier reviews. We are also grateful to Ellis Daniel and Tanya Flower for specific review work on the SUT alignment and deflation topics. Finally we would also like to extend our thanks to the administrative support team without whom our experience of meeting so many helpful ONS staff and stakeholders would have been much more complicated. This includes Jane Desmond and Christine Dunn in particular for note taking and organising meetings and travel arrangements and Katie Roberts for her support with other administrative details.

We hope the ONS will move forward with our recommendations, some of which aim to reduce workload pressure on staff at a time when fresh pressures on workload are emerging. The recent five year work plan was a very welcome step in setting out these new demands and how the ONS proposes to respond. We hope that this Review will help in shaping the next version of the work plan, and enable some necessary improvements to be introduced. The experience following some previous reviews has been that later resource pressures have meant the unwinding of some enhancements – we hope this will not be repeated following this Review.

Kate Barker, DBE

Art Ridgeway
2 Recommendations and Suggestions

Recommendations and suggestions are included throughout the report. These have been split into three types:

1. Recommendations for improvements to present processes
2. Recommendations for future developments
3. Suggestions

Some of the recommendations have been scored as high priority.

The following sections provide a summary of all the recommendations and suggestions, by category.

Recommendations for improvements to present processes

Process Recommendation 1:  Systems improvements are required before any move to SUT in PYP or the workload is unlikely to be sustainable. Examples of important development work are: to improve the processing times for the quarterly production process; to investigate the best options for the system platform for SUT balancing and improved links with satellite systems such that the weights for implicit price indexes are internally consistent. Work on NA systems should be given priority in this regard. [Priority – High]

Process Recommendation 2:  Data on product use must be improved and updated periodically, this is essential for both the balancing of the SUT in CP due to the significant changes in classification and the proper deflation of production. The primary requirement is for the urgent re-instatement of the Purchases survey or some alternate data source that provides input data on a frequency dependent on the pace of change in the industry. [Priority – High]

Process Recommendation 3:  The process for aligning the GDP(O) using only selected service industries should be changed. Given this will have to occur when ONS introduces SUT at PYP, if the short term indicators are going to conform to the new balanced volume series, changes to this process should be integrated into plans to meet the upcoming EU requirements for regional GVA at PYP and annual SUT at PYP. [Priority – High]

Process Recommendation 4:  As an interim step, we support the current plans for development of a limited set of commodity balancing satellites within the quarterly system. These can be developed as resources permit without interfering in current production but once in place would provide a testing ground for any eventual work on quarterly SUT.

Process Recommendation 5:  It is recommended that the ONS undertake a thorough study of the 2008 – 2009 economic cycle and how the three measures of GDP and related short term indicators performed in measuring quarterly economic growth. This study should look at how the current quarterly and annual processes and procedures contributed to the larger than normal revisions for this period with a view to possible changes that might improve the performance during future cycles.

Process Recommendation 6:  ONS should explore having a single point in the annual/quarterly production cycle where all annual benchmarking activities are incorporated into the accounts, most likely at the first quarter when BB cycle changes are brought in.

Process Recommendation 7:  It is also recommended that only the quarters of the current year be open for revision except for the quarter in which the annual benchmarks are introduced, generally the first quarter.
Process Recommendation 8: The processes for developing the current price estimates of GDP should be reviewed and in particular the practice of ‘reflating’ CVM series to get the quarterly CP series.

Process Recommendation 9: The data sources and methods for estimating cost of ownership transfer that are to be capitalized should be reviewed to ensure they are in line with international standards and that they appropriately enter the capital stock estimates.

Process Recommendation 10: It is recommended that, as the ONS has committed to doing, the deflators and deflation process for GFCF be reviewed. Issues that should be covered include: the fitness for use of indices from outside sources where a lack of information on methods and samples is evident, indices where back casts have been used to estimate historical series and an examination of the appropriateness of deflators chosen for acquisitions, largely new products, and disposals where used products dominate.

Process Recommendation 11: It should be a requirement that all those producing volume measures have a sound knowledge of the deflators they employ.

Process Recommendation 12: Processes should be developed that better utilize the complete system of National Accounts and in particular the implicit deflators should be given more attention during QA processes to benefit from the signals on quality that they can provide.

Process Recommendation 13: Earlier vintages of published datasets should be stored and accessible in an archive section of the ONS Web Site.

Process Recommendation 14: The recent plans for improvement to QA are very welcome and should be rolled out as soon as possible across the ONS’ more important data sets. When QA for National Accounts releases is being planned, there should be an important role for ONS economists. When there are big methodological changes (i.e. it is mainly past data which is under review) the potential for including reviewers of the data who are external to the ONS should be positively considered more frequently, although care has to be taken about who has early access to unpublished data. We strongly support the ONS’ commitment to Quality Assurance Plans for major economic and social outputs.

Process Recommendation 15: If there are circumstances in which it seems better to publish data which has not been subject to full QA, rather than to delay, then a simple note to that effect would, while not making users happy, be the best way to retain trust in UK statistics. In general the approach should be to acknowledge any known shortcomings in methodology. Some users however prefer delay, and this might be the right decision if the delay is likely to be short, and has no implications for a wider release which is key for policymakers.

Process Recommendation 16: ONS should consider whether data, press releases and articles are signed-off at an appropriate level of seniority. In particular, care should be taken not to prioritise releasing an article on time, over ensuring it is of robust quality.

**Recommendations for future developments**

Development Recommendation 1: Develop double deflation estimates of CVM value added as part of development of SUT at PYP. [Priority – High]

Development Recommendation 2: Given the number and complexity of development projects facing the NA over the next half decade, the review recommends that quarterly SUT be seen as a low priority.

Development Recommendation 3: ONS should explore limiting the frequency and detail in the early releases for each quarter, one possibility might be to merge the M1 and M2 releases with the minimum detail to meet EU requirements, freeing up resources to accelerate the M3 release.
Development Recommendation 4: The significant work required to accomplish the goal of the extended flow of funds data sets will require close collaboration between the ONS and the BoE and possibly others. It is recommended that a separate group be formed bringing together members of at least these two organizations. Since success will require sharing of expertise and data, new protocols may be required to facilitate the necessary exchanges of information.

Development Recommendation 5: Diligence in measuring the ever changing landscape of international trade and trade prices needs to continue.

Development Recommendation 6: It is recommended that opportunities continue to be sought to improve the data available on the myriad of evolving international transactions and that in particular data on international processes continue to be improved.

Development Recommendation 7: It is also recommended that particular attention be given to international financial transactions as the flow of funds data sets are further developed and that consideration be given to using the CPIS and the CDIS organised by the IMF to form part of the base methodology.

Development Recommendation 8: It is also recommended that as the monthly measures of BoP are implemented, consideration be given to streamlining the quarterly process for GDP and BoP to allow more simultaneous processing and closing of the estimates.

Development Recommendation 9: We strongly endorse the idea of an international group of experts to advise on further improvements to the capital stock programme. [Priority – High]

Development Recommendation 10: We recommend that there is a Capital Stocks review to consider alternatives to the current linear depreciation, noting that many other countries have, after research, moved to some non-linear model. This review should also examine the average service lives in use in the UK as it has been noted that these are in some case much longer than the lives used in other economies. It would also be good to have a more complete description of how disposals and scrappage are estimated and used in both GFCF and the stock estimates. The practice of using fixed proportions for sector estimates should also be reviewed.

Development Recommendation 11: Consideration should be given to adjusting production processes such that the CP and CVM retain consistency to the greatest extent possible. The simplest way to achieve this would be to apply all adjustments to CP series and or primary deflators such that CVM series are always derived (may be some cases where it is the CP series that is derived). In some processes this would require considerable change to current practices, while in others such as moving to a double deflated SUT on an annual basis the process would ideally be built this way.

Development Recommendation 12: It is recommended that the programme of improvements to the BR currently underway be given priority as a sound business register is a fundamental requirement for good National Accounts and economic statistics in general. Particular priority should be given to improved data on assets and liabilities, the legal status of all entities in the economy, in particular non-profit institutions and newer forms of entities such as Special Purpose Vehicles (SPVs). [Priority – High]

Development Recommendation 13: A review of stratification variables for economic surveys should be undertaken with careful consideration given to the relationship to value added and other economic variables such as assets and liabilities where increased emphasis will be required for programmes such as the flow of funds.

Development Recommendation 14: ONS should actively pursue access to identifiable micro data from HMRC so that it can apply more rigorous statistical techniques to the estimation of these important variables. Access to micro data should enable improvements in sample size and estimation such as stratification by size and region of domicile should be pursued. The pursuit of such micro data will be
dependent on wider discussions on appropriate access to confidential information but the strong track record of ONS with regard to guarding the confidentiality of the information it collects from businesses and persons should be considered by the relevant Government departments in assessing the risk of broader access for the ONS.

Development Recommendation 15: It is recommended that the ONS pursue opportunities for expanded access to administrative data in general. This should include attention to the following aspects: maximum access to identifiable micro data to allow more rigorous statistical techniques and quality assurance; opportunities to have administrative systems capture additional or improved data, particularly when administrative processes are undergoing reviews. This requires the cooperation of other administrative organizations to ensure ONS are aware of these opportunities.

Development Recommendation 16: It is recommended that the outcomes of the NA systems assessment are considered in conjunction with those of this review in establishing the next version of the five year NA Work Plan. A sound resource plan for dealing with the substantive challenges in this area will also be required. It is hoped that some of the recommendations in this report that suggest ways to reduce outputs and associated work will help to address these systems issues in a timely manner. [Priority – High]

Development Recommendation 17: There should be a programme of regular reviews of methods and process for all major data to ensure that methods for key series are kept in line with best practice. The frequency of this is likely to vary according to the nature of the data, but there should be a pre-defined timetable for important series. These reviews should be carried out by experts in both methods and production processes.

Suggestions

Suggestion 1: Given that the methodologies implemented post Atkinson have been used for only a short time both in the UK and other countries, it is suggested that these estimates be reviewed and assessed on a regular basis in conjunction with the experience from other countries.

Suggestion 2: It is suggested that the ONS undertake a review of how decisions are taken on how to push back deflator changes to ensure that historical data sets remain as consistent as possible.

Suggestion 3: ONS should consider developing a users’ version of training in National Accounts. In addition, clearer signposting to methodology and definitions on the website, and a more systematic approach to what is presented there on methods would be beneficial.

Suggestion 4: ONS intends to re-instate much historic data. However, we would caution against carrying this out without due regard for the context of other indicators at the time of the original data releases. Sound historic data sets are resource intensive, and it would be preferable to have less, but robust, historic data rather than a hastily-constructed back series.

Suggestion 5: The ONS should consider enlarging its economics team, with a view to developing a small expert oversight team, possibly based in London. This should act as a key group in QA which is slightly remote from the data producers. In addition, this might be the right group to carry out some economic research and commentary. There have been suggestions that ONS economists should not focus on explanation – but their effort to explain is bound to help to evaluate the data and this has proved useful. The question of location is eventually of course an ONS decision, but a team in London might find it easier to draw in skills on a short-term or part-time basis.

Suggestion 6: A group of external advisers, including international economists and statisticians, should be established to keep outside scrutiny fresh and ensure methodology is best practice.
Suggestion 7: Experimental data ought not to be published in advance of the accompanying explanation, even if this means missing a pre-announced publication date. Without the accompanying article there is not enough information for users to derive value from the dataset. Care should be taken when new data releases are proposed to ensure that there are reliable processes to identify any aspects of releases that could create confusion and unhelpful media comment.

Suggestion 8: There is much good practice with regard to advance notification when a methodological change is likely to suggest a different picture from the previously-published version. The right method for this will vary depending on the significance of the data. In order to do this most effectively ONS needs to develop contact lists of users for pieces of data. For example, the Productivity user group is based on people who have contacted the team inbox. This is used to circulate articles and other information.

Suggestion 9: If it becomes clear that the normal practice of prior explanation of a significant methodological change cannot be carried out, the risks of this creating confusion and misunderstanding need to be assessed. An early communication exercise will be needed around publication to tackle any potential misunderstandings and all communication needs to be carefully thought through to ensure that access to information is available on an equal footing.

Suggestion 10: Errors, once identified, should be reported as soon as possible on the website, with a note on when a correction is to be expected. The erroneous data should be withdrawn in the interim – or very clearly identified as incorrect.

Suggestion 11: Notify users who have registered an interest in the National Accounts data when an error in data is found, and when corrections are published.

Suggestion 12: Users should be able to access data readily on the website, including historic time series, and to have their attention drawn to any particular data issues related to a series. While users of statistics should take care that they understand the series which they are using, the ONS website should assist in avoiding errors and misuse of the data. The search engine is a particular weakness and should be improved or replaced.

Suggestion 13: Consultations should be given more prominence on the website. It should be clear in any consultation what specific issues or choices the ONS is seeking input on. Consultations on changes to data either in scope or methodology should be publicised as widely as possible, and with specific questions where possible to enable a user response.
3 Background

3.1 The National Accounts

The National Accounts show the economic activities for an economy, by sector, through a series of accounts including all the levels and transactions relating to the production of goods and services and to the stocks of financial and nonfinancial assets supporting these transactions.

Production of the full system of National Accounts allows the derivation of many important individual series used to measure economic performance such as Gross Domestic Product (GDP), Gross Fixed Capital Formation (Investment) and the Household Saving Ratio. While the importance of these headline measures is undisputed, it must be stressed that the National Accounts are a complete ‘system’. Virtually all of the key indicators coming out of the accounts are residuals – for the residuals to be of good quality the components of the ‘system’ must also be of good quality. Therefore the overall ‘health’ of the ‘system’ is crucial.

A full description of all the accounts can be found elsewhere. However, as this report makes several recommendations about data sources, production processes and methodology related to key indicators such as Gross Value Added (GVA) and GDP; a short description of certain accounts, headline series and balancing items is provided below:

In simple terms the ‘system’ of National Accounts can be represented through a series of accounts with associated balancing items (these are obtained by subtracting the total value of entries on one side of the account from the total value on the other side). From top to bottom (noting some accounts are parallel in sequence), as listed in the European System of Accounts 2010, these accounts with their accompanying balancing items (which are important statistics in their own right) are shown in Box 1.

The first main account is the Production Account in which the purchase of goods and services are recorded and transformed by the application of labour, intellectual input and the use of capital into new goods and services i.e. Output. The difference between these Outputs and the Inputs (between ‘Output’ and ‘Intermediate consumption’ in National Accounts terminology) is Gross Value Added (the balancing item for this account). This is a measure of the value or improvement provided by the producer by taking a set of inputs and converting these into a set of outputs, which generally have a greater value than the sum of the inputs.

A key statistic that is derived from the National Accounts is Gross Domestic Product (GDP).

As detailed by Pete Lee in ‘UK National Accounts: A Short Guide’:

‘GDP is the primary indicator of economic activity in the UK.

GDP can be estimated in three ways:

1. the sum of all production activity within the economy (the production approach), as estimated using gross value added (GVA);
2. the sum of all final expenditures within the economy (the expenditure approach); and / or
3. the sum of all income generated by production within the economy (the income approach), again, as estimated using GVA.

11 For example, follow this link Eurostat’s ‘Building the Basics’ document:
12 Lee, P. (2013, August) - UK National Accounts: A Short Guide can be found here:
It should be noted that there are not three different versions of GDP, just three different ways of estimating the same thing.

### Box 1: Sequence of Accounts

<table>
<thead>
<tr>
<th>Account</th>
<th>Balancing item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Account</td>
<td>Value Added</td>
</tr>
<tr>
<td>Generation of Income Account</td>
<td>Operating Surplus/Mixed Income</td>
</tr>
<tr>
<td>Allocation of Primary Income Account</td>
<td>Balance of Primary Incomes</td>
</tr>
<tr>
<td>Secondary Distribution of Income Account (Parallel with above)</td>
<td>Disposable Income</td>
</tr>
<tr>
<td>Redistribution of Income in Kind Account</td>
<td>Adjusted Disposable Income</td>
</tr>
<tr>
<td>The Use of Disposable Income Account (Parallel with above)</td>
<td>Saving</td>
</tr>
<tr>
<td>The Use of adjusted Disposable Income Account</td>
<td>Saving</td>
</tr>
<tr>
<td>Capital Account</td>
<td>Net lending (+)/borrowing(-)</td>
</tr>
<tr>
<td>Financial Account</td>
<td>Net lending (+)/borrowing(-)</td>
</tr>
</tbody>
</table>

In addition, the level and change to assets and liabilities (both real and financial) is shown through the following accounts:

<table>
<thead>
<tr>
<th>Account</th>
<th>Balancing item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Balance Sheet</td>
<td>Net Worth</td>
</tr>
<tr>
<td>Capital Account (as above)</td>
<td>Net lending (+)/borrowing(-)</td>
</tr>
<tr>
<td>Financial Account (as above)</td>
<td>Net lending (+)/borrowing(-)</td>
</tr>
<tr>
<td>Other changes in volume account</td>
<td>Changes in volume of assets</td>
</tr>
<tr>
<td>Re-valuation account</td>
<td>Nominal Holding Gains and losses</td>
</tr>
<tr>
<td>Closing Balance Sheet</td>
<td>Net Worth</td>
</tr>
</tbody>
</table>

Another notable balancing item, which can be found on both the opening and closing balance sheets is Net Worth (assets less liabilities) as this shows the wealth of an economy.

These data enable detailed analysis of growth and trends in the economy and hence influence significant decisions on monetary and fiscal policy. The Accounts are also used to determine the effectiveness of a range of government policies, by academics in economic and social research, by a myriad of users across the public and private sectors and by individual members of the public for research, analysis and to make decisions about their own financial positions.

It is important to note that all EU member states are legally required to complete their National Accounts in line with the latest European System of Accounts\(^\text{13}\) (ESA, described later).

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\(^{13}\) Introduction to ESA 10 can be found here: [http://epp.eurostat.ec.europa.eu/portal/page/portal/esa_2010/introduction](http://epp.eurostat.ec.europa.eu/portal/page/portal/esa_2010/introduction)
3.2 The Balance of Payments

The Balance of Payments\textsuperscript{14} (BoP) is a key macro-economic indicator which measures the UK’s economic transactions with the rest of the world.

Balance of payments estimates are used by the Bank of England and the Treasury to inform decisions on monetary and fiscal policy. The Department for Business, Innovation and Skills also uses balance of payments estimates to identify international trade partners. International users include the Statistical Office for the European Union (Eurostat) and the International Monetary Fund (IMF); Eurostat uses UK figures to compile aggregate EU accounts and the IMF collate data as a means of ensuring financial stability and sustainability. Balance of payments data are also of interest to a wider range of user groups including the media, researchers and other regional, national and international policy makers. The balance of payments allows a sector breakdown of the financial accounts and their relationship to domestic sources of finance.

\textbf{Box 2: UK ONS responsibility for Balance of Payments as opposed to the Central Bank}

The National Accounts programme at the ONS has, for many years, covered the full range of accounts described in international manuals such as the System of National Accounts 2008 (SNA 2008) and the Balance of Payments and International Investment Position Manual - Sixth Edition (BPM6). By contrast, in many countries the balance of payments and financial accounts and balance sheets are the responsibility of the central bank, although this has gradually been shifting in recent years.

The international standards for macroeconomic accounts have become much better integrated in recent years and having all of these accounts produced by the same agency, as in the UK, facilitates integrated processes that help ensure coherent datasets. However, having responsibility for the whole range of accounts also requires a broader set of knowledge to ensure the quality of the accounts; ONS needs to be fully informed on changing realities of all sectors and industries of the economy and developments in the rest of the world if the quality of the macro accounts is to be maintained.

While the full range of accounts is produced by the ONS, the Bank of England still has considerable responsibility for providing key data sets needed to produce these accounts. In addition the Bank has been producing a monthly version of the Balance of Payments required for the European Central Bank but this will become the responsibility of the ONS during 2014.

The balance of payment statistics at the ONS are fully integrated with the National Accounts as are the financial accounts. However, while the UK’s balance of payment statistics are well developed, the financial accounts are less well developed than in some other countries. Increasing demands related to the financial datasets will require additional capacity.

3.3 Previous Reviews

The economy is ever changing. As such National Statistics Institutes (NSIs) must continually evolve and adapt in line with these changes to ensure accurate and timely estimation of important statistics. Regular review is essential to provide insight, observation and recommendations to aid this process of continuous improvement, and so there is a history of previous reviews of the UK’s National Accounts and other economic statistics.

\textsuperscript{14} ONS BoP releases can be found here: \url{http://www.ons.gov.uk/ons/rel/bop/balance-of-payments/index.html}. More information can be found in the ‘Background Notes’ section of the release.
It is beyond the scope of this NSQR to assess progress against each and every recommendation from the substantial list of past reviews. However, an assessment of the basic compilation procedures put in place following the Pickford Review in 1989 is within scope. And inevitably, as we reviewed the current procedures and practices we recognised that the derivation of many practices could be traced back to other reviews. Therefore, where appropriate we have made reference to past reviews and, in particular cases where the recommendations were of direct relevance, we have attempted to assess the changes that followed and the progress made to meet them.

We found some overlap between the Pickford and Allsopp recommendations and the resultant changes to surveys, collection practices and methods adopted by the ONS. Therefore we provide a short summary of the main conclusions and recommendations from both these reviews before discussing the highlights of the subsequent changes.

While there is clear evidence of positive changes following Pickford and Allsopp, there was a subsequent need for ONS to make savings following the 2004 Spending Review as a response to the Gershon review of that time. This demand to make efficiency savings forced ONS to unwind some of the earlier developments by reducing sample sizes and the level of data editing and validation.

Conversely, in the last 2 to 3 years, as will be seen in later chapters, there has been some reversal and improvement once again in terms of investment in improved surveys and the frameworks and systems underpinning the National Accounts. These later changes, such as the development of the financial surveys, are strongly correlated with the development work necessary for implementation of ESA2010. Other changes, such as plans to reintroduce a data source for detailed inputs to the production process, will contribute ultimately to regulatory compliance, but are also supportive of the much earlier methodological recommendations from the Caplan review of 2003.

So there have been peaks and troughs for ONS in terms of its investment and development of surveys and related processes, reflecting its responsibility to react to external review and scrutiny and, inevitably, the availability of public money for statistical data collection and production.

The table below provides a short summary of the main reviews that have influenced the development path of the UK’s National Accounts and Balance of Payments over the last 35 years.
### Table 1

<table>
<thead>
<tr>
<th>Review lead by/ Date</th>
<th>Title/Terms of Reference and/or Principal recommendations</th>
</tr>
</thead>
</table>
| **Sir Derek Rayner** 1979 – 1982 | ‘Reports on the Efficiency of the Civil Service’ (External)  
Text from National Archive:  
In May 1979 Sir Derek Rayner was asked by the Prime Minister to undertake a number of inquiries into the operation of various parts of the Civil Service. In these inquiries he was assisted by teams of officials from the Civil Service Department and other government departments.  
The inquiries included a series commissioned by the Prime Minister on 21 January 1980 into government statistical services. Their purpose was to examine critically the statistical services available to each Minister and the use made of them:  
a) assessing each statistical activity to see whether the costs to government and to those outside were justified by the benefits obtained and whether the work could be undertaken more efficiently;  
b) recommending the best means for continuing scrutiny of the cost of, and the need for, individual statistical services. |
Main recommendations  
1. Unwinding some of the cuts from Rayner  
2. Use of SUTs as the foundation of annual National Accounts  
3. Better coverage of the service sector  
4. Increased sample sizes and coverage and a change from voluntary to statutory for some surveys  
Indirectly resulted in the production of one balanced measure of GDP from the three separate approaches (O, I, E)  
Led to the establishment of the CSO as an executive agency. |
| **Christopher Allsopp** 2003/2004 | ‘Review of Statistics for Economic Policymaking’ (External)  
Main recommendations:  
1. Improvements to regional accounts including (good quality) baseline GVA estimates for NUTS 1 regions  
2. Better and more even coverage of sectors of the economy (particularly the service sector) through changes to the ABI  
3. Development of the business register  
4. Improved links between the central statistical office (ONS) and GSS statisticians located in the regions. |
An internal ONS review, primarily of National Accounts methodology that has underpinned the UK’s National Accounts vision ever since.

Main recommendations:
1. SUTs should form the foundation of the National Accounts in current and constant prices (PYPs) quarterly and annual
2. Reaffirmation of many long standing processes for the production of the NA and BoP.

Text from National Archive:
‘...it sets out the scope for further efficiencies that he has identified within the public sector’s back office, procurement, transaction service and policy-making functions.’ Sir Peter also identifies opportunities for increasing the productive time of professionals working in schools, hospitals and other frontline public services, and makes a series of cross-cutting recommendations to further embed efficiency across the public sector.

The Gershon Review concludes by summarising the specific efficiency proposals that Sir Peter developed with individual departments during the concluding phase of his review.

The recommendations from the review included setting efficiency targets of at least 2.5 per cent a year for every department which was then reflected in the 2004 Spending Review.

This led to the relocation of civil service posts out of London including the whole ONS National Accounts and Balance of Payments teams and also to a series of ONS savings through the reduction of survey sample sizes and data editing and validation.

Methodological developments for the measurement of government activity.

Recommended a shift towards more direct output measurement (rather than purely inputs = outputs approach).

3.3.1 Pickford

3.3.1.1 Background
The introduction to the report explains that it was prompted by concerns expressed by users, both inside and outside Government, about the quality of macro-economic statistics. The main concerns were:

i. wide discrepancies between the three measures of GDP;
ii. large and growing balancing items;
iii. frequent and major revisions to statistics.

Part of the evidence for (i) came from the Annex to the Autumn Statement in 1988 as follows:

‘2A.1 It is difficult to assess how strongly the UK economy has grown over the past two years because of the considerable disparity between the various measures of real GDP. This disparity is particularly marked for the first half of 1988.’

The Pickford Review drew a lot of attention and the recommendations had a fundamental and long lasting effect on the collection and production of the UK’s economic statistics.

3.3.1.2 Scope

The terms of reference for the Pickford review were:

‘To examine the present inter-departmental arrangements for the production of Government economic statistics and to make recommendations for achieving cost-effective improvements where necessary.’

Included in scope were the UK National Accounts, the balance of payments, and data for the labour market, productivity and prices. The review focussed primarily on macro rather than micro-economic statistics. The scrutiny team were tasked with making cost-effective recommendations relating to ‘the standards of coverage, quality and coherence’.

3.3.1.3 Pickford Recommendations

The scrutiny team’s report was completed on 18th November 1988. In the time available the team were not able ‘to investigate fully all the detailed statistical aspects of the National Accounts and their inputs’. It was recognised therefore that the suggested improvements would not 'be sufficient to solve the underlying problems’. Therefore the recommendations were made ‘in three principal areas:

a) changes to the way macro-economic statistics are collected or compiled;
b) further work on statistical issues, in order to identify additional improvements to the statistics;
c) changes designed to create a statistical organisation more likely in future to meet the needs of users in a cost-effective manner.’

The report includes 36 separate recommendations.

The most relevant recommendations to reflect upon for the present review can be grouped as follows:

– recommendations to change the responsibility for official statistics across government, such that one office should have primary responsibility for the central collation of the relevant data and the subsequent compilation of the National Accounts and clarification of the responsibilities of the Central Bank and other Government Departments providing data to that office (recommendations 32 – 36)
– recommendations that input-output tables should be used to match the supply of capital goods for recent years with the corresponding expenditure estimates for fixed investment and that the CSO
should produce a set of balanced accounts every year as a diagnostic tool for improving the
published accounts (recommendations 2 and 17); although recommendation 12 conversely stated
that work on input-output compilation should cease after the current tables were complete

– recommendations prompting changes to inquiries (now called surveys) ranging from increases
and decreases in sample sizes to a change for some surveys from voluntary to statutory
(recommendations 7, 8, 10, 14, 28 and 29)

Much of the data at the heart of the National Accounts comes from surveys. An understanding of the
development of ONS surveys in response to Pickford, other reviews and demands up to the present day
is important for a good understanding of the current quality of the accounts and the challenges faced by
modern statisticians. The more relevant recommendations from the Pickford Review with respect to the
coverage and nature of surveys are:

‘7. We recommend that the monthly sales inquiry should be strengthened by increasing the
sample size and making the inquiry fully statutory. (Para 3.18)’

‘8. We recommend that the Quarterly Sales Inquiry sample should be reduced and restructured in
a manner optimal for the overall Index of Production subject to the conclusions of the DTI
scrutiny. (Para 3.19)’

‘10. We recommend that CSO should review on a regular basis the balance of statistical reporting
between industries, in terms of the requirements of the National Accounts, to ensure that it
adequately reflects changes in the economy. (Para 3.24)’

‘14. We recommend that where voluntary surveys need to be improved and where statutory
surveys can provide better quality data at less cost to business, the surveys should be made
statutory. (Para 6.2)’

‘28. We recommend that CSO should investigate alternative sources of data on persons’ financial
transactions, with a view to making greater use of them in the published accounts, and should
report by June 1989. (Para 4.7)’

‘29. We recommend that consideration be given, if no satisfactory alternatives exist, to developing
the Family Expenditure Survey as a comprehensive data source on all items of household
income, expenditure and financial transactions. (Para 4.7)’

The progress against these recommendations is detailed later.

3.3.2 Allsopp (2003)

3.3.2.1 Background
In 2003 Christopher Allsopp was commissioned to carry out a review of economic statistics for
c Policymaking. The terms of reference were wide and can be summarised by two broad headings:

- The informational requirements for regional economic policy;
- and whether official statistics have kept pace with the changing structure of the UK economy
  (which reflects one of Pickford’s recommendations)

Two reports were produced. The first report (published in December 2003) concentrated on the first of
these broad headings and the final report (published in March 2004) updated the former and
centrated on the second part of the terms of reference.
3.3.2.2  **Allsopp First Report (Dec 2003) – Review of economic statistics for policymaking**

This report focussed on providing recommendations to improve regional economic statistics. The press notice for the report stated:

'Its recommendations respond to the needs of policymakers and the wider user community, including business and academics at both national and local levels. These include:

- bringing Regional Accounts more into the National Accounts framework, including a better quality and more timely measure of real regional Gross Value Added;
- expanding the range of micro-economic and sub-regional data already available, with the infrastructure used by the Office of National Statistics’ (ONS) Neighbourhood Statistics Service becoming the primary platform for area-based National Statistics;
- ONS or Government Statistical Service presence in the English regions to complement that which already exists in Scotland, Wales and Northern Ireland; and
- greater access for the ONS to administrative data held within government, which could improve both regional and national data while offering important savings in the compliance burden on business.

Many of the recommendations in the first Allsopp report ‘concern the processes required to provide adequate regional and sub-regional data, including expansion of a number of key surveys.’ There were three key elements to this:

- ‘the sample size of the Annual Business Inquiry (ABI),’ [which has later been superseded by the Annual Business Survey], ‘should be increased in order to improve the level of accuracy at the regional level;
- the ONS should review the industrial stratification of the ABI, which may be excessively detailed and biased towards the manufacturing sector; and
- the ONS should review the models that underpin the allocation between regions of the activity of national enterprises, including discussion with business.’

There were also two important institutional recommendations:

- ‘we believe that an Office for National Statistics (ONS) or Government Statistical Service (GSS) presence in the English regions could improve the information that feeds into both Regional and National Accounts; it could strengthen links with key users and providers in the regions; and also help to increase the consistency and comparability of surveys commissioned by regional bodies; and
- greater access for the ONS to administrative records, including tax data, could improve both regional and national data, while offering important savings in the compliance burden from survey forms sent to businesses. Looking the other way, there seems a good case for the ONS granting regional access to information, in particular its key business register. Access rights raise a number of issues, including legal barriers and the need to ensure adequate safeguards of confidentiality.’

3.3.2.3  **Allsopp Final Report (Mar 2004) - Review of economic statistics for policymaking**

The final report focussed on whether official statistics had kept pace with the changing structure of the UK economy. The press notice at the time said:

‘The principal outcomes from implementing the recommendations of the review would provide policymakers with:

- good quality baseline Gross Value Added estimates for the twelve regions and countries of the UK, and improved detail at lower levels, as part of an integrated system producing both National and Regional Accounts;
a statistical system that is not skewed towards particular sectors of the economy, that reflects the contribution and nature of different economic sectors, and that evolves alongside future change in the economy;

- a coherent and efficient suite of surveys, sample frames and estimation procedures, based on sound statistical principles, that reflects the balance of the economy and delivers reliable results at acceptable compliance cost;

- a range of information held by government that can be used to increase the quality and the compliance efficiency of economic statistics, while safeguarding its confidentiality; and

- good links between the centre, Office of National Statistics (ONS) and Government Statistical Services (GSS) statisticians located in the regions and devolved administrations and regional bodies, with greater comparability of those micro-regional data that are not collected centrally.

A paper to the 8th National Statistics Methodology Advisory Committee (MAC) on 4 May 2005 summarised the results from the final report as follows:

‘...the broad findings were that the changing structure of the economy has resulted in imbalances, particularly between the treatment of the goods and service sectors, which need to be alleviated. A principal requirement for industry sector detail is to support production of a coherent and consistent framework for meeting core demands for economic statistics, and from this perspective the imbalance arises not so much from any skewness in the main business surveys, but rather from a lack of product detail and incomplete price information on the service sectors. The key specific recommendations relate to:

- a review of the level of industrial stratification for business surveys, moving away from being based on one specific level of the SIC to a ‘wavy line’ approach based primarily on producer demands – this to include an examination by ONS of its own ‘producer’ demand for industry and product detail; and

- the following hierarchy of user demands for estimates of national GDP and associated macroeconomic variables: national GDP estimates; NUTS1 regions; industries according to the producer-led demand; NUTS 2 and 3 and any other industry structure.”

3.3.3 Progress against Pickford and Allsopp Recommendations

As stated earlier, there is overlap between the recommendations from Pickford and Allsopp. For example, Pickford recommended that the CSO should ‘review on a regular basis the balance of statistical reporting between industries’ and Allsopp gave recommendations focussed on ensuring a statistical system ‘not skewed towards particular sectors of the economy’. In other words, it could be said that both recommended a system that measures different industries and sectors in a balanced and proportionate way. In practice this translates over the past three decades to ensuring that the growing size and importance of the service sector in the UK economy is adequately reflected by developments in surveys and methodology for recording this sector in the accounts.

To tell the full story of how ONS has reacted to both reviews, given the overlaps, it is simpler to group the resultant developments into categories such as changes to surveys or to the business register from the time of Pickford, through Allsopp and beyond.

This NSQR has reviewed progress against the most pertinent Pickford Recommendations in terms either of their significance to changes in the organisation or the collection and production of statistics. So this is not a full account of the progress against each recommendation from the Pickford review. Some of the recommendations have in any case already been rendered redundant by advances in technology. Similarly, it is not within the scope of this review to assess all the actions taken following the Allsopp review and to judge their merits.
Progress against certain recommendations from the Pickford and Allsopp Reviews, including around the management of risks in the coverage and collection of underlying data are important. The evidence we have gathered suggests that all of the main recommendations from Pickford were positively acted upon (and fully completed in many cases). There has also clearly been progress made against the recommendations from Allsopp although, as we will see, some of the developments have since been unwound.

i. Organisational Change
The restructured Central Statistical Office was set up in July 1989 with almost all work on compiling the National Accounts centralised under one Group within this office (responsibility for Bank data remained with the Bank of England) (Jenkinson & Brand, 2000).15

ii. Regional statisticians
New ONS Regional Statistician teams were established in each English Government Office Region in April 2007. Except for London, all ONS Regional Statisticians were disbanded in March 2011 following the decision of the Regional Development Agencies (RDAs) to pull out of the funding agreement from the end of March 2011. Given the difficult financial climate, ONS were unable to find additional money to make up for the loss of the RDA contribution, and pressures on departmental budgets more widely meant that an alternative funding source could not been found; so the service entered into a managed run-down.

iii. Methodological and Product Changes
Pickford directly and indirectly prompted a number of methodological changes to the production of the UK National Accounts as summarised here (taken from Jenkinson and Brand, 2000):

- ‘annual current price input-output balancing through supply and use tables was introduced in 1989 and brought more up to date in 1994, an approach still used today which forms the foundation of the annual accounts
- a single measure of GDP for the balanced years
- early estimate of GDP. An early “3 weeks” estimate of GDP based on output indicators introduced in 1993
- sector accounts integrated. Fully integrated quarterly accounts including the financial and sector accounts introduced in 1992
- dividend and interest matrix. Introduced in 1992 and fully integrated into the accounts in 1994
- reductions in sector balancing items particularly for the personal and overseas sectors
- more consistent quarterly GDP. Adjustments were introduced so that there was a single estimate of quarterly GDP growth
- better timing. National accounts were presented at increasing levels of detail around 3, 8 and 12 weeks after the end of the quarter
- UK Economic Accounts introduced. Comprehensive National Accounts were presented in a new publication
- quarterly supply side balancing. Introduced in the early 90s to improve the consistency of the accounts ensuring that the supply and demand for broad commodity groups matches. Some balancing work was also done on major commodities including oil, cars and aircraft.’

iv. Data Collection Changes
The business surveys used as the main source for much of the data in the National Accounts were strengthened and improved following the Pickford recommendations with further changes following Allsopp. The frequency of many surveys was increased and some voluntary surveys became statutory.

The main changes following Pickford (as summarised in Jenkinson & Brand, 2000) were:

- Distribution and Service Industries Output. A new set of statutory Quarterly and Monthly Turnover Inquiries (QTIs and MTIs) were introduced and strengthened progressively starting in 1991. The results have been used to improve the output measure of GDP.
- Improvements to Balance of Payments. A range of improvements were made to the components of the Balance of Payments. These included greater centralisation of data collection at the then CSO, more quarterly reporting and a move to a statutory inquiry basis e.g. on direct investment and overseas trade in services, and better integration of information e.g. within the overseas capital account.
- Production industries output. Several of the inquiries were converted from quarterly to monthly frequency to improve the quality of the monthly index of production.
- Output deflation. Starting in 1993 an improved procedure was introduced to ensure that the deflation applied to goods produced for export was consistent with the deflation applied in the calculation of the export of goods figures. (Subsequently the direct collection of key export prices was started and more recently this has been extended to imports.)
- Stock adjustments to output. Additional voluntary monthly and statutory quarterly stock inquiries were introduced. This improved the quality of the IOP and, in particular, improved the reliability and quality of the 3 weeks output based estimate of GDP.
- Company profits. A new statutory Quarterly Profits Inquiry (QPI) was introduced for large non-financial corporations in 1991. Some financial corporation profit inquiries were also strengthened.
- Inventory inquiry. In addition to the improvement mentioned above existing quarterly inquiries were put on a statutory basis with larger samples and an improved sample design.
- Capital expenditure inquiry. Similarly this inquiry was put on a statutory basis with a larger sample from 1991, with a subsequent improvement to sample design.
- Financial assets and liabilities survey. An existing voluntary inquiry into company liquidity was put on a statutory basis in 1993 following an expansion to cover a wider range of assets and liabilities for non-financial companies in 1991.
- Share register surveys. A new sequence of surveys was started from 1989 to determine the beneficial owners of listed ordinary shares from an analysis of information held in share registers. There were large revisions to estimates of overseas and personal holdings.
- Valuation of trade in goods. A trade valuation survey was conducted in 1990/91 to check the accuracy of reported data. Deflation of trade in goods was also improved progressively from 1993 consistent with output deflation reported above.
- Overseas trade in services. An expansion and rationalisation of trade in service inquiries was implemented, mainly on a statutory basis.
- Overseas personal sector transactions. A survey was conducted in 1992/93.
- Offshore centres. A study was undertaken to check that transactions passing through the Channel Islands and the Isle of Man were completely and consistently measured in the balance of payments.
- Financial institution inquiries. Most non-bank financial institution inquiries were transferred into the CSO from the Bank of England and elsewhere, registers were improved with the coverage being made more complete and consistent. Some existing inquiries to pension funds and insurance companies were made statutory as part of the programme of improvement. Later in the 1990s, all the inquiries were thoroughly reviewed in terms of their methodologies.
- Producer prices. The inquiry was made statutory in 1992 and extended.
- Retail sales and consumers’ expenditure. The retail sales inquiry was made statutory and a new quarterly commodity inquiry introduced. Another major source of data for consumers’ expenditure - the family expenditure survey - was made much faster.”

Following Allsopp ONS also set out its plans to address the recommendations by re-engineering the IDBR (more on this later) and through the redesign and integration of some of the main annual and sub-annual surveys, including:

- revising survey methodology in a consistent way that applies current best practice and facilitates optimisation of survey design and coherence of outputs;
• meeting the emerging needs for extended and improved outputs at regional level, and for improved detail of the service industries sector;
• and increasing efficiency and value for money by making the best possible use of administrative data sources.

The changes detailed above are those most directly attributable to a response to Pickford in the period up to 2000. In addition, for this period and beyond, data collection changes to improve the measurement of the service sector are covered in the next section. Aside from these, ONS made a number of further changes to its surveys in the period 2000 to 2010. As will be seen later, some of these steps were to unwind earlier developments in order to meet challenging efficiency targets.

More recently, with regard to ESA2010, while not connected with a response to Pickford or Allsopp it is important to note here that ONS is leading an extensive programme of survey changes and other developments to meet the requirements of the new standards. This includes multiple changes to a range of financial surveys to extend and improve on the range of data collected on financial instruments and transactions (the Bank of England is also making similar changes to its surveys and data collection). There are also changes to asset classifications which ONS is addressing through changes to the relevant surveys, to name but a few.

v. Coverage of the Service Sector
Perhaps the most significant developments to business surveys following Pickford (and later Allsopp) were those focussed on improving the coverage and measurement of the Service Sector. The UK has now established itself as a leader in the EU with respect to the measurement of activity in this sector of the economy. These advances were driven by the development of the Index of Services, introduced as an experimental statistic in December 2000 and successfully designated as a National Statistic in 2007, ahead of most other EU countries. This development significantly improved the measurement of the output of the service sector as well as the output measure of GDP. As Pickford recommended, the ONS continues to monitor the balance of coverage across industries.

The size and importance of the service sector in the UK has increased markedly from the early 1970s. The service sector accounted for approximately 53% of Gross Value Added (GVA) at the start of the 1970s (compared with 33% for manufacturing). This proportion grew to approximately 73% of GVA in 2002 (16% for manufacturing). In 2010, the service sector had increased further to 78% of GVA (just 10% for manufacturing).

Box 3 below gives a short history of the changes and developments undertaken by the ONS to ensure an ongoing improvement to service sector measurement.
Box 3: Extract from ‘The Challenges of Measuring the UK Service Sector’ (Morgan & Stephens, 2013)\(^{16}\)

Progress

1989-1994: In response to the Pickford Review, GDP estimates became a balance of the Expenditure, Income and Output (or Production) methods by confronting the various data through annual supply and use tables, and Output (GDPO) was chosen as the source of what would become an accelerated preliminary or flash estimate. This led to investment in more robust monthly turnover inquiries and price indices to deliver a stronger Index of Production (IoP) while parts of the service sector benefitted from new quarterly turnover inquiries from 1991.

1995-2000: By the mid 90’s, ONS aimed to measure services in the way it would the production sector, and from 1995 the transition from quarterly to monthly inquiries for the service sector began to steadily strengthen the flash estimate. Progress was tempered by the need to fully establish new surveys over a number of years to produce meaningful time series. At the same time the lack of service sector prices were addressed with the launch of a new quarterly Corporate Services Price Index (CSPI) which covered business to business activity in the service sector. However, coverage was more limited than the turnover surveys and the expansion proved slower than planned due to the difficulty in resolving some of the methodological challenges.

2001-2006: The launch of the IoS in 2001 did not signal that the development programme was complete. It simply marked the end of the first phase of expansion in which the more straightforward challenges had been addressed and the move from quarterly to monthly turnover inquiries had all but been completed. National Accounts integrated the IoS within GDPO seamlessly but new methods and approaches were required to confront the issues such as those surrounding non-market activity, financial services and the enduring weakness of deflation.

Against this background the Industry Review programme commenced in 2001 with a remit to systematically review each industry within the service sector and ensure that concepts, methodology and data sources followed robust international standards. Prioritisation was based broadly on industries that had scope for conceptual development, that were rapidly changing, that had importance in terms of Gross Value Added (GVA) weight and could embrace new data sources.

In this context the Eurostat ‘Handbook on price and volume measures in National Accounts’ (2001 edition) became the IoS guidebook as it sought ‘National Statistics’ status. Furthermore in a practical sense, Canada and the UK were key contributors to the OECD ‘Compilation manual for an index of services production’ which was published in 2007. However, it would be misleading to believe that the wider statistical community had agreed all the standards or answered all the questions that could support a short-term approach to measuring service sector output – our community itself needed time to reflect on the new challenges.

In the UK the experience of the move to the International Standard of Industrial Classification Revision 3.1 (ISIC Rev3.1) equivalent to the UK Standard Industrial Classification (SIC) 2003 did little to improve the focus on service industries. This would only come with the adoption of ISIC Rev4 equivalent to SIC 2007 although it is arguable that further work is required to more completely address the imbalance of detail that exists between the manufacturing and service sectors.

With prices, the Voorburg Group discussions proved supportive and helpful in spreading knowledge and practice internationally but they demonstrated that the challenges in measuring services are ongoing and are far from solved in a practical sense. We must also recognise the pricing issues observed when comparing final consumption expenditure and intermediate consumption in the service sector – a

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challenge which is not mirrored within manufacturing. While the debate and discussion over Financial Intermediation Services Indirectly Measured (FISIM) highlighted the fact that financial services were complex and were becoming ever more complex during the opening decade of the 21st century.

In addition, there have been two main areas of improvement for service sector data collected through the Annual Business Survey (ABS) since the Pickford report in 1989.\(^{17}\)

Methodology - The Annual Census of Production and Annual Distribution and Services Inquiry were combined to form the Annual Business Inquiry/2 (ABI/2) in 1998. This meant that annual production and services information was collected and estimated on a consistent basis for the first time. (Note: ABI/2 became the ABS in 2009).

Coverage - With the move to SIC07 for the 2008 reference year the ABS extended coverage to include part of the financial sector, Division 65 'Insurance, reinsurance and pension funding, except compulsory social security' (within Section K). For the 2011 survey, Division 65 recorded GVA of £40.9bn (around 4\% of GVA in the Business Economy as covered by the ABS).

vi. Development of the Interdepartmental Business Register (IDBR)

The collection of good quality survey data is reliant upon robust sampling methodology which in turn requires an accurate sampling frame with wide coverage. For the National Accounts in particular this means that an accurate business register is required from which to draw the samples for business surveys.

Underpinning much of the survey changes listed above following Pickford was ‘the start of the development of a much improved business register based on a wider range of administrative sources’ (Jenkinson & Brand, 2000).

‘A major study of statistical inquiry procedures (was) completed in November 1993, which led to better co-ordinated, better quality, more timely and more efficient inquiries based on a single business register. Implementation also released substantial efficiency savings - much of these were recycled into product improvements and reduced compliance costs for businesses’. (Jenkinson & Brand, 2000)

A single comprehensive business register (the Interdepartmental Business Register) came into use from 1994, with implementation completed in 1998. All surveys were managed from this to reduce the risk of double counting or gaps. This brought major improvements in terms of coherence, as well as the better management of the form-filling burden on individual businesses.

Later, the ONS set out its response to the Allsopp recommendations in the paper to the 8\textsuperscript{th} Meeting of the National Statistics MAC on 4 May 2005 as ‘Methodological Developments to Support Allsopp’s Objectives for Economic Statistics’.

The consequent recommendations for the business register and business surveys include:

\begin{itemize}
  \item extension of ONS’s business register (the Inter-Departmental Business Register – IDBR), Annual Register Inquiry (ARI) and associated methodological techniques in order to play a more sophisticated central role in inputs and outputs of the business survey process, possibly including widening the coverage of the IDBR, extension of the ARI, extended integration with other surveys, development of new estimation and apportionment techniques;
  \item extension of the ABI sample to provide NUTS1 regional estimates;
  \item if necessary, extension of the sample sizes of the monthly turnover surveys to provide a reasonable advance annual measure;
\end{itemize}

\(^{17}\) Acknowledgement of Jason Bradbury and colleagues for informational input for ABS text.
estimation of product sales for all industries, with timeliness and detail driven primarily by producer rather than user considerations; and the ONS should move towards a fully coherent business survey system in the long term and should assess: the relevant roles of survey and administrative data; the extension of surveys to broad industries not covered at present; the combination and integration of surveys.

vii. Regional GVA(P)
Following Allsopp, the ONS committed to the development and publication of estimates of regional GVA from the production measure - regional GVA(P). A measure of regional GVA(P) on a consistent basis for all regions is a requirement of the ESA2010 European legislation. In December 2013, the ONS published its first set of estimates of regional GVA(P) as experimental statistics. The UK is required to deliver the finalised set of estimates to Eurostat in 2017.

3.3.4 ONS Savings and Reductions
Significant improvements were made to the coverage, regularity and statutory status of surveys for the collection of data for the National Accounts following the Pickford and Allsopp reviews. Many of those improvements have been maintained, but it was necessary in the mid to late 2000s for ONS to make savings in its survey collection and processing functions. This was mainly in order to fulfil its efficiency requirements as set out in the 2004 Spending Review (SR04). Some of the progress made through the 1990s and early 2000s following Pickford and Allsopp was reversed, but not back to the starting position, and it must be stressed that a number of initiatives and techniques were adopted to minimise the impact of changes.

A paper presented to the National Statistics Methodology Advisory Committee 12th Meeting on 11 May 2007 provided a detailed account of the changes to surveys and data validation and editing practices aimed at meeting the challenging efficiency targets and presented some important questions regarding choices for methods and practices going forward. The main points from that paper are:

1. A description of OPTIONS (Outputs Prioritisation Tool for ONS) a model for prioritising outputs
2. Use of SNOWDON (a process for changing editing rule parameters in business surveys that quantifies the associated cost saving and the impact on quality) to minimise the effects of reduced data validation and editing
3. Reductions and changes to a range of surveys

On the third point, the paper gives details of these changes resulting from the reduced funding at that time (see annex 3 of the MAC paper). In summary, that paper detailed a range of changes both to improve statistics produced at a regional level, but also savings from survey changes and cuts.

So, it can be seen that some of the earlier positive steps forward following Pickford and Allsopp in terms of increased sample sizes and other data collection and validation practices were affected by the efficiency savings required by the 2004 Spending Review.

In addition, there have been other changes to data collection, methodology and analytical processes that could be seen as steps backwards since the initial practices put in place following Pickford and Allsopp.

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One example is the removal of stock adjustments to the Index of Production from the quarterly stocks inquiry, detailed in an article in January 2008 (Walton, Youll, & Hunt, 2008). In addition, the commodity flow analysis that informed the quarterly GDP balancing process up to around 2005 has since been dropped, although there are now plans to reinstate this analysis to some extent. And, while the plan set out in the MAC paper of 2007 was to only suspend the Purchases Inquiry for one year it has not been run since and is only now being considered for some form of reinstatement (or for an alternative data source to take its place).

3.3.5 Caplan (2003)

In May 2002, the ONS Executive commissioned a major project for re-engineering the UK National Accounts. As part of this project, in 2003, David Caplan (then Deputy Director in charge of National Accounts Coordination Division at ONS) conducted a thorough review of the UK National Accounts High-level Methods. The review was published in September of that year. The remit for this review was:

- to take account of the requirements of ESA 95 and international best practice and conventions;
- to consider and recommend the most appropriate and effective methodology for the future compilation of the UK National Accounts; and
- to produce a blueprint for their compilation that will provide the route map for the National Accounts Re-engineering Project

The most relevant recommendations from Caplan for this NSQR are as follows:

- 6.2.2.1 Annual GDP should be compiled at current prices and the prices of the previous year using an integrated supply use framework
- 6.2.2.4 There should be common deflation across the National Accounts which should be integrated within the supply use framework
- 6.2.3.4 Like annual GDP, quarterly GDP should be estimated within a supply use framework with mechanised balancing

The Caplan recommendations formed the bedrock of the methodological and system development work undertaken in the initial stages of the National Accounts re-engineering project. Systems were developed to produce more detailed supply and use tables than the UK had ever produced before and much of the ground work to establish SUTs in both CPs and PYPs was advanced. However, system issues and the unavailability of disaggregated data of sufficient detail meant that the original plans were scaled back in about 2007.

Nonetheless the vision as set out by Caplan has remained that underpinning developments in National Accounts to the present day. Consistent with the European regulatory position set out in ESA2010 and confirmed in the NA work plan published in 2013, the ONS has maintained its plans for establishing annual SUTs in PYPs as a main component process in the production of the National Accounts (for 2017/18).

This NSQR has taken the original recommendations from Caplan and the continued adherence to this vision as one of the main methodological areas to review and for which to provide recommendations.

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20 An update of progress against Caplan recommendations can be found in ‘The National Accounts High Level Review – Status Update 2013 (Youll, 2013):
3.3.6 Atkinson (2005)
In December 2003 the National Statistician commissioned Professor Tony Atkinson to conduct an independent review of the measurement of government output in the National Accounts. ONS began introducing direct measures of government output from 1998 and was leading the debate on the direct measurement of government output within international accounting standards.

The terms of reference of the review set out by the National Statistician were:
‘To advance methodologies for the measurement of government output, productivity and associated price indices in the context of the National Accounts, recognising:
a) the full scope of government outputs;
b) differences in the nature and quality of these outputs over time;
c) the relationship between government outputs and social outcomes;
d) the need for comparability with measures of private sector services’ output and costs;
e) the existing work of the Office for National Statistics (ONS); and
f) the appropriate measurement of inputs, including quality and the distinction between resource and capital, so that, together with the measurement of output, light can be thrown on developments in government productivity.’

The final report for the Atkinson Review was published in January 2005 providing 54 recommendations for the measurement of government output.

The Review was split into two parts, covering government outputs and productivity in general and four major spending functions: Health, Education, Public Order and Safety, and Social Protection.

3.3.7 Current work plan
On 31 May 2013, ONS launched a public consultation on a five year work plan for National Accounts and other outputs that have a close relationship. The purpose was threefold:

1. to provide users and staff with visibility of the priorities for National Accounts production and development over the next five years;
2. to establish a baseline for internal and external users to assess progress; and
3. to provide a mechanism to prioritise emerging new issues.

This was the first long term published plan for National Accounts since the posts producing most of the outputs were relocated from London to Newport over the period 2008-11. In line with the ONS Strategy for 2013-2023 (ONS, 2013), the work plan included the following strategic aims for National Accounts:

- Produce our regular outputs in line with the pre-announced timetable and free from the need for major corrections.
- Improve the presentation of our numbers, both through improved statistical commentary and using the latest dissemination techniques.
- Improve the quality of our processes and outputs, in part by adopting Lean Six Sigma techniques.
- Consult with our users about what is important to them both in the regular production of our statistics and our developments.
- Plan our work in line with a five-year plan for National Accounts and Related Outputs that provides users with a clear road map of when improvements might be seen and is a basis for further discussions about priorities.
- Focus our development resource on delivering the major changes required by European Legislation (European System of Accounts 10 and Balance of Payments and International Investment Position Manual version 6).
- Identify other improvements that can be made to our statistics and prioritise these within the resources that have been allocated in consultation with our users.
• Ensure full compliance with our international legislative requirements, in part by adopting appropriate interim solutions to address possible non-compliance issues.
• Actively contribute to, and seek opportunities to influence, international discussion on all relevant topics.
• Ensure that staff receive the relevant training they need to do their job well.
• When planning our work take into account the impact on the ‘work-life balance’ of our staff.

The work plan summarised recent achievements including the move to the new Standard Industrial Classification SIC07 and the new Classification of Products by Activity CPA08, and the switch from the RPI based to the CPI based deflators for certain categories of households’ final consumption expenditure.

The consultation received few responses, but those received were important, useful and on the whole supportive. Notable comments on the content, format and accessibility of the work plan gathered during this NSQR and ensuing recommendations are detailed in the relevant sections later in this report.

3.4 Changing Landscape

3.4.1 Organisation and location changes
As described earlier, the Pickford review led to the setting up of the reorganised Central Statistical Office (CSO) in July 1989 with almost complete control over the production of the UK’s National Accounts. There followed a period of relative stability in terms of responsibility for production of the National Accounts and the organisational structure underpinning the management of that production process.

From the late 1980s the bulk of the source data for the corporate sector for the National Accounts came from surveys run out of ONS Newport, formerly the Business Statistics Office (BSO). Other significant data sources came from HM Treasury for the public sector and other government departments including tax data from HMRC. During this period, the bulk of the National Accounts compilation and publication was completed by the National Accounts Group in ONS London, formerly the Central Statistical Office (CSO).

Following Sir Peter Gershon’s Efficiency Review of 2004-5, relocation of the bulk of operations from ONS London to Newport was announced as part of the 2004 Spending Review, with the aim of relocating 600 Full Time Equivalents (FTEs) out of London and the South East by 2008. The move was disruptive, at a time that conflicted with the Modernisation Programme. However, ONS has since then made considerable progress in building strong teams of statistical staff in Newport.

Since 2011 the whole of the National Accounts collection and production team have been located in ONS Newport. During this time the ONS has delivered several major changes and improvements to the National Accounts such as the move to the new Standard Industrial Classification 2007 (SIC07) and the new Classification of Products by Activity 2008 (CPA08), both implemented in Blue Book 2011. In addition, the long standing reservation by Eurostat on the calculation of insurance has been lifted following methodological improvements implemented in Blue Book 2011.

The National Accounts team in Newport is now heavily engaged in a major development and business change programme to move the accounts onto the new international standards, ESA2010 and BPM6 as detailed earlier.

The regulatory landscape has also developed. In 2008 the UK Statistics Authority was established by the Statistics and Registration Service Act 2007 as an independent body at arm’s length from government
with direct reporting to Parliament and the devolved legislatures, rather than through Ministers, and with the statutory objective of promoting and safeguarding the production and publication of official statistics that “serve the public good”.

As regulator, the Authority is responsible for the production of a Code of Practice for Statistics and assessment of official statistics against the Code. The Authority has assessed the key releases derived from the National Accounts and concluded that they comply with the Code of Practice, and therefore can be designated as National Statistics.21

The most recent assessments, of the short term economic output indicators22, concluded that the ONS could do more to stand back from the detail of individual releases and to communicate more clearly what the statistics are saying about activity in the economy.

### 3.4.2 Systems23

The compilation of National Accounts started fully in 1952 with the publication of the Blue Book, but for the first twenty years the compilation process was carried out on ledgers. In 1972, the first computer based compilation of economic statistics was introduced on a joint Treasury/CSO UNIVAC machine using punch cards for both the programme and data. In 1976, hard disks were added to the UNIVAC which meant that the programmes could be permanently stored (but not the data).

#### 3.4.2.1 CSDB

In the 1980s the first incarnation of the Common Software Database (CSDB) was introduced. CSDB was an in-house programmed database and was based on the notion of having three statuses on which data were held – in effect a central repository. Compilers still derived their estimates locally on their own systems. This was known as the ‘knitting needle’ approach.

Systems on CSDB are built up from classification tables with each series being identifiable through the use of CDIDs (4 letter identifiers) still used today by ONS and still published. CDIDs are also an integral part of some user models and systems and are used by many to access data from ONS website.

In the mid-1990s, the Windows front end of CSDB was introduced as WinCSDB and by 1998, the majority of systems had been moved over to compilation on WinCSDB. Prior to this systems such as Lotus 12324 and Smartware25 had been used by compilers. This coincided with the move to ESA95 consistent National Accounts.

From 2003, the CSDB platform was no longer actively developed and one of the last deliverables was the functionality for chain-linking. Full-scale system development was stopped and the development team re-allocated to CORD (Central ONS Repository for data) development.

Technical support for the old CSDB system finished in 2009, but the user interface was successfully developed and launched on OpenRoad (replacing the old Uniface system) so CSDB (now called ORCSDB) continues to be supported and is still used for parts of the National Accounts and Balance of Payments compilation and production process, including the final step of delivery before publication.

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21 See Assessment Reports 24 (Producer Price Indices); 25 (Services Producer Price Indices); 45 (Balance of Payments); 81 (Short Term Economic Outputs); 100 (UK Annual and Quarterly National Accounts); 278 (GDP and Indices of Production and Services); 279 (Retail Sales); and 280 (Construction Output and New Orders).


23 Acknowledgement of Steve Drew and Alan Hewer for informational input.


3.4.2.2 CORD
In 2002, due to the proprietary nature of WinCSDB, the fact that it could not handle the Supply and Use system and the concern that elements of the platform would become unsupported (in particular the Uniface interface\(^\text{26}\)), the case was put forward to investigate options for a new platform.

CORD began development through the NA re-engineering project following the recommendations from the Caplan review. It could be argued that the initial aims were too ambitious both methodologically and from a systems perspective. The project initially strove for CP and PYP SUT balancing at a detailed level (369 products by 197 industries on a SIC03 and CPA02 basis (still less than some countries e.g. the Netherlands, but much more detailed than the 123 square SUT tables used in the live UK accounts at that time). This aim was scaled back in 2007 (hence BB07 was only a large quarterly round with no SUT balance and no re-referencing). Scaling back from the Caplan vision meant a lot of system reworks and also necessitated the development of an equivalent GDP system in CORD to match the system in CSDB. This was not originally built because the expectation was that quarterly GDP would be derived solely through the SUT balancing process, but without this there was a need to develop a system in CORD with the equivalent methodology to the CSDB system for calculating quarterly GDP.

As the work scaled back from the original vision, so more additional adjustments processes had to be built into CORD to facilitate the previous (and still current) mechanism of balancing SUTs in CPs only and adjusting and aligning the quarterly path and CVMs accordingly.

Quality assurance of the CORD system identified some flaws in underlying statistical functions which led to further delays and workarounds in many systems to ensure fit for purpose data.

In overly simplified terms this combination of changes in direction and workarounds, combined with the organisational and location changes, contributed to delays in the development of the CORD system and to undesirably long system run times.

A series of investments in both hardware and resources, accompanied by a change in approach to collaborative as opposed to waterfall development, have contributed recently to improvements to the functionality and usability of the CORD system.

CORD is used for large portions of the live production of the accounts. However, one of the pressures and strains on the staff that was evident to this review was the continued use of multiple systems for the full set of accounts including CORD, CSDB and other systems and the apparent ensuing impact on data flows, time taken to complete systems runs, balancing, adjustment and quality assurance.

3.4.3 Evolving requirements
3.4.3.1 EU regulations
Since the Second World War major economies have worked together to develop, agree and follow a System of National Accounts allowing standardisation in the measurement of the economy and comparability in the analysis of economic change within countries and around the world. This System of National Accounts is developed on a rolling cycle of 10 to 15 years to reflect the changes in the economy such as technological advancement and more accurately to reflect the ever increasing complexity of transactions, especially in the financial sector. The most recent update to the System of National Accounts came in 2008 (hence the abbreviation SNA08). This was followed in 2010 by the European

System of Accounts (ESA2010) which is consistent with the SNA08 and is the regulatory system of accounts which must be adhered to by European Union member states.

The ONS needs to develop the way it produces key National Accounts and economic statistics outputs in order to comply with these revised international standards which are part of EU legislation. There is a regulatory requirement to implement the improvements in the new versions of the international standards by September 2014. Implementation of ESA2010 is underpinned by an enforcement regime -- failure to comply could result in infraction fines for the UK Government.

Due to the extent of the changes and long lead times to collect additional statistics to comply, ONS has been granted derogations from Eurostat to delay provision of some detail beyond the implementation date of September 2014. Most EU countries have derogations for ESA2010 and the number granted to the UK is fairly typical.

The main outputs affected by the new international standards are:

- The (annual) United Kingdom National Accounts: The ‘Blue Book’
- The (annual) United Kingdom Balance of Payments: The ‘Pink Book’
- The Quarterly National Accounts (including Quarterly GDP)
- Various quarterly and monthly statistics and indicators
- UK Gross National Income (GNI)

The relevant updated international standards are:

- United Nations **System of National Accounts 2008**
- Eurostat **European System of Accounts 2010 (ESA 10)**
- International Monetary Fund **Balance of Payments and International Investment Position Manual** (BPM) Version 6
- Eurostat **Manual on Government Deficit and Debt** (MGDD).

The international standards have been improved and updated to reflect:

- an extension of the production boundary (i.e. production of goods and services);
- the recording of new assets and transactions;
- the rapid expansion of the financial services and financial products;
- the impact of globalisation;
  - improved statistics for the measurement of government finances including the treatment of pensions.

The NA work plan sets out in more detail the timeframe for delivery of full compliance.
4 Statistical Programme Issues

Box 4: Benefits and challenge of three measures of GDP

The National Accounts standards in various international manuals describe an accounting system that provides estimates of the levels of different economic transactions with certain residuals in the system forming key indicators. From these data are derived important indicators such as the growth in economic activity from one period to the next. The initial estimates for all three measures of GDP are produced from a bottom up approach. These processes provide three different levels of GDP for each quarter and thus also, potentially three different growth rates. Given the vast number of transactions in the economy in any period and number and variety of sources used to estimate the values of these transactions, it is not to be expected that they will provide numerically common results.

The fact that the system of National Accounts provides three different pictures of an economy for any period is both a strength and a challenge.

The existence of the three measures provides a check that changes in the real world or changes in how source data are developed for any one estimate, are not causing one measure to deviate and provide a false signal. Of course, one can bring all three measures together into a Supply Use framework where they can be balanced and form a single estimate. However, in general, data sets to fully balance and reconcile such a framework are not available until more than a year after the end of the reference periods.

On the other hand, three separate measures provide a communication challenge as it is not possible to say which is ‘correct’ as all of them have variances around the true value. Given this communication challenge, official statisticians have several choices:

- Publish all three measures to the best quality possible, with good documentation on the relative strengths and weaknesses of each and let the users interpret the results for their particular use
- Publish only one or two measures, bringing them to common values or at least two of them to a common value.
  - It is relatively common for the income and expenditure measures to be made equal simply by dividing any difference and allocating it equally across the two measures.
  - Or one can choose to bring all three measures to a common value, the simplest way of course is to average (arithmetic mean) the three GDP level estimates for each period and publish this as the official estimate.

The UK has chosen to use a simple average for the estimates, but has also decided to focus on the growth rate of only one of the three approaches, the output approach, in setting the first estimates of the level and growth. These choices made on how to present the data need to consider the impact the method will have on the estimates and on users’ understanding of the accounts.
4.1 National Accounts Programme

4.1.1 National Accounts Estimation and Alignment

A fundamental strength of the national accounting system is the fact that one can derive a number of the measures in the system from more than one starting point. This of course includes GDP which can be estimated in three ways. Another example is net lending by sector that can be arrived at in two ways. Given the huge challenge of measuring all economic activity of a nation relatively soon after the relevant period is over, the closed system with its constraints and multiple approaches to some estimates provides a cross check that can improve the quality of the overall estimates.

However, multiple estimates of some measures such as GDP are often seen as a communications challenge with a single, but possibly less informative, estimate seen as the preferred approach. In tranquil economic times, this may well seem inviting, but in more challenging economic climates, the trade-off between ease of communication and loss of information needs to be considered.

Box 5: NA, more than GDP, a post 2008 recession perspective

The National Accounts as described in the international standards and increasingly implemented by economies around the world comprises a series of accounts starting from the production account and moving through to a national balance sheet. The National Accounts has value added - GDP - as its headline measure of economic activity. However, the latest economic cycle has drawn attention to the need for improved data from the financial accounts and the balance sheets. In particular, focus has been drawn to how, for many countries, this part of the accounts was less utilized and not fully up to the task of informing policy makers.

International efforts to open world markets, for flows of goods, services and capital, have increased the challenges for national accountants. A nation’s accounts increasingly involve transactions in goods, services and capital with parties from other nations and increasingly the channels for these transactions are less regulated and often instantaneous over electronic communications networks. The challenges of providing good measures of these rapidly changing flows are being felt by all national statistical offices around the world. These ever changing flows need to be captured, as the globalization of markets is changing the structure of all national economies and up-to-date information on these evolving structures is essential for national policy.

The recent recession starting in 2008 has led international financial institutions to seek new statistical measures in part linked to the financial accounts and balance sheets that go beyond the latest international standards such as SNA2008, ESA2010, BPM6 and MGDD - even before most countries have been able to move to these standards. While there is a general consensus on the improved data that is required, at the time of writing (March 2014) most countries still need to undertake considerable data development to achieve these goals.

While measures of GDP and hence economic growth will remain the headline measures coming from the National Accounts, recent events have highlighted the need for a complete set of accounts. We don’t yet know what parts of these accounts will be most important for policy makers during the next economic cycle.
The recent economic cycle has demonstrated the challenges of communicating the many facets of a modern evolving economy. The continued evolution of world and UK markets and the fact that the UK NA does not yet include the Other Changes in Assets account, important for flow of funds, means that yet more challenges are on the horizon.

The next sections deal with existing and future challenges in a more fully articulated system, aligning the multiple measures that arise.

4.2 National Accounts Processes and Components

4.2.1 Annual SUT at PYP
The Background section noted that a number of previous ONS reviews concluded that the best foundation for measures of value added would be one based on balanced SUT estimated in both CP and PYP. While this has been the goal for some years, constraints have prevented the UK’s national accountants from moving to this basis of estimation for PYPs. However, as noted in the National Accounts Work plan issued by the ONS in 2013, SUT at PYP on an annual basis has become a requirement for delivery in 2017 under ESA2010.

The use of SUT in PYP is already the practice in a number of countries and recognized as a best practice. We certainly agree with previous reviewers that this is the appropriate goal for the UK NA; however, there are prerequisites that must be put in place for this methodology to be implemented successfully.

4.2.1.1 Getting to SUT in PYP
A fundamental requirement is completion of the transition of the annual National Accounts processing to a common up-to-date computing environment. The annual current price SUTs are still balanced outside the main computing system, using Excel to facilitate a largely manual balancing process. Various projects to improve the computing environment have not been completely successful over recent years, but progress here is required before taking on the challenge of producing and balancing SUTs in previous year’s prices in conjunction with the SUTs in current prices. The issues with the systems are well recognized by ONS and some significant progress has been achieved in recent years. However, the task of implementing SUT in PYP and aligning them with the already existing GDP(E) estimates of volume change without a significant improvement in the computing environment would require an investment of resources that would very likely put at risk other parts of the work plan. Therefore, systems improvements are an absolute prerequisite to moving forward to achieve this goal.

Process Recommendation 1: Systems improvements are required before any move to SUT in PYP or the workload is unlikely to be sustainable. Examples of important development work are: to improve the processing times for the quarterly production process; to investigate the best options for the system platform for SUT balancing and improved links with satellite systems such that the weights for implicit price indexes are internally consistent. Work on NA systems should be given priority in this regard. [Priority – High]

A second very important element already noted in the NA Work Plan relates to the need for updated information on inputs to the production processes across industries. The last period for which fully processed and quality assured Purchases Inquiry data are available is 2004. Since then, the economy
has encountered the most significant economic cycle in nearly a century, the globalization of supply chains has continued apace and many new products have emerged.

In addition, the National Accounts have adopted the standard industrial classification SIC 2007 - to replace SIC 2003 and the classification of products by activity – CPA 2008 – to replace CPA 2002. While mappings from the old to new classifications have allowed the continued production of current price SUT, it will be important to have updated product and industry information to form the foundation of the deflation of inputs and outputs for SUTs at PYP.

Given the length of time since the last survey, the reinstated survey should cover all industries for at least two successive years. However, once new input patterns have been established, it may be sufficient to collect some input data for some industries with relatively stable production processes less frequently.

Process Recommendation 2: Data on product use must be improved and updated periodically, this is essential for both the balancing of the SUT in CP due to the significant changes in classification and the proper deflation of production. The primary requirement is for the urgent re-instatement of the Purchases survey or some alternate data source that provides input data on a frequency dependent on the pace of change in the industry. [Priority – High]

As noted, the ONS Work Plan recognizes the need for this information; however, unfortunately the Work Plan as currently formulated does not foresee the reinstatement of the purchases survey in time for the delivery of the first SUT in PYP in 2017. Given the significant resources needed for such surveys and the many competing demands, it will be important to ensure some early progress is made on this project. Efforts by the ONS to acquire additional information from administrative sources and to modernize data collection will be important to the long run achievement of regular updates on the product information needed to support ongoing production of SUT at PYP. (Full recommendations on data source issues follow in 4.3 Programmes Supporting National Accounts.)

4.2.1.2 Annual SUT at CP

The current annual estimation process is grounded in the balanced SUT in CP that brings the three measures of GDP (Production, Expenditure and Income) into equality. These estimates are based on a programme of annual economic surveys and other data sources that provide a more complete data set than that available for the quarterly estimates. In particular the data available for the key income components – compensation of employees, mixed income and surplus – are eventually based on taxation data sources that lead to the income measure being judged as the strongest of the three annual measures.

These estimates have benefited from a number of data improvements over recent years, in particular improvements to the data available for the estimation of the services sectors of the economy. Better coverage of the services sectors and advances in developing price indexes for services have both contributed (see section 3.3.3v Coverage of the Service Sector). However, the loss of the Purchases Inquiry (already mentioned), poses a quality risk for these accounts, particularly given the shift to the new industrial and commodity classifications. The lack of recent inputs data weakens the estimates of specific industries but more importantly weakens the overall balancing activity as a significant proportion of the use of certain products will soon be based on data a decade old and based on the previous versions of industry and product classifications.

Technological innovation has advanced rapidly for some products and industries causing shifts in the shares of products used in production. These changes, plus the development of new sources of supply
for some goods and services such as clothing and electronic components from a much broader set of economies, has resulted in relative price shifts contributing to the changing shares of products used.

The Work Plan for the National Accounts released by the ONS recognized the need for renewed input information and envisages a survey that would inform the 2018 Blue Book and become fully integrated into the 2019 Blue Book. While this is a welcome development, the high costs of such surveys and the relatively high burden they impose on respondents suggests that innovative and less costly ways of obtaining these data need to be investigated such as more Electronic Data Collection. This will be addressed in section 4.3.2: Survey Programmes.

4.2.1.3 Annual Volume Measures

Until such time as the goal of annual SUT in PYP is achieved, the annual estimates of value added in volume terms will continue to be based exclusively on deflated GDP(E). Improvements in the data inputs and the methods for these volume measures have contributed to maintaining this measure as a sound estimate of volume change for the UK economy.

Recent changes that have contributed include: moving to the use of CPI components for deflation of household expenditures; expanded surveying of import and export prices and new volume measures of government production. There have also been new methods introduced for GFCF which have generated some debate given the size of revisions to past trends, discussed further in section 4.2.6 GFCF.

Areas that still require attention, and are identified as such in the NA Work Plan, are the international trade in services and its deflation, in particular the increasing access of households to services directly over the internet.

However, the most important development for improved annual volume measures would be the development of a SUT with the CVM production measures based on double deflation. Double deflation deflates the inputs (i.e. intermediate consumption) and outputs of the production process separately and thus develops CVM of value added by subtracting CVM input values from CVM output. This is widely recognised as the best approach\(^{27}\) and would provide a good alternate measure to the current CVM measure of value added based on the deflation of GDP(E). It would therefore allow the balancing of a SUT in CVM terms and the confrontation of the two alternate measures of CVM value added. However, this assumes that the challenges already mentioned on the road to the production of a balanced SUT in PYP terms have been overcome.

**Development Recommendation 1:** Develop double deflation estimates of CVM value added as part of development of SUT at PYP. [Priority – High]

In the current process where the annual volume measure is based only on GDP(E), the volume measures for the output approach are brought into line with this measure of annual growth through coherence adjustments to the output measures derived from the sub-annual methodology. This is done by adjusting some of the service industries such that the aggregate output measure has the same annual growth as the GDP(E) measure.

The use of only service industries to bring the output measure into line was implemented in an earlier period when data on the service sector was weaker than that for the production sectors. In recent years

the ONS has invested considerably in improved data not only for turnover but also prices for the services sector. It is recognized within ONS that the current use of only some service industries for alignment needs to be reconsidered, and this review certainly supports that view. It is noted that in part the recent issues around the experimental regional GVA measures results from this alignment process that has not been replicated in the regional data thus making the national and regional estimates inconsistent.

However, given that under new Eurostat regulations the UK will be required to deliver regional PYP data in 2017 and SUT in PYP in 2017, it may not be a good use of resources to spread these adjustments across a broader set of industries in the short term. Rather it may be best to focus resources on implementing the more fundamental changes that meet the regulations and correspond to best practices.

Process Recommendation 3: The process for aligning the GDP(O) using only selected service industries should be changed. Given this will have to occur when ONS introduces SUT at PYP, if the short term indicators are going to conform to the new balanced volume series, changes to this process should be integrated into plans to meet the upcoming EU requirements for regional GVA at PYP and annual SUT at PYP. [Priority – High]

4.2.2 Quarterly SUT at PYP
Previous reviews and the National Accounts work plan indicate the goal is to have the quarterly estimates of GDP based on a quarterly balanced system of current price and PYP SUTs. Such a system is currently used in only a few countries and poses larger challenges for systems and data than the annual production discussed earlier.

There are a number of countries that use the results from annual balancing of SUT in PYP to help estimate and evaluate the outputs of quarterly estimation systems. Once annual SUT at PYP are achieved for the UK, development of a quarterly programme should move forward cautiously, building on the experience of others who have taken this intermediate approach of building QA tools from the annual SUT to support/improve the quarterly estimates.

As noted in the work plan, one initial step would be to develop commodity balances for selected commodities. This is how the SUT information is used in other countries and developing capacity to work with such tools should be viewed as a prerequisite to any attempt to move to a fully balanced quarterly SUT process.

Given the relatively long list of development projects facing the National Accounts over the next few years, it is the reviewers’ opinion that balanced quarterly SUT should be considered a lower priority for the foreseeable future.

Development Recommendation 2: Given the number and complexity of development projects facing the NA over the next half decade, the review recommends that quarterly SUT be seen as a low priority.

Process Recommendation 4: As an interim step, we support the current plans for development of a limited set of commodity balancing satellites within the quarterly system. These can be developed as resources permit without interfering in current production but once in place would provide a testing ground for any eventual work on quarterly SUT.

4.2.3 Quarterly National Accounts (Prior to SUT Balancing)
The largest challenge facing the quarterly accounts over and above those already noted for the annual accounts is the limited data available for the early estimates. The economic statistician is continually faced with the problem of balancing the trade-off between timeliness and accuracy of the data and this is nowhere more evident than in the production of the quarterly National Accounts.
The preliminary estimate of GDP is based on only one of the three approaches as this is the only one with data available in the time frame of this release. Each quarter, as additional data on all three approaches becomes available, there are two additional releases of estimates for the current quarter with the third estimate also providing revisions to previous periods.\textsuperscript{28}

In the United Kingdom, as noted earlier, the current practice is to publish a single ‘average’ measure of GDP (GDP(A)).

For the most recent period to be estimated, the ONS has decided that the output measure, GDP(O), has the best source information and provides the best estimate of the growth of the economy. The initial\textsuperscript{29} estimate of the growth rate for GDP(O) then becomes the agreed rate of growth for the quarter. Note it does not determine the level of GDP only the quarterly growth.

This procedure sets as an objective function for the remainder of the process: to establish the quarterly growth rates for the average GDP to be published as close as possible to the growth rate for GDP(O) for all quarters open for revision. This constraint is imposed quite rigidly for the current quarter being estimated; however, for earlier quarters it cannot be strictly maintained and growth paths for GDP(E) and GDP(I) will increasingly influence the final result, but only to a limited extent. This effectively means that the measures of growth for the other two measures, GDP(E) and GDP(I), are given little to no weight in determining the quarterly growth rates.

The level of GDP is an average which differs from each of the GDP estimates by a Statistical Discrepancy. To ensure that these discrepancies do not become too large over any calendar year, that is that the cumulative distance for each of the three measures does not get too far from the average, a ratio of the expenditure measure to the output measure and a ratio of the income measure to the output measure are projected forward. The fact that the ratios have GDP(O) in the denominator and there are only two of them, not three with GDP(A) in the denominator signals that the process is such that GDP(O) plays a much more important role than the official estimate GDP(A). To keep the annual discrepancies from becoming too large, balancing adjustments are applied to GDP(E) and GDP(I) initial estimates to bring the levels of these GDP estimates closer to that of GDP(O).

A final step brings the growth rates of the GDP(E) and GDP(I) measures to be in line with that of GDP(O), an alignment adjustment for each quarter for each of these two measures is estimated. The alignment adjustment for GDP(E) is included in the Change in inventories series, while that for GDP(I) is included in the Operating Surplus series.

The three statistical discrepancies and the two alignment adjustments for each quarter open to revision are estimated such that the ‘average’ level of GDP for each quarter has a growth pattern that is as close as possible to that of GDP(O).

The result of this process, which allows the publication of a single measure of GDP, is that until such time as the data are confronted in a SUT balancing exercise, the GDP(E) and GDP(I) approaches have very little influence on the path of overall economic activity estimated by the ONS. Of course individual components of GDP(E) and GDP(I) provide very valuable information on specific aspects of current economic activity.

\textsuperscript{28} In Quarter 4 this occurs at Month 2.\textsuperscript{29} Initial estimates are those after the team responsible for each of the methods has reviewed and implemented quality adjustments as required.
This raises an interesting question – does the current process that gives dominance to the GDP(O) growth rates, sufficiently incorporate the information in the GDP(E) and GDP(I) approaches in the short run? This question can be thought of as having a number of aspects:

- Is the formulation of the model used to estimate the statistical and alignment adjustments simply too narrowly focused on GDP(O) growth?
- Given the focus on GDP(O), is there sufficient analysis of the different paths of the three measures by ONS staff or does the policy of using the growth of only one measure lead staff to be less focused on the quality of the other two?

The decision to focus on GDP(O) is defended on the grounds that the data used to estimate this measure is the most robust in the short run. While this may be true in one sense, it is also acknowledged that the data going into this measure of production are largely deflated turnover statistics. This method is based on the assumption that turnover has a constant linear relationship to value added by industry, which may be a strong assumption particularly at turning points.

A topical and relevant question is - was it in fact the case that GDP(O) provided the best measure during the recent economic downturn? The initial estimates of the downturn in 2008 were quite muted compared with the current estimates of how severe this recent recession was in the early quarters. In fact, it was only with the Blue Book 2011 estimates, three years after the event, that the estimates of the initial periods of the cycle resemble the estimates of today. The revisions for the five quarters 2008 Q2 through 2009 Q2 are quite large compared to the average for quarters since the decision to go to a single quarterly measure was implemented in 1993.

This is important as the cost of false signals during a period of relatively smooth economic performance is low compared to the cost of a false signal when a significant change in economic activity has been initiated. Informing users that the timing and severity of the recession in its initial quarters was very different from that originally published as far as three years after the fact does not allow for a timely response by economic policymakers.

So one must ask, was the fact that the official estimates were slow to capture the depth of the recession linked to the current processes and procedures - such as the focus on a single measure of GDP for the path in the current periods and the use of forecast values for all three measures as a technique for limiting the overall discrepancies? Would users have been better off if the process had been different or had relied on a more diverse set of measures for GDP? Would such a set of data have raised the alarm earlier and provided users with valuable information?

A strength of the National Accounts noted earlier is that there are three approaches to measuring GDP. However, to benefit from this fact all three measures must be based on sufficiently robust data sets and methodologies such that each of them can inform the overall estimates of economic activity. Failure to fully use all three measures underutilizes the information content from the surveys feeding GDP(E) and GDP(I) and lowers the overall quality of the accounts and increases the risks of false signals to users.

Process Recommendation 5: It is recommended that the ONS undertake a thorough study of the 2008 – 2009 economic cycle and how the three measures of GDP and related short term indicators performed in measuring quarterly economic growth. This study should look at how the current quarterly and annual processes and procedures contributed to the larger than normal revisions for this period with a view to possible changes that might improve the performance during future cycles.

The current programme of releases has three separate releases each quarter with potentially up to seven quarters open for revision, and puts a considerable burden of work on the current complement of National
Accounts staff. It is also the case that there are currently multiple points each year when annual benchmark information are incorporated into the accounts – for example the financial account benchmarks in either the third or fourth quarters and then the benchmarks from the SUT balancing for the annual BB process in either the first or second quarter.

The introduction of benchmarks at different times during the year not only adds heavy work cycles to the production process, it also raises questions about how one balances the accounts when annual benchmark information is not incorporated at the same time. The system being a closed accounting system requires any changes to be offset elsewhere and having some benchmark information requires temporary adjustments that may well be reversed once the other benchmark information is incorporated.

Process Recommendation 6: ONS should explore having a single point in the annual/quarterly production cycle where all annual benchmarking activities are incorporated into the accounts, most likely at the first quarter when BB cycle changes are brought in.

Only rarely are there significant amounts of new data available for the previous year outside of the benchmarking procedures. This raises the question of how beneficial are the revisions to the previous year in the majority of cases. Given the extra resources needed to open up and then QA the additional four quarters of data and the relatively small impact on the perception of the economy given from what are generally small revisions, there seems to be a case for reviewing this practice. It seems that the resources employed in these previous year revisions might be better utilized addressing the range of initiatives and challenges outlined elsewhere in this review. Some other major economies such as Germany and the Nordics do not have so many quarters open.

Process Recommendation 7: It is also recommended that only the quarters of the current year be open for revision except for the quarter in which the annual benchmarks are introduced, generally the first quarter.

The review team also notes that in some other countries there are only one or two releases of GDP information each quarter. Given the work load and resourcing challenges facing the National Accounts team currently and into the medium term, it seems prudent to examine if the quarterly production cycle could be reduced to allow resources to be freed up for other priority work.

Development Recommendation 3: ONS should explore limiting the frequency and detail in the early releases for each quarter, one possibility might be to merge the M1 and M2 releases with the minimum detail to meet EU requirements, freeing up resources to accelerate the M3 release.

This recommendation will require additional work and review before the specific details of this proposal can be articulated. Paramount will be improvements in the computer systems used for the National Accounts which, in conjunction with earlier recommendation to study a more balanced use of the three methods in determining the quarterly path, develop a process that closes all of the system of accounts in parallel with closing dates for all components within a two day period and no longer taking on revisions from short term indicators released between M2 and M3 close off.

A final point related to short term indicators of GDP relates to the proposal in the NA work plan to possibly add a monthly measure of GDP. The ONS has already announced that it is not pursuing this objective in the foreseeable future and this review strongly supports this decision, noting the many other priority tasks need attention and the limited resources available.
4.2.3.1 **Quarterly Accounts post SUT balancing**

The process for aligning the quarterly estimates with the annual estimates that have been established by SUT balancing and the annual process described above starts by aligning the CVM measures and goes on to do the CP measures as a second step.

As in the early estimates, it is the growth rate of GDP(O) that is taken to be the better measure of quarterly patterns. Therefore the initial alignment is done for GDP(O) on a CVM basis. The GDP(E) on a CVM basis is also aligned along with GDP(I) at the aggregate level only.

Finally, the CP data is created by ‘reflating’ the CVM data to establish the quarterly pattern in CP terms. Then the GDP(E) and GDP(I) estimates are balanced to align with the quarterly patterns of the GDP(O) in CVM and CP terms.

This annual alignment process that does the CP basis data at the end highlights the fact that both in the pre and post SUT periods, the CP based series for all the measures of GDP are generally less well developed and quality assured than the CVM series.

**Process Recommendation 8:** The processes for developing the current price estimates of GDP should be reviewed and in particular the practice of ‘reflating’ CVM series to get the quarterly CP series.

4.2.3.2 **Flow of Funds and Balance Sheets**

The recent economic cycle has drawn attention to the need for additional information on the financial activities in the economy. The National Accounts already has accounts that provide some of this information; however, these accounts are generally less well developed than those more closely associated with the measurement of value added. Unfortunately, the main financial surveys at ONS were cutback in both content and sample size in 2009.

The Other changes in Volume of Assets and Liabilities account is not estimated in the UK NA and the financial and balance sheet accounts are in part based on data sources that do not use the Inter-departmental Business Register.

National and international financial supervisors and institutions have expanded the demands for data on financial flows and risk distribution significantly since the last cycle. These demands go beyond the existing standard National Accounts – in particular seeking expanded articulation of the sectors within the financial sector of the economy and most particularly asking for information on which sectors hold the assets/liabilities of which other sectors of the economy. This is sometimes referred to as ‘From Whom to Whom’ presentation or increasingly just referred to as Flow of Funds (FoF). A recent Monitoring Report by the UKSA, ‘The Use of Official Statistics by the Financial Services Industry’ also supported additional development in these accounts.

These increased data demands in particular from the G20 Data Gaps initiative and the IMF Special Data Dissemination Standard Plus (SDDS+) have the support of a broad base of countries at the international level; however, there is no country yet that can meet all of the new demands (i.e. all of the 15 requirements of SDDS+). Some of these new demands will require the development of new data sources such as an expanded set of subsectors within the financial sector of the National Accounts, both by national statistical offices and by central banks and/or other financial regulatory institutions.

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One could argue that this priority is more important than moving forward on the SUT in PYP as there are no substitutes for the requested financial flows data whereas the existing GDP(E) measure of volume change for the economy provides a sound measure for policy development. However, it is important to note that the production of SUTs in PYPs is a regulatory requirement under ESA2010, but the production of full flow of funds ‘From Whom to Whom’ basis accounts, while crucially important for measuring financial flows and levels in the modern economy is not currently a regulatory requirement for NSIs.

Having said that it should be noted that the development of FoF will require some data sources that may well have relatively long gestation periods and require investments in new resources. This may allow the development of improved GDP estimates while the foundational data are being built up for the FoF.

Given the organization of the statistical system in the UK, it is clear that success in developing FoF accounts and improved financial sector data, including improved balance sheet accounts for all National Account sectors will require cooperation across a number of organizations, most particularly the ONS and the Bank of England. This is an essential point as it is our firm view that while development of new data sources by both agencies are necessary, neither is sufficient in itself to produce the needed data for an informative set of FoF.

Work is underway on improving the IDBR and some financial inquiries with the work focused on meeting the ESA2010 requirements, which should improve the foundations for the future development of FoF. A joint working group between the ONS and the Bank of England has very recently been established to address a range of national accounts issues, which is welcome, but there remains a clear requirement for a specific group focused on FoF.

Development Recommendation 4: The significant work required to accomplish the goal of the extended flow of funds data sets will require close collaboration between the ONS and the BoE and possibly others. It is recommended that a separate group be formed bringing together members of at least these two organizations. Since success will require sharing of expertise and data, new protocols may be required to facilitate the necessary exchanges of information.

4.2.4 Balance of Payments and International Investment Position (Rest of the World)

The United Kingdom is one of only a small but growing number of countries where the major part of the rest of the world accounts are produced in the central statistical office. In the majority of countries these are produced in the central bank. The Bank of England is a crucial partner in the preparation of international accounts as it provides a significant amount of the data on international financial transactions.

As noted earlier, this organization allows the ONS to integrate the production of these accounts with other parts of the overall National Accounts system and ensure that concepts, methods and data sources are as consistent as possible across these outputs. During the review, there were relatively few comments directed specifically toward the Balance of Payments.

While the United Kingdom has a long history of international trade and as a centre of international finance and exchange, the liberalisation of international markets, the globalization of production and distribution networks and the speed of electronic commerce pose challenges as they do for all countries’ National Accounts. Some of the challenges related to financial markets have already been discussed in the section on financial flows above.
Following an earlier review, the ONS has made advances in measuring a number of types of international transactions. In conjunction with progress in measuring services, additional data has been collected on services trade. Improvements are still being sought, particularly as electronic commerce allows increasing volumes of products to be delivered directly to businesses and households via the internet. The volume of these services is increasing in size and the origins continue to diversify thus accurate measures are more important for the quality of the accounts. The ONS has also expanded its programmes of collection of prices to include more specific export and import prices as these can diverge from domestic prices for important periods of time.

Higher volumes of intra-firm trade also make the measurement of price and volumes of trade difficult to measure under some circumstances. It is interesting to note that the terms of trade (the ratio of export prices to import prices) has been relatively stable since the introduction of the Euro. Even during the significant changes to the sterling exchange rate following the recession of 2008, the terms of trade has moved by a much smaller percentage, albeit in the expected direction.

Development Recommendation 5: Diligence in measuring the ever changing landscape of international trade and trade prices needs to continue.

While international flows of wages and salaries and related income transactions are much smaller than trade in goods and services, these too are evolving and require attention. The internet allows people to be employed in one country while living and ‘working’ in another. Since one’s contribution to value added should be captured where one is employed not where one may physically sit to work, this growing reality may need additional attention. The growing numbers of persons moving within the EU to find employment also generate significant economic flows that are not always easy to capture. Workers may transfer significant amounts of income back to support family members in other countries. These flows can be from persons who have permanently emigrated or those who are working temporarily in the country.

The challenge of keeping pace with the rapid evolution of international economic transactions of all kinds is increasing for all nations. The IMF has led two initiatives to help; these are the Coordinated Portfolio Investment Survey and the Coordinated Direct Investment Survey. These annual surveys (CPIS is actually changing to be 6-monthly) collect data for a standard set of questions across a large number of economies representing most international transactions. These surveys allow a country to see what the enterprises in other countries are saying about their holdings of UK assets and liabilities. While the UK is participating in both of these surveys, the results are not yet being used fully in the production of UK statistics.

In the near future the ONS will take on the responsibility of providing the European Central Bank (ECB) with monthly estimates of the BoP (first delivery is expected to be October 2014). These data are currently being estimated by the Bank of England which will continue to be a participant in the production of these data. The current quarterly production processes for GDP and the BoP require the BoP to await the closing of GDP and potentially make their data balance to the GDP estimates.

Given the BoP programme will soon have to produce both monthly and quarterly estimates, a move to more simultaneous processing and closing of the accounts would be preferred.

Development Recommendation 6: It is recommended that opportunities continue to be sought to improve the data available on the myriad of evolving international transactions and that in particular data on international processes continue to be improved.

Development Recommendation 7: It is also recommended that particular attention be given to international financial transactions as the flow of funds data sets are further developed and that
consideration be given to using the CPIS and the CDIS organised by the IMF to form part of the base methodology.

Development Recommendation 8: It is also recommended that as the monthly measures of BoP are implemented, consideration be given tostreamlining the quarterly process for GDP and BoP to allow more simultaneous processing and closing of the estimates.

4.2.5 Public Sector

The public sector has recently had its own review and while very important for the overall National Accounts has not been a major focus of this review. Following other processes, there have been a number of improvements in the classification of public sector entities and the coordination of the National Accounts and public sector dataset. These are welcomed.

Also, it has been noted that the implementation of recommendations from the Atkinson report have now been in place for some years and it may now be time to review how these have affected the accounts in general. Are the estimators that were put in place producing reasonable results both for the measures of volume of outputs but also for the resulting implicit deflators? As other countries also implemented instances of this approach can ONS learn anything from their experiences?

Review of deflators in general is discussed later in the report but as there are relatively few examples of volume indices in the National Accounts, attention to the deflators for those cases would be important.

Similar to many other developments in progress noted during the review, methodological changes will be introduced in BB14 to ensure compliance with ESA2010, for example removal of quality adjustments applied to education.31

Suggestion 1: Given that the methodologies implemented post Atkinson have been used for only a short time both in the UK and other countries, it is suggested that these estimates be reviewed and assessed on a regular basis in conjunction with the experience from other countries.

4.2.6 GFCF

The measurement of Gross Fixed Capital Formation is one of the most challenging areas of national accounting and economic statistics in general and has been a major topic of discussion throughout this review. GFCF estimates (based on new methods and an updated process and system) released in the summer of 2013 produced data that exhibits a number of significant changes in pattern from the data published previously. In addition, there were some errors in the initial release that caused further questioning of the new data.

Several articles and releases have followed the initial publication of these revised data. ONS has decided to revert to earlier methods in one case in an effort to address some of what has been judged to be excessive volatility in the data, as increased volatility in a number of key series has been one of the most discussed topics. However, it has been changes to how some assets have been deflated to arrive at volume measures that have produced the largest changes to the overall story about GFCF.

31 See first of the two articles here: http://www.ons.gov.uk/ons/rel/naa1-rd/national-accounts-articles/industry-reviews-bb14-implementation/index.html
The quality of the source data used for construction price indices was raised during the review. In effect the source data for a number of the key price index series for construction activities have for a number of years come from a veritable ‘black box’. These price data come from a private contractor and unfortunately the contract is such that specifics of the methodology and data sources are not made available to users by the contractor. A new contract has been let and new methods are being put in place, but the ONS and other parts of the Government Statistical Service are still dependent on the original contactor for the basic data used in a number of important indexes. How these construction related price series have been applied to the GFCF data has changed in ways that have significantly altered the housing investment data in recent periods. Changes in the deflation of software have also had an important effect, but in this case the impact is greatest in the 1990’s and early part of this century.

In recent articles on these changes the ONS has indicated that there will be further reviews of the sources, methods and processes used in building these indices. These reviews are welcomed.

It is also the case that data sources and methods for estimating the value of disposals should be reviewed, in particular the transfer costs associated with disposal of non-produced assets. More generally a review of how the data sources for GFCF correspond to the conceptual requirements of the national accounts should be considered, again particularly for disposals.

Process Recommendation 9: The data sources and methods for estimating cost of ownership transfer that are to be capitalized should be reviewed to ensure they are in line with international standards and that they appropriately enter the capital stock estimates.

Process Recommendation 10: It is recommended that, as the ONS has committed to doing, the deflators and deflation process for GFCF be reviewed. Issues that should be covered include: the fitness for use of indices from outside sources where a lack of information on methods and samples is evident, indices where back casts have been used to estimate historical series and an examination of the appropriateness of deflators chosen for acquisitions, largely new products, and disposals where used products dominate.

4.2.7 Capital Stocks
The publication of capital stock data was stopped in 2011 after a review found quality issues with the detailed breakdown of industries and assets following the conversion of the industrial classification from SIC03 to SIC07. The lack of these data was raised as a concern by a large number of the users consulted for this review.

These data are crucial to the estimation of multi-factor productivity and during the period following the recent recession, there is a great deal of interest in how UK productivity is recovering. In addition, estimates of depreciation allow the publication of Net Domestic Product as well as Gross Domestic Product. While a less often cited variable, it is important in understanding the long term health of the economy.

See UKSA assessment number 95 for additional information: http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/

The contract in question was not issued by the ONS but by BIS, the agency that continues to be responsible for the production of a number of these indices.
The first release of updated capital stock data was published on 2 July 2014 which has not allowed us to review these data. An article entitled ‘Methodological changes to the estimation of capital stocks and consumption of fixed capital’ was also published on 25 June 2014.\(^3\)

The new data are based on PIM models that are little changed in form from earlier estimates but take advantage of the new GFCF data and have been updated to the SIC 2007 classification. The process has been simplified slightly by working at the level of industry and assets only rather than sector, industry and assets in the previous version. Sectors are now determined from a top down method using fixed proportions.

The new capital stock estimates also include cultivated assets. Other changes coming with ESA2010, such as capitalization of military weapons and research and development will be introduced later in 2014. We note with interest that the ONS is considering the establishment of an international group of experts to advise on further improvements to the capital stock programme and a review of the current PIM models.

Development Recommendation 9: We strongly endorse the idea of an international group of experts to advise on further improvements to the capital stock programme. [Priority – High]

Development Recommendation 10: We recommend that there is a Capital Stocks review to consider alternatives to the current linear depreciation, noting that many other countries have, after research, moved to some non-linear model. This review should also examine the average service lives in use in the UK as it has been noted that these are in some case much longer than the lives used in other economies. It would also be good to have a more complete description of how disposals and scrappage are estimated and used in both GFCF and the stock estimates. The practice of using fixed proportions for sector estimates should also be reviewed.

4.2.8 Deflation

The topic of deflation has already been part of the discussion in various previous sections of the report. A general issue is that current practices mean in many cases the adjustments to CP and CVM series are done independently or at least somewhat so, such that the implicit deflators are not consistently defined. This appears to result in a lack of focus on the resulting implicit deflators such that irregular results are not noted during the production or review periods or, if noted, they are heavily discounted.

This appears to be partly a problem associated with the challenges in moving all parts of the National Accounts onto the common processing platform - CORD. It would seem that as sub-systems are integrated into CORD, practices around deflation are improved. However, during the review we observed that in a number of cases, those responsible for volume measures were not familiar with the sources and relative strengths and weaknesses of the deflators they were using to produce volume measures.

Process Recommendation 11: It should be a requirement that all those producing volume measures have a sound knowledge of the deflators they employ.

Development Recommendation 11: Consideration should be given to adjusting production processes such that the CP and CVM retain consistency to the greatest extent possible. The simplest way to achieve this would be to apply all adjustments to CP series and or primary deflators such that CVM series are always derived (may be some cases where it is the CP series that is derived). In some processes this would require considerable change to current practices, while in others such as moving to a double deflated SUT on an annual basis the process would ideally be built this way.

The issue seems to come from an excessive focus on the real GDP measure to the detriment of other parts of the system. While real GDP will continue to be the headline economic indicator, the nominal estimates are very important for weights for the CVM series and as the foundation for the complete system of accounts.

**Process Recommendation 12:** Processes should be developed that better utilize the complete system of National Accounts and in particular the implicit deflators should be given more attention during QA processes to benefit from the signals on quality that they can provide.

It was beyond the capacity of this review to assess the myriad of specific deflators currently in use in the National Accounts. However, it was observed that there have been in recent periods a number of changes in deflators that have significantly affected the historical data. Many of these changes are the result of a concerted effort by the ONS over a number of years to expand the range of price indices available for use as deflators. In particular, the planned improved coverage of services prices has been a very welcome development that will allow improved deflation.

Likewise improvements have been made in the coverage of import and export prices to enhance the coverage of products/market specific prices. Data on international trade in services could still benefit from improved prices data.

While the improvements from these additional price indexes are most welcome, one concern has been noted. It seems that on some occasions the alternate deflation has been pushed back for an extended period of time significantly altering the history of the UK economy.

These changes to history have not always been explained fully so users are left wondering exactly how to interpret some of these changes. Changes to the deflation of GFCF in 2013 are examples already noted. However, a more fundamental issue around pushing back revisions to selected components or individual time series is that this is done outside of the quality assurance process inherent in balanced National Accounts.

While the original deflation may not have been based on ideal deflators, it was undertaken and quality assured by in depth analysis and confrontation that is integral to the balancing of the annual SUT. Revising selected content without fully rebalancing the accounts should be done with some caution as this may produce data sets that are no longer consistent and in the end produce misleading results for researchers looking at long term trends and behavioural changes. One must recall that the System of National Accounts is a closed system and if you change one part then you always need to ask “where is the balancing change?”

During the time of this review, the ONS created a unit specifically focused on deflation as opposed to creation of price indexes. This is a welcome development as the price indices available to National Accountants for deflation often have a primary purpose other than deflation. This may mean that some adjustments are required for the price index to be a good deflator.

This group is to work with price index statisticians and national accountants (and others doing deflation) to help develop deflators that make the best use of the price indexes being produced and identify areas where additional price collection may be required.\(^{35}\)

\(^{35}\) See related UKSA monitoring review of the ‘Use of Deflators in Official Statistics Publications’:
Suggestion 2: It is suggested that the ONS undertake a review of how decisions are taken on how to push back deflator changes to ensure that historical data sets remain as consistent as possible.

4.3 Programmes Supporting National Accounts

The terms of reference for this review includes the consideration of data used in the production of the National Accounts. The following section discusses various issues related to the collection and processing of data that feed into the National Accounts.

4.3.1 Business Register

A Business Register that covers the entire economy and has sufficient information for general economic surveys and specific surveys needed for the National Accounts is a fundamental requirement for good quality National Accounts.

The UK Inter-departmental Business Register has been strengthened in recent years and is now used for the majority of surveys feeding into the National Accounts, both those undertaken by the ONS and those in other statistical agencies. The IDBR has improved access to some administrative data such as VAT registrants and uses data from commercial sources where cost effective. However, legal and administrative barriers continue to impede ONS access to a broader range of administrative data sources likely resulting in higher maintenance costs of the IDBR. Little progress seems to have been made on this since the Allsopp Report made similar points.36

While it is true that the majority of the major economic surveys are using stratified sampling based on the BR, a large number of the surveys in ONS using the BR are to some extent based on reference lists, this includes a few important economic surveys and in particular most financial surveys. The use of reference lists may well be optimal for some surveys, particularly those focused on specific products that may only be relevant for a sub-population of an industry.

However, the extent of the use of lists is of some concern as the creation and maintenance of separate lists outside of the BR programme may not be a very efficient use of resources. Pooling of resources that are currently going into these many reference lists may provide efficiencies that could help address the improvements needed for the BR.

Where it is simply not possible for the programme in question to use the IDBR, the challenge always for the national accountant is to understand and be able to make appropriate estimates for any gaps or overlaps with other data sources needed to complete the NA. This would be aided if there were a programme that could at least periodically compare populations from the IDBR and programmes not using it such that basic information of overlaps and gaps could be available.

This might include matching of files from different sources in a research environment or possibly in some cases producers not using the IDBR would be willing and able to identify their population on the IDBR.

One area where the IDBR is acknowledged as being weaker is the financial sector. Here separate reference lists have been used. This also reflects that much of the data for this sector comes from administrative/regulator/supervisor sources.

However, the increased priority being given to the FF and BS information noted earlier in this report is premised on the need for better information on the financial sector in general and specifically the shadow banking sector. By definition these entities are not part of the regulated/supervised universe and it is here that the use of an up-to-date and well maintained BR will be essential for success. The work programme associated with the introduction of ESA2010 has begun to look at some of these issues such as special purpose vehicles, holding companies and captive financial institutions.

A project is underway to add to the IDBR asset and liability information for businesses registered at Companies House. A quarterly “proving” survey is also underway to improve the coverage of the financial sector. Again one should note that better access to administrative data might supersede the need for such a survey or at the very least reduce the frequency with which it need be conducted.

In conjunction with this but going beyond the FF enhancements is a general concern that the information on all types of legal entities may be insufficient for the tracking of modern economic activity. Businesses are using alternate legal forms and special purpose vehicles are being created for many specialized purposes. If sources of information used to update the BR are not providing a complete picture of these and all types of legal entities, there is the risk of double counting or gaps in the data that may pose significant quality issues for the National Accounts.

One example that is pertinent for the short run is the treatment of not-for-profit entities on the business register. This is an issue important for meeting new requirements under ESA2010, which require the publication of separate estimates for the Non-profit Institutions Serving Households Sector (NPISH). During the review it was learned that while there is a separate legal entity class for not-for-profit legal entities and NPISH is a sector recognized on the BR, it is not clear that all non-profit entities are allocated to the appropriate sector. The national Accounting standards clearly say that non-profit entities can exist in any of the sectors other than Households.

The IDBR will also need to have sound information on legal entity types for optimal utilization of additional administrative data (see section on administrative data later) that is or may become available at the micro level. In general micro administrative data relate to a single legal entity thus for a well-informed BR it will be important to get the information into the correct sector of the economy.

The IDBR team is aware of and working on the improvements needed for ESA 10 changes such as NPISH and the growing demand for flow of funds improvements. However, the IDBR team does not as of yet have the access to all of the data sources, in particular micro administrative data that will be required to fully meet these new requirements. Access to a broader set of administrative data at the micro level might also allow the IDBR to reduce the current level of surveying required to maintain the register.

**Development Recommendation 12:** It is recommended that the programme of improvements to the BR currently underway be given priority as a sound business register is a fundamental requirement for good National Accounts and economic statistics in general. Particular priority should be given to improved data on assets and liabilities, the legal status of all entities in the economy, in particular non-profit institutions and newer forms of entities such as Special Purpose Vehicles (SPVs). [Priority – High]

The Public Sector programme does not use the IDBR at the moment and while that may continue, efforts should be made to ensure the IDBR accurately reflects the Public Sector so other programmes using the IDBR are not surveying PS entities inappropriately.
4.3.1.1 Stratification Based on Employment

The majority of economic surveys using the IDBR use employment levels for stratification. Value added and turnover can vary widely by number of employees and it would be preferable to have turnover used in more of these cases.

Global value chains employed in the production of products often result in labour intensive portions of production moving off-shore. In addition, business arrangements which see some services including employment services outsourced, even if domestically, will affect the ratio of employment and value added across enterprises in the same industry.

The Australian Bureau of Statistics for example has recently reported that a major manufacturer in Australia has moved to a model where all employee services are acquired from an employment agency and thus they technically have no employees.

The area where employment and level of economic activity can diverge is the financial sector. With demands for increased priority on these parts of the accounts such as the improvements demanded for the FF, it will be necessary to add other variables such as assets to the IDBR.

Focusing on the NA headline indicator of GDP – value added, the use of employment as the weighting/stratification variable may result in more subtle adverse effects on the data. It seems clear that employment will in general be more highly correlated with one of the two major components of value added – compensation of employees. However, the other component – surplus or the return to capital – may be less correlated with employment and more correlated with capital investment.

At turning points in the economic activity, it is generally surplus that is affected first, particularly at downturns; whereas employment is generally a lagging variable at downturns. The use of employment will result in samples that are less likely to be representative of enterprises where surplus is a larger proportion of value added and thus slow the survey results from registering turning points, particularly downturns.

Development Recommendation 13: A review of stratification variables for economic surveys should be undertaken with careful consideration given to the relationship to value added and other economic variables such as assets and liabilities where increased emphasis will be required for programmes such as the flow of funds.

4.3.2 Survey Programmes

Fundamental to improving business survey programmes in the twenty-first century is the adoption of electronic reporting. Respondents, particularly business respondents, are increasingly demanding to be able to respond via the internet. This change requires a significant investment in basic infrastructure such that confidentiality of the basic data is maintained. However, it also has the potential to allow for more responsive and flexible survey programmes able to adjust to the rapidly changing world.

The ONS has a project underway to move business surveys in this direction and this is welcomed.

The need for improvements in some survey domains has already been mentioned earlier in the report. A prime example is the data required on inputs from a purchases survey or other source to strengthen the SUT currently done on CP and essential to moving to double deflation and the estimation of SUT in PYP.
However, improvements in other survey areas would also benefit the National Accounts. Examples of areas where survey coverage might be improved are: the quarterly survey providing data on surplus which has only a sample of 1000 businesses to represent the millions of businesses across the UK; the one percent sample of person taxes from HMRC which is quite small particularly for estimating differences in regional income patterns; and international trade in services.

Developing improved data sources for such cases will depend on the pace with which improvements in electronic data collection and access to administrative data can be achieved.

### 4.3.3 Administrative Data

Access to information is important for many aspects of daily life for governments, businesses and individual citizens. Unfortunately, the gathering of the basic information can be burdensome on these same individuals and businesses.

Many governments around the world are seeking to minimize this burden by ensuring that information collected for use by public authorities is shared in appropriately secure ways such that costs both for the respondent and those needing the information can be minimized.

While statistical agencies often impose a relatively small proportion of the overall response burden from public administrations, they can often benefit greatly from appropriate access to the administrative data collected by others.

The current legal and administrative processes necessary for ONS to access additional administrative data are very challenging and thus costly for the ONS. These processes must be followed for each individual data set that might be used for statistical purposes adding to the cost and delaying access.

This section looks at the current availability of administrative data for ONS use, the use being made of similar data by some other countries and finally comments on how the UK statistical system would benefit from additional access to and use of administrative data.

#### 4.3.3.1 Current Use of Administrative Data by ONS

While there are a number of administrative data sets available to the ONS for use in the National Accounts, the majority are only available in aggregate form. That is, the micro data are not provided to the ONS. These aggregate data are produced by other parts of the GSS or other administrative bodies, based on methods and quality assurance processes that the other agency puts in place with input from ONS.

While these aggregate estimates are crucial to the current estimates of the National Accounts, the lack of access to micro records hinders the capacity of the ONS to integrate these data with its own survey results. Integration of information at more detailed levels can reveal inconsistencies and errors that may exist across data sets that weaken the overall measures of economic activity. It also creates the scope for producing new outputs to answer specific policy questions and improves the speed with which change can be analysed and reported.

This review has noted a number of times the speed of change in how goods and services are produced and distributed, and how businesses are organizing themselves. In times of rapid change, reliance on aggregate data also means that there can be a significant lag in recognizing changes in the economy and then organizing with the other agencies to arrive at new methods and approaches needed to measure this rapidly changing world.
The principal sources of administrative data currently used in the National Accounts come from HMT and HMRC (for more sources see section 6.3 - Sources for National Accounts)

The ONS has had a project underway for some years trying to acquire access to more administrative data as it is clear that ONS access to such data is currently far less than in most other countries in Europe and elsewhere. Unfortunately, there has been relatively little progress achieved thus far.

Recently access to VAT data at the micro level has been obtained by the ONS. While this data set has not yet been integrated into all of the data processes where it can be of use, it has great potential. These types of data are already in use in many countries such as Canada and parts of Europe in the estimation of short term economic indicators.

Administrative data are most important in the final estimates of GDP(I), where information from tax returns for key inputs, particularly labour compensation, mixed income and surplus. While these are very reliable administrative sources due to the enforcement of tax authorities, these data become available only with a considerable time lag, typically 1 – 2 years after the reference period.

An important usage of administrative data at present is the information from the HMRC PAYE (Pay as you earn) system. This system collects income tax remittances which are used to estimate Labour Compensation. Unfortunately, the sample size for this data is only 1% and only aggregate data are provided to the ONS. Such a small sample that is not stratified by size does not provide a very good estimate of this key income component, particularly when disaggregated by industry or region.

Development Recommendation 14: ONS should actively pursue access to identifiable micro data from HMRC so that it can apply more rigorous statistical techniques to the estimation of these important variables. Access to micro data should enable improvements in sample size and estimation such as stratification by size and region of domicile should be pursued. The pursuit of such micro data will be dependent on wider discussions on appropriate access to confidential information but the strong track record of ONS with regard to guarding the confidentiality of the information it collects from businesses and persons should be considered by the relevant Government departments in assessing the risk of broader access for the ONS.

Likewise the administrative data for the corporate sector received from HMRC based on corporate income tax returns, are aggregate data only. This does not allow the ONS to confront the basic data with other data sets in its possession and thus limits the quality assurance that can be undertaken.

This can be particularly important for the largest enterprises in the economy that often have very high weights in particular industries or sectors. The very complex production and legal structures of many of these large enterprises means that without the capacity to confront micro data from different sources, there will likely be significant examples of double-counting or missing activity.

Access to micro data for the smaller businesses can also be very beneficial. In contrast to the large multi-legal enterprises, most smaller businesses comprise a single legal entity and operate in a single industry or activity. In these simpler cases, administrative data may provide sufficiently good information on some economic aspects so that surveying of smaller businesses can be greatly reduced or eliminated, reducing the burden on business.

One example that has come to our attention during the review is that HMRC is considering adding a requirement that participants in the PAYE system submit, with each tax remittance, information on the payment of wages to the persons for whom taxes are being remitted. Currently the system only collects data on the taxes remitted and this is used by ONS to estimate labour compensation. Access to actual
information on the payments to persons would allow improved estimates of this important NA variable on a timely basis.

Development Recommendation 15: It is recommended that the ONS pursue opportunities for expanded access to administrative data in general. This should include attention to the following aspects: maximum access to identifiable micro data to allow more rigorous statistical techniques and quality assurance; opportunities to have administrative systems capture additional or improved data, particularly when administrative processes are undergoing reviews. This requires the cooperation of other administrative organizations to ensure ONS are aware of these opportunities.

The review has also already noted a number of instances where improved access to administrative data and particularly identifiable micro data would be beneficial, if not crucial to success in making progress in certain areas. Examples are: the improvements needed to the IDBR, which is a foundational resource needed for the efficient operations of enterprise surveys and for the integration of micro administrative records with these survey results: the important new data that are now in demand for the financial sector following the recent recession and continued fragility in these markets.

While administrative data will likely never be able to provide all of the data needed for the National Accounts, it can make the processes of gathering the required data much more efficient and can significantly lower the response burden, particularly for the smallest businesses which are least able to absorb the cost of this burden.

For example in Canada where Statistics Canada has access to all the micro records from the central government tax authority, it has been possible to put in place a policy whereby the smallest 10% of businesses in each industry are exempt from virtually all surveys. In addition, for the principal annual business survey, 50% of the simple businesses sampled are not sent surveys and tax data are used as a replacement for a survey return. Research is underway seeking to increase this 50% threshold in some cases.

Another example of the power of administrative data comes from the United States where recently the National Accounts programme has started to work with other agencies to produce estimates of the distribution of household income based on national accounting principles. This enables analysis of questions presently of much interest, such as the financial capacity of households to support the debt they hold or to support themselves in retirement. These data help analysts to bridge the data from social surveys and other data sources and the macro data from the National Accounts.

While it is exciting to think of the possible new information that could come from improved access to administrative data, the more fundamental point that needs to be emphasized is that with constrained budget capacity and increasing costs of surveys, significantly better access to administrative data may well be the only way to maintain the quality of basic economic data sets such as the national accounts.

4.3.4 Systems
System challenges have been mentioned by staff and informed users in our review meetings on a number of occasions. It is beyond the scope of this review to address these issues but we have noted in several parts of the report where these constraints are important factors in achieving other goals and responses to some of our recommendations.

ONS have recognised that there is an urgent need to improve the systems used to produce the National Accounts. This is required to provide a stable and robust platform to improve the efficiency of the current production of the National Accounts outputs, together with a firm foundation on which to make
improvements. An assessment of the National Accounts systems is currently underway drawing on external expertise. This assessment is suggesting a number of recommendations covering; the development of a refreshed systems strategy, improvements to the design and performance of the systems and changes to the governance and operation of the systems.

Development Recommendation 16: It is recommended that the outcomes of the NA systems assessment are considered in conjunction with those of this review in establishing the next version of the five year NA Work Plan. A sound resource plan for dealing with the substantive challenges in this area will also be required. It is hoped that some of the recommendations in this report that suggest ways to reduce outputs and associated work will help to address these systems issues in a timely manner. [Priority – High]

4.4 Looking Ahead – challenges on the horizon

The world and national economies all continue to change and at times at a pace that seems quite remarkable. To maintain the quality of the information about the economy national statistical offices must keep pace and anticipate the foundational elements they must have in place to meet the challenges of the future.

This review has already mentioned a number of cases where changes are dictating modifications to the National Accounts programmes. Examples are the new demands for information on financial markets relating to shadow banking and new financial markets and instruments; the changing legal structures of businesses as production chains are spread across the globe and continue to evolve; and as the exchange of services and goods is increasingly facilitated across the internet at lightning speed.

The vast amounts of data being produced every minute by the increasing flow of electronic communications and transactions is already being exploited to extract information but often only for private use. Big data, as it is commonly referred to, does not usually provide data for general consumption. This poses both a threat and an opportunity for official statistics. While the vast proprietary holdings of data give their holders valuable information, they may soon find it not as valuable as they had hoped, if they do not have good foundational information on the whole economy to put these data in context.

It will be important for national statistical institutes to keep abreast of developments in this field and work with all interested parties to ensure that publicly available information continues to be available for policy and other public good uses.

On a more practical level, statistical offices including the ONS are already aware that to maintain good contact and relations with respondents will require the collection of data through electronic means. The new generations of household and employees that form the pool of respondents all expect that they can communicate on all subjects in electronic format. They often do not relate well to questionnaires in paper format delivered by the post. Again this can be an opportunity as electronic communication is generally faster and electronic questionnaires can easily link to more supporting information and include simple edits that help to enhance the quality of the data provided.

ONS is already working on moving in this direction but is behind many other countries in moving to electronic reporting. There can also be efficiencies gained by having questionnaires more flexible in the sense of not asking all questions every year for example. For some stable industries detail on inputs may be needed every few years whereas for areas experiencing rapid change new questions may need to be
added to keep pace. However, the high costs of infrastructure for such electronic operations means all surveys must conform to standard approaches if costs are to be controlled.

Likewise administrative data sets from other sources are also increasingly created electronically right from the beginning. Access to such data sets can increase the timeliness of alternate sources and reduce the burden and cost of collecting some data allowing scarce resources to be focused on key information that can only be obtained by survey. However, this does require building systems and data protocols that allow the efficient use of these vast data holdings that are being created. Without a sound foundation the statistical system could become overwhelmed with data.

In the case of economic statistics, changes in the structure of businesses have accelerated because of global production chains. This has caused some questioning of industrial classification for many years. This is becoming an even more important issue. If all of the processes whereby goods are constructed and assembled are in other countries is the business a manufacturer or has it moved to some other industry?

And, if we look into the future and consider technology that is just now becoming more commonly known, 3D printing and scanning for example, how will economic statistics have to evolve in the future? If goods can be produced in small quantities at the point of sale, is the business a manufacturer or a retail establishment. Such simple practical questions will have to be answered if we are to have data sets that people can interpret and use to make decisions.

This says nothing of how markets will be organized and operated given the intellectual property and patent issues that will arise given this new technology. Statisticians will have to be fully in tune with these changes if we are to understand how key economic transactions are to be affected as local producers may be able to produce a wide variety of goods but their cost functions will then include transactions with a wide variety of patent holders.

As industries become harder to define, the product dimension of the economic accounts will become even more important, just as instrument detail has become important in the financial accounts. As the production chain gets chopped into increasingly small pieces and as new technologies turn some processes on their head, it may become difficult to represent a modern economy with only 114 products and industries.

While a considerable amount of the basic data collection takes place at more detailed levels of industry and product, the current level of detail that is balanced in the National Accounts risks missing not so subtle changes in the structure of the economy. The great challenge for national statistical offices will be to find the balance between maintaining sufficient historical continuity so that the lessons of history are available to current policy makers while changing the detail sufficiently to keep pace with an ever changing reality.

To meet this challenge, the ONS will need to foster an organizational culture that respects the historical record of the UK economy while at the same time maintaining continual curiosity about the ever changing world that will assure sound information for current users and a historical record the next generation can build upon.

The future development of national accounting data must also take account of the growing demand for national accounts data as inputs to various satellite accounts. Satellite accounts are increasingly being used to focus on aspects of the economy that are not highlighted in the core accounts which are designed to inform macroeconomic policy.
Satellite accounts have been created for such topics as the environment, tourism, health and household work. These generally require inputs beyond those used in the national accounts but use detail from the national accounts as the foundation. Recently a separate international standard for environmental accounting has been published by the United Nations and standards for other satellite accounts have or are being developed.

As the national accounts evolve in response to the ever-changing economy and to changing data availability such as administrative data sources, it will be important to ensure that data for use in satellite accounts can efficiently be extracted and combined with other data sources to produce satellite accounts to inform a broader range of policy questions.
5 Quality Assurance and Communication

Quality Assurance (QA) and communication are separate issues, but both have an impact on the experiences of users, and on the reputation of and trust in the ONS as a statistics producer. In the course of this Review, we have noted a number of very positive initiatives which have been started by ONS following well-publicised recent issues around data on construction output and Gross Fixed Capital Formation (GFCF). We pick up these initiatives below as appropriate, and are supportive of these changes. However in some cases we believe that QA and communication could be strengthened further.

5.1 General principles – what should users expect?

The Code of Practice for Official Statistics established the statistical standards to which outputs should comply. The ONS website turns this into an operational guide in a comprehensive document ‘Guidelines for Measuring Statistical Output Quality’ published in September 2013. The content is described as a set of best practice guidelines for measuring and reporting quality. These guidelines have a dual purpose. Firstly, they set out ways of assessing quality by the producers of statistics. Secondly, the document places weight on information which would ensure that the quality of outputs can be assessed by users.

Five ‘quality dimensions’ against which output producers should report are recommended, in line with the European Statistical System: Relevance; Accuracy and Reliability; Timeliness and Punctuality; Accessibility and Clarity; Coherence and Comparability. We have borne these in mind when commenting below on general issues and on specific examples.

More informally expressed, one comment on what users might reasonably expect from the ONS in terms of statistical quality and communication would be that all data releases should be clear about the standard to which the data was produced. To be designated as National Statistics there is a clear set of conditions set out by the UK Statistics Authority (UKSA), who rule on this classification. But if statistics do not meet this standard, or are explicitly classified as experimental, users should be given guidance about quality. In addition, there should be clear and accessible explanations of the statistics. Regular publications should help users to understand the latest trends, as well as uncertainties around the estimates.

Specific recommendations are made below, some of which build on existing practice at ONS, where we believe this good practice is not sufficiently widespread and systematic, or where although a new initiative has begun it is important to ensure that it becomes thoroughly embedded.

5.2 User input

Over the course of the review, the NSQR team met with a number of stakeholders (refer to Annex 5.1 for full list) to gather detailed feedback and views on their use of the National Accounts and Balance of Payments. These have been very helpful to the Review team in guiding us towards issues of particular concern. We are most grateful to all those we spoke to for their time and open input.

The meetings covered a broad spectrum of users from within and outside of Government, including journalists, think-tanks and private sector firms. Several themes related to communication and quality emerged from users, as summarised below.

5.3 Quality of query response service from ONS

Users frequently mentioned the willingness of ONS staff to help with queries and specific data questions. Much credit was given to the prompt and thorough responses received. In general users considered that
this was an improving service from the ONS which helped understanding and meant that users were able to be more precise and informed in their use of data.

For example, one user commented that the naming of staff on press releases and their helpfulness was exemplary. Others echoed this and welcomed the present good access to statistical experts. It is important that resources allow this to be maintained.

5.4 General communication and engagement with users

ONS engagement with users more generally has improved over recent years, and this has been much appreciated. This is partly due to ONS initiatives, and partly to the creation of the UK Statistics Authority (UKSA) – although it is notable that the relationship between the UKSA and the ONS is not always well-understood by users. The new Economic Statistics Forum (the first took place on 7 April 2014) is a welcome addition to the communication effort.

While further improvements are desirable, shortcomings in engagement between users and the ONS are not all due to the ONS. Several user groups and forums have faded partly because users have given less input to them – for example the Society of Business Economists user group. To some extent this may reflect the greater work pressure over time for many users of statistics, which means there is less time for users to engage fully. But then this puts more onus on the ONS to communicate more fully and consult more precisely.

The ONS may assume too much about user knowledge of National Accounts and their compilation. During the course of this review, we met many users and in the course of discussions became aware that outside a small ‘expert’ user group in HM Treasury, the Bank of England (and some other areas, often where ex-ONS staff are employed), there are some significant gaps in understanding of how the National Accounts are compiled. The UKSA’s recent assessment of GDP communication also pointed out that engagement with users needed to go beyond the key institutions.

For example, the issues raised in the debate about the experimental GVA(P) data for the regions (covered in more detail below) illustrated some lack of awareness about how the process of benchmarking the quarterly GDP(O) estimates in CVM terms to that established annually by the GDP(E) method causes inconsistencies between the CP and CVM estimates of GDP(O). The ONS website contains a wealth of material on the National Accounts, but it is not easy to find a clear account of compilation methods and processes. Statistical press releases however often have very good notes with clear links to methodology and revision papers, and perhaps a note on the website could advise infrequent users to start there.

The ONS has a number of courses on the National Accounts for its own staff which are also attended by members of the Government Economic Service (GES) and Government Statistical Service (GSS). The plans for more communications with users on specific topics are also very welcome. However, it would be worthwhile to create a users’ version of some courses to enable more informed debate. (There is an MSc in Official Statistics at Southampton University, but this does not aim to serve a more general audience). In the long run, this should improve the quality of debate and understanding which would support confidence in the ONS. Training need not be unduly onerous for ONS – units could perhaps be available as webcasts including question and answer sessions.

37 All completed Authority assessment reports can be found here:
Suggestion 3: ONS should consider developing a users’ version of training in National Accounts. In addition, clearer signposting to methodology and definitions on the website, and a more systematic approach to what is presented there on methods would be beneficial.

5.5 Loss of historical data and lack of access to previous vintages of data

ONS produced a ‘core’ dataset alongside Blue Book 2011 (BB11), of 300-400 long-run series, instead of the 10,000 series dataset usually published. The other series were then available only back to 1997. ONS explained this decision prior to the release in papers on Method Changes (Everett, September 2011) and Historical National Accounts Data Proposal (Everett, October 2011). Changes to methods, relocation to Newport and new ONS internal statistical systems had made it very challenging to maintain the quality of the previous large dataset.

Many users commented that this was not communicated well enough ahead of BB11 publication and they did not receive sufficient warning prior to data being withdrawn. Lack of historic data has had a major impact on the usefulness of ONS statistics, particularly for economists constructing forecasting models or wishing to make comparisons with the behaviour of detailed data in earlier recessions. The latter has been particularly unfortunate as the period since 2007 is just the time when these comparisons would be of most interest.

Users commented that they would still like this longer run of data to be reinstated. In particular a lot of data only goes back to 1997, and so comparison cannot be made with the last economic cycle in the early 1990s. ONS received feedback on this through consultation on the National Accounts work plan. The ONS response to this is noted in points 42 and 43 of the National Accounts and related outputs work plan.

For Blue Book 2011, for GDP, only 1997 onwards was published with the Quarterly National Accounts, because ONS did not have the CPI deflators to produce consistent series pre-1997, or the systems to run data in (with CORD being setup to start from 1997). The core dataset term for GDP was defined as those inputs needed for the CSDB GDP central system to run. Note this was the case for GDP, not Sector and Financial Accounts.

The historic (pre-97) core dataset was reinstated and published with Blue Book 2012.

For Sector and Financial accounts, the cut-off was 1987 rather than 1997, and data pre-1987 were removed for the Financial Corporations (FCs) and Private Non-financial Corporations (PNFCs) sectors (at the time of BB11). Government data remained available on the website, along with Household sector and Non-profit Institutions Serving Households (NPISH) aggregates such as the saving ratio.

In July 2014 ONS plan to publish more detail on GFCF (essentially to repopulate Chapter 9 of Blue Book back up to the levels of Blue Book 2010) back to 1987, including some quarterly data and to reinstate the Household Final Consumption Expenditure (HHFCE) tables in Chapter 6 of Blue Book back to 1987 as well, consistent with the top level totals, and also with some data on a quarterly basis.

When Blue Book 2014 is published, initially ONS will take the core GDP dataset back to the start of each time series at end September 2014, and then expand to add in the GFCF and HH consistent datasets by the end of November 2014. Their plan is to deliver the SFA history due at the end of October 2014, but at this stage they are not planning to expand pre 1987.

38 UK National Accounts Blue Books can be found here:
39 Work plan and consultation documents can be found here:
However, welcome as these plans are, a note of caution is needed. Much care has to be taken when methodological change is taken into the past. There is a risk that the data may tell a different ‘story’ simply because changes have been applied too hastily. National accountants at a point in time use elements of judgement in determining the path of the economy, and if data is pushed back without sufficient thought the ‘story’ told by the data may be misleading. So while it is desirable that the ONS finds the resources to recover the historic dataset, it should not be assumed this is a small task, and it is perhaps preferable to have less historic data of a good, consistent standard than a poorly-constructed back dataset. Indeed, in 2007 questions were raised (by Bill Martin⁴⁰) about historic data which suggested that attempts to go back beyond 1987 at that stage had been imperfect.

An example is that in the 2012 Blue Book, there were major changes to the growth rate of GDP back to 1950, based on a shift from the use of RPI to CPI as the deflator. However the back history of the CPI had been modelled, as it was not calculated then. This was a major re-writing of history based on a somewhat uncertain foundation.

Suggestion 4: ONS intends to re-instate much historic data. However, we would caution against carrying this out without due regard for the context of other indicators at the time of the original data releases. Sound historic data sets are resource intensive, and it would be preferable to have less, but robust, historic data rather than a hastily-constructed back series.

We have heard from users that they want both access to previous vintages of data and to historical time series based on current concepts and definitions. Often the points have been linked in recent discussion as the lack of historical time series going back very far, e.g. some stopping in 1997, has led to more demands for vintage data as a seemingly easy to do second best.

We need to be clear on these two different sets of demands.

Earlier vintages are simply a question of maintaining the originally published data sets in some form of archive with a set of metadata that allows for the informed use of the data. So for example an IoP dataset based on SIC 1997 but no longer updated once the IoP had moved to SIC 2007 would be moved to an archive section of the Web Site but still accessible to users. This does not require any additional statistical work only database management activities.

Process Recommendation 13: Earlier vintages of published datasets should be stored and accessible in an archive section of the ONS Web Site.

The demands for longer (historical) time series of consistent data are a different matter and can require considerable statistical work if they are to be of value. As commented, the issue here is how to backcast or link data for periods prior to when certain conceptual or methodological changes have been introduced and estimate a longer time series of data that are as consistent as possible with the current estimates. The challenge is to provide value added by developing the long time series but not to distort the economic record of the UK. This is why we suggest there needs to be due caution.

A point about the organisation of material on the ONS website has already been made. While it would be burdensome in the short-term, clearer organisation and signposting would be very helpful. By contrast, many users commented positively on ONS press releases and the information contained in them. It is also welcome that the ONS now has an internal ‘Statistical Products Working Group’ which is tasked with improving the content of statistical releases.

⁴⁰ Bill Martin’s webpage includes the relevant articles: http://www.cbr.cam.ac.uk/about_us/martin_bill.htm
5.6 Quality Assurance (QA)

In carrying out this Review, some specific examples have led us to query whether QA has been sufficiently rigorous, and whether it is applied consistently. In addition, it is not clear whether the various risks facing the ONS with regard to statistical outputs are assessed at the appropriate level. Two statistical releases in 2013 can be taken to exemplify the reasons for these concerns. The discussion below uses examples from the National Accounts, but clearly some of the recommendations apply more widely across the ONS.

5.6.1 Gross Fixed Capital Formation and Business Investment – the June 2013 release

There has already been a considerable amount of commentary in this Review around the statistical questions which arose following the publication of the Gross Fixed Capital Formation (GFCF) and Business Investment (BI) data in the summer of 2013. Regardless of whether there are any remaining queries over the robustness of some of the deflators (in particular the software deflator and some of the construction deflators) it is clear that the process in the run-up to the initial publication was unsatisfactory. With a pre-announced publication date of June 27, it is surprising to learn from discussions with the ONS that the quarterly CVM GFCF data was only delivered to the central GDP balancing team by the GFCF compilers on 11 June, and the BI data was not available until 25 June. These data included a number of methodological changes and a sufficient time for QA should have been regarded as essential, and ought to have included time for a careful view to be given by the ONS economists of the plausibility of the data. Yet even without the opportunity for adequate QA, first consideration of this initial data ought to have raised concerns, not just the errors which were subsequently detected, but also the increased volatility and changed trend in the volume data.

We are pleased to find that the ONS has reacted to the poor experience last summer by starting work on a robust programme of new QA procedures. This will include ensuring that QA is always planned carefully with adequate time allocated, and that any risk to this is flagged early. Decisions to cut back on planned QA will need to be justified and taken at Director level.

Process Recommendation 14: The recent plans for improvement to QA are very welcome and should be rolled out as soon as possible across the ONS’ more important data sets. When QA for National Accounts releases is being planned, there should be an important role for ONS economists. When there are big methodological changes (i.e. it is mainly past data which is under review) the potential for including reviewers of the data who are external to the ONS should be positively considered more frequently, although care has to be taken about who has early access to unpublished data. We strongly support the ONS’ commitment to Quality Assurance Plans for major economic and social outputs.

However, there are further changes we would recommend in order to give users appropriate confidence. The new process still provides for the option to reduce QA time – which may be acceptable for more routine releases, but seems highly undesirable in instances where there has been a major change of methodology.

The new GFCF data, part of the Quarterly National Accounts release in June 2013, raised a number of issues which have been widely commented on. This set of QNA was the first to be consistent with the 2013 Blue Book. The GFCF component is a major piece of data for policymakers and on this occasion it included a number of significant methodological changes and told a story which was rather different to that of the previous Blue Books. Once this became apparent, along with the lack of time to consider all the implications fully, the ONS faced an uncomfortable choice between:
• Announcing a delay to publication
• Publishing on time, but with no comment on QA
• Publishing on time, but setting out clearly the issues around QA.

The first option would have been embarrassing for the ONS – only three years after heavy criticism for a delayed publication of the 2010 Blue Book. There would also have been the option of publishing the QNA but not the business investment (BI) release. Indeed, since on 20 June it was announced that publication of the industry breakdown of BI was to be delayed until 31 July, users might in any case have reasonably drawn the conclusion that there had been some problems in producing this data set punctually. A delay to the QNA, which given the questions raised by the GFCF publication could have been lengthy, would have been a very considerable problem to key users, in particular Bank of England analysts (who at that time were starting the forecast exercise leading up to the August 2013 Inflation Report, a significant moment for the Monetary Policy Committee as this was when forward guidance was introduced).

The second option however is also not satisfactory for users, who find that there are problems with data which they have taken as having been quality assured. Discovering errors in this data set led to some criticism of the ONS which might have been avoided if the data had been qualified on publication. Had that third option been selected, users would of course not have been happy – but it would have enabled an open discussion about issues in the data. It might also have avoided a period in which the ONS was perceived as being defensive – not about the errors in the data (quickly acknowledged and corrected) – but about the new methodology. For example, an article discussing the changes to GFCF was published in July 2013\(^41\) which described the changed picture for the trend and quarterly patterns as being related to improvement. It gave little hint that many users were still critiquing aspects of the data, or that the ONS was itself reflecting on the key messages of the data from the new methodology.

Publishing with greater transparency about QA would have been a preferable approach, and by acknowledging potential problems would have enabled an initially more open attitude to user queries about the data. (For example, the July 2013 article defended the volatility in the data, but the subsequent article in March 2014\(^42\) suggested that a further change was likely to reduce this volatility.) The note on GFCF, published alongside the QNA, did explain that lack of QA had delayed the BI breakdown, and perhaps by implication suggested that the data which had been published had all been subject to adequate QA. However, the subsequent user engagement, including regular meetings with key users has been very much welcomed, and has met the great majority of user concerns.

In addition, as detailed in earlier sections of this report, in our discussions around the deflators used for the components of investment, it has become apparent that the ONS has been using construction deflators bought in from an external source which has not been prepared to reveal its methodology. This makes it difficult to pursue any issues if these data are puzzling. It is very welcome that in future a different contractor is to be used to compile these data, with a contract meaning the ONS will have knowledge of how the data is constructed.

The March 2014 article also by implication raised a question about the quality of the BB2011 and BB2012 datasets for GFCF and BI. It was open about the fact that in some respects, for example the direct measurement of assets and the weighting methodology the methodology was different from BB2010. It is not clear that users were made aware at the time of publication that those two BBs had changed in this respect. With regard to the 2013 data, the very large changes in some series suggest that, if the new data really are an improvement, there had been a period of years in which the data has been giving misleading

\(^{41}\) Explaining the Impact of the Blue Book 2013 Changes to Gross Fixed Capital Formation and Business Investment
\(^{42}\) Business Investment Explaining UK Investment Estimates: past, present and future
messages, on which much analysis was built. Of course, there are often methodological improvements which alter the past, and it is not possible to keep all data at the statistical best practice frontier at all times. But a clear implication is that consideration should be given to regular methodological reviews for key data.

Process Recommendation 15: If there are circumstances in which it seems better to publish data which has not been subject to full QA, rather than to delay, then a simple note to that effect would, while not making users happy, be the best way to retain trust in UK statistics. In general the approach should be to acknowledge any known shortcomings in methodology. Some users however prefer delay, and this might be the right decision if the delay is likely to be short, and has no implications for a wider release which is key for policymakers.

Development Recommendation 17: There should be a programme of regular reviews of methods and process for all major data to ensure that methods for key series are kept in line with best practice. The frequency of this is likely to vary according to the nature of the data, but there should be a pre-defined timetable for important series. These reviews should be carried out by experts in both methods and production processes.

A more general issue which might have helped avoid some of the problems around the GFCF release is that the role of ONS economists, or of trusted government economists outside the ONS, in QA with regard to the National Accounts, does not always seem sufficient. There may be a rationale for setting up a small economics team, possibly in London to draw on the wider labour market for economists there, some of whom might be on short-term contracts, or academics working part-time for the ONS. This would ensure a frequent fresh pairs of eyes and fresh thinking. The tasks would be somewhat different from those in Newport embedded with statistical teams. Staff might well move between the two roles, but the real purpose would be to provide greater access to wider economic debate and challenge to enrich the experience of the whole team.

Alongside this, the ONS should consider establishing a group of senior statistical and economic advisers, including some with experience gained outside the UK, to consider methodology and where appropriate take an early look at data which has been subject to a major change in process or methodology. In conducting the review, we came across a number of experts or expert groups, such as academics at Imperial College with good knowledge of Research and Development data, who are already consulted on some issues, but could perhaps be drawn more frequently with suitable confidentiality commitments. And in practice external QA of some series already occurs, such as capital stocks, but this could perhaps be more systematic.

Suggestion 5: The ONS should consider enlarging its economics team, with a view to developing a small expert oversight team, possibly based in London. This should act as a key group in QA which is slightly remote from the data producers. In addition, this might be the right group to carry out some economic research and commentary. There have been suggestions that ONS economists should not focus on explanation – but their effort to explain is bound to help to evaluate the data and this has proved useful. The question of location is eventually of course an ONS decision, but a team in London might find it easier to draw in skills on a short-term or part-time basis.

Suggestion 6: A group of external advisers, including international economists and statisticians, should be established to keep outside scrutiny fresh and ensure methodology is best practice.
5.6.2 Regional GVA (P)
The second example which suggests weaknesses in pre-production process relates to the publication in December 2013 of a set of experimental GVA data for the English regions and the devolved administrations using a production approach: GVA(P). The notes on this release explained that this enabled a ‘real’ set of data to be produced, whereas the previous regional GVA was only available on an income basis: GVA(I) and so could not be deflated. It was also made clear that the GVA(I) data should be taken as more reliable where there were differences in levels (and the table of comparisons in the release makes it apparent that in some cases these differences were very large). In particular, these data had not been constrained to be consistent with the overall GVA for the UK, on the basis that ‘to do so would worsen this detailed industrial picture.’ (The argument being that the detailed industry data in the new release was more informative).

The underlying reason for this was made clear in an article published in January 2014, which is that the real industrial output series for the main National Accounts is not based on deflating the nominal outputs. So these experimental data would not be expected to be consistent with the output data resulting from the SUT balancing. Conceptually this implies that these data are the ‘best guess’ for the GVA of a specific industry in a specific sub-national geography, but these ‘best guesses’ do not sum to the ‘best guess’ of GVA for the whole UK. As commented earlier, the best guess for the UK data involves an adjustment to some services sectors to bring the output estimates into line with the ‘best guess’ GVA. It will be important to reconcile the national and regional data sets in the lead up to the publication of the regional GVA measures as official statistics.

These data therefore provided useful information about specific industries in the individual regions. But publication of the data ahead of the article created unnecessary confusion. It led to some comment on the data for Scotland in particular, as by comparison with the Scottish Government estimates of GVA the ONS data suggest the growth in Scotland since 1998 had been only half of that previously estimated. With the referendum on Scotland’s independence due in September 2014 this was a sensitive topic.

One reason for the differences in the data seems to have been that the deflators in the GVA(P) data were all rather stronger than the UK GDP deflator. This feature required some explanation, subsequently given in the January article. Again this created some discussion and confusion.

Suggestion 7: Experimental data ought not to be published in advance of the accompanying explanation, even if this means missing a pre-announced publication date. Without the accompanying article there is not enough information for users to derive value from the dataset. Care should be taken when new data releases are proposed to ensure that there are reliable processes to identify any aspects of releases that could create confusion and unhelpful media comment.

5.7 Sign-off procedures
All outputs from the ONS need to have appropriate QA. It would be useful to consider whether this occurs consistently at the right level, so that data, press releases and articles all receive appropriate challenge. At Statistics Canada, significant releases relating to the National Accounts are presented to a senior group where the data is discussed. In the UK, the GDP releases are subject to challenge by a senior group, but this practice could be used more frequently. There may be little change as a result of

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43 Regional Accounts: Deflation Methodology for Regional Gross Value Added (Production Approach), January 2014
44 Letter from Sir Andrew Dilnot to Bernard Jenkin, Statistics on Gross Value Added, 6 February 2014 is available here: https://www.google.co.uk/url?q=http://www.statisticsauthority.gov.uk/reports---correspondence/correspondence/letter-from-sir-andrew-dilnot-to-bernard-jenkin-06022014.pdf&sa=U&ei=sEaHU-HjJKWy7AakzHgAg&ved=0CCsQFjAC&usg=AFQjCNFZvvh2EAN_JVCmKFc7R4BEjxduxA

8 July 2014
this process, but its existence offers the opportunity for helpful questioning which supports the robustness of the final release.

Similarly, press releases and articles do have an explicit sign-off policy – but there is a question about whether this is in all cases a ‘second pair of eyes’. It should also be clear that it is the final version, rather than a late draft, which is signed-off.

**Process Recommendation 16:** ONS should consider whether data, press releases and articles are signed-off at an appropriate level of seniority. In particular, care should be taken not to prioritise releasing an article on time, over ensuring it is of robust quality.

In recent years, the regular National Accounts and Public Finance indicators releases have tended to become longer documents with more discussion of trends in the data and commentary about definitions. During the course of our Review, many users commented favourably on these releases, which were regarded as very helpful in aiding economic interpretation of the data. Our discussions with ONS staff have made it clear that considerable effort goes into ensuring that these releases are of a high standard and point users in the right direction. This is very welcome and we hope it will be maintained.

In addition, ONS aims wherever possible to set out in advance a clear explanation of forthcoming changes to methodology with regard to back data, and to give some indication of the impact. A recent example where this was important was the change from RPI to CPI in the historic data for the National Accounts. This resulted in a significant change to the long-term growth rate – but the reason was widely-understood and therefore commentary was generally sensible. Users are less likely to be critical of a change if the ground has been prepared. Similarly, there is a major communication programme underway to inform users of the many changes which will affect the data in the 2014 Blue Book, mainly due to ESA2010 and BPM6. One of the most significant will be the capitalisation of research and development, and there will also be changes to the household savings ratio. These changes are already known to the user community, and the ONS started relatively early communication on these changes and has a plan for further communication around this and the other changes, which have been clearly signalled. So there are many examples of good practice.

Against this background, failures of early communication such as around the 2013 GFCF release remain a concern. Communication plans need to be embedded into all methodological changes and if it becomes clear that these plans cannot be carried out the risks around this should be assessed. At the least, the initial release of the data would need to have a very clear account of the changes, which should be reviewed across the ONS at senior levels. Key users generally feel well-informed about methodological changes. Non-key users were more likely to feel that information had been lacking. Care needs to be taken that sufficiently wide publicity is given ahead of major data revisions.

**Suggestion 8:** There is much good practice with regard to advance notification when a methodological change is likely to suggest a different picture from the previously-published version. The right method for this will vary depending on the significance of the data. In order to do this most effectively ONS needs to develop contact lists of users for pieces of data. For example, the Productivity user group is based on people who have contacted the team inbox. This is used to circulate articles and other information.

**Suggestion 9:** If it becomes clear that the normal practice of prior explanation of a significant methodological change cannot be carried out, the risks of this creating confusion and misunderstanding need to be assessed. An early communication exercise will be needed around publication to tackle any potential misunderstandings and all communication needs to be carefully thought through to ensure that access to information is available on an equal footing.
5.8 Errors and corrections
Some users raised a problem with ONS’ communication of errors within the data, noting that unless they went back to the release and saw the notification they would not be aware that a correction had been issued and so risked using incorrect data. The timescale from noticing the error and correcting it on some occasions was also criticised.

The ONS has a published policy on revisions and corrections – although it is not particularly informative about corrections – simply stating that these will be published promptly, with an explanation, and stakeholders notified if they are material. (In terms of transparency, however, it is hard to argue that the ONS compares badly against international practice. An internet search of the Eurostat, French statistical agency (INSEE) and Statistics Canada websites was not able to find any reference to corrections publication policies.)

There is also an internal corrections policy document which is more informative about processes, and includes a typology for classifying errors as major or minor. While not all of the internal policy would be of interest to, or relevant for a wider audience, there seems no reason not to be more transparent about the approach to corrections.

However, the internal policy document itself raises issues. With regard to the classification of an error as major or minor, there is some focus on media interest and the ONS’ reputation – as well as on the interpretation of statistics. But surely the key question should be whether the statistics as published would be misleading to any user, including those whose interest was in detailed parts of the National Accounts. ONS cannot know who is using what data, or for what purpose. So the impact of leaving incorrect data on the website cannot be judged. While the likelihood of corrections is notified to key users, it would be more transparent to put a notice on the website to that effect. This is one of a number of examples where, while the service to the main stakeholders is of a high standard, it is perhaps less satisfactory for other users.

Suggestion 10: Errors, once identified, should be reported as soon as possible on the website, with a note on when a correction is to be expected. The erroneous data should be withdrawn in the interim – or very clearly identified as incorrect.

Suggestion 11: Notify users who have registered an interest in the National Accounts data when an error in data is found, and when corrections are published.

5.9 Website issues
Without exception, the users and stakeholders we spoke to were critical of the ONS website. The criticisms ranged from the difficulty of finding data, to only using the four-letter codes (known as CDIDs) to identify series in many places, which is a problem for the infrequent user who will not be familiar with these codes. For the more frequent user, the irritation is that the search engine does not recognise these CDIDs clearly. However, a page with Key Economic Data and their CDIDs is available and is useful – though could perhaps be given greater prominence on the website. The ONS is well aware that problems still exist with the website and efforts to improve it continue. Some users commented that they use other sources for data – but this often means the data is more costly, which raises access questions.

It is of course true that the ONS has a wide range of users, who are more-or-less well-informed and it is very optimistic to think that all their requirements can be accommodated. But a better website could also have the longer-term benefit of reducing the number of queries into the ONS by phone or email.
While full, detailed proposals for changes are beyond the scope of this review, we give below a note of some specific issues we have encountered while carrying out this review.

- Even knowing that the terms of reference for this Review were on the website, the document was very difficult to find.
- Items are not always listed where they might be expected – looking under publications for this January’s article about regional GVA - it was not included in the list. However the right words in the search engine did pull it up. Similarly the March 14 piece on business investment was classified as a release.
- Articles and information relevant to specific topics are not always grouped together. For example, the National Accounts Work Plan can be found under consultations on the website. However it is not clear on the document that this is a consultation. And although the responses are in the same part of the website, the final National Accounts Work Plan is only in the Guidance part of the site and has nothing in the body of the document to indicate it is the post-consultation version, nor does either document have a date on it. Users have to put in too much effort to make sure they are using the right document.
- Data tables appear in different formats, and not all have stable headings making it hard to scroll down a series to find a specific item at a specific date.
- The search engine is poor – for example retail trade returns no results when in the retail sales part of the website. And the four-letter series identifiers do not lead to the data series. A full list of these identifiers with clear data definitions would also be a very helpful addition. There is however now a part of the site which has major data series in this form and that is valuable for the less expert or less regular user.

Suggestion 12: Users should be able to access data readily on the website, including historic time series, and to have their attention drawn to any particular data issues related to a series. While users of statistics should take care that they understand the series which they are using, the ONS website should assist in avoiding errors and misuse of the data. The search engine is a particular weakness and should be improved or replaced.

5.10 Consultations

The ONS conducts a number of consultations – there were nine which closed in 2013, of which five were related to the National Accounts data. (In 2012 19 consultations closed, of which five were in some way related to the National Accounts.) Open consultations are not easy to find on the website – there is no apparent link to them from the main front page. They can be found under the heading ‘about ONS’ in the section- ‘Get Involved’ although the description of this section does not make it clear that consultations are housed there.

The consultation in 2013 around the ONS work plan for the National Accounts and Related Statistics has been referred to above. It elicited few responses – perhaps not surprising as the document did not include any very specific questions, nor did it set out any possible choices. In order to make informed responses, it would have been helpful to indicate what the resource implications were for the different work streams. However, the work plan itself is a very welcome document.

Suggestion 13: Consultations should be given more prominence on the website. It should be clear in any consultation what specific issues or choices the ONS is seeking input on. Consultations on changes to data either in scope or methodology should be publicised as widely as possible, and with specific questions where possible to enable a user response.
## 6 Annexes

### 6.1 Stakeholder consultation

Stakeholders who have contributed to the review from September 2013 to April 2014:

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Stakeholder</th>
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<tr>
<td>Bank of England (BoE)</td>
<td>Spencer Dale</td>
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<td>Martin Weale</td>
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<td></td>
<td>Melissa Davey</td>
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<td>Katie Low</td>
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<td>Sarah Breeden</td>
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<td>Mark Robson</td>
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<td>Department for Business, Innovation and Skills (BIS)</td>
<td>Barry Williams</td>
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<td>Siobhan Carey</td>
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<td>Dave Ramsden</td>
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<td>Robert Chote</td>
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<td>Andy King</td>
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<td>Sir Andrew Dilnot</td>
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<td>Gavin Wallis</td>
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<tr>
<td>London School of Economics</td>
<td>Nick Oulton</td>
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6.2 Abbreviations

ABI/ABS  Annual Business Inquiry/Annual Business Survey
ARI  Annual Register Inquiry
BB  Blue Book
BBA  British Bankers Association
BI  Business Investment
BIS  Department for Business, Innovation and Skills
BoE  Bank of England
BoP  Balance of Payments
BPM  Balance of Payments Manual
BR  Business Register
BS  Balance Sheet
BSO  Business Statistics Office
CBI  Confederation of British Industry
CDID  Unique identifier for ONS data series
CDIS  Coordinated Direct Investment Survey
COINS  Combined Online Information System
CORD  Central ONS Repository for Data
CP  Current price
CPA  Classification of Products by Activity
CPI  Consumer Price Index
CPIIS  Coordinated Portfolio Investment Survey
CSDB  Common Software Database
CSO  Central Statistics Office
CSPI  Corporate Services Price Index
CVM  Chained Volume Measures
DFPNI  Department of Finance and Personnel - Northern Ireland
ECB  European Central Bank
EDC  Electronic Data Collection
ESA  European System of Accounts
EU  European Union
FDI  Foreign Direct Investment
FESUG  Financial and Economic Statistics User Group
FF/FoF  Flow of Funds
FISIM  Financial Intermediation Services Indirectly Measured
FTE  Full Time Equivalent
GDP  Gross Domestic Product
GDP(A)  GDP headline figure
GDP(E)  GDP using the Expenditure approach
GDP(I)  GDP using the Income approach
GDP(O)  GDP using the Output approach
GES  Government Economic Service
GFCF  Gross Fixed Capital Formation
GNI  Gross National Income
GSS  Government Statistical Service
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<th>Abbreviation</th>
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<tr>
<td>GVA</td>
<td>Gross Value Added</td>
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<tr>
<td>GVA(P)</td>
<td>GVA using Production approach</td>
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<td>Inter-Departmental Business Register</td>
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<td>IIP</td>
<td>International Investment Position</td>
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<td>International Monetary Fund</td>
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<td>National Statistics Institutes</td>
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<td>NSQR</td>
<td>National Statistics Quality Review</td>
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<td>PAYE</td>
<td>Pay As You Earn</td>
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<td>PIM</td>
<td>Perpetual Inventory Model</td>
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<td>Previous Year's Prices</td>
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VAT  Value Added Tax
6.3 Sources for National Accounts

The UK National Accounts are compiled from a vast range of data sources, the main ones being surveys and administrative data. The summaries below are not exhaustive.

Summary of quarterly sources:

- Monthly Business Survey
- Construction Output Survey
- Living Costs and Food Survey
- Quarterly Capital Expenditure Inquiry
- Quarterly Stocks Inquiry
- International Trade in Services Survey
- Quarterly Operating Profits Survey
- Quarterly Capital Expenditure Survey
- Average Weekly Earnings
- General Insurance Survey
- Long term Insurance Survey
- Investment Trusts Survey
- Securities Dealers Survey

Summary of annual sources:

- Annual Business Inquiry
- Business Spend on Capital Items
- Expenditure and Food Survey
- Financial Inquiries
- Inter-Departmental Business Register
- International Passenger Survey
- International Trade in Services Inquiry
- Monthly inquiry into Distribution and Services Sector
- Monthly Production Inquiry
- Perpetual Inventory Model
- PRODCOM
- Quarterly Profits Inquiry
- Quarterly Capital Expenditure
- Quarterly Stocks Inquiry
- Range of ad hoc pilot surveys
- VAT paid and VAT turnover data
- Bank of England
- Department for Environment, Food and Rural Affairs
- Department of the Environment, Transport and the Regions
- Department of Enterprise, Trade and Investment (Northern Ireland)

- Department for Transport
- Department of Health
- Department of Trade and Industry
- Her Majesty's Revenue and Customs (including INTRASTAT data)
- Her Majesty's Treasury
- Ministry of Defence
- Department for Communities and Local Government
- Association of British Insurers
- Civil Aviation Authority
- Company annual reports and accounts
- Company financial websites
- Regulatory accounts
7 Bibliography


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