

Assessment of compliance with the Code of Practice for Official Statistics

The UK National Accounts: Supply and Use Tables and Input- Output Tables

(produced by the Office for National Statistics)

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About the UK Statistics Authority

The UK Statistics Authority is an independent body operating at arm's length from government as a non-ministerial department, directly accountable to Parliament. It was established on 1 April 2008 by the *Statistics and Registration Service Act 2007*.

The Authority's overall objective is to promote and safeguard the production and publication of official statistics that serve the public good. It is also required to promote and safeguard the quality and comprehensiveness of official statistics, and good practice in relation to official statistics.

The Statistics Authority has two main functions:

1. oversight of the Office for National Statistics (ONS) – the executive office of the Authority;
2. independent scrutiny (monitoring and assessment) of all official statistics produced in the UK.

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ASSESSMENT AND DESIGNATION

The *Statistics and Registration Service Act 2007* gives the UK Statistics Authority a statutory power to assess sets of statistics against the *Code of Practice for Official Statistics*. Assessment will determine whether it is appropriate for the statistics to be designated as National Statistics.

Designation as National Statistics means that the statistics comply with the *Code of Practice*. The *Code* is wide-ranging. Designation can be interpreted to mean that the statistics: meet identified user needs; are produced, managed and disseminated to high standards; and are explained well.

Designation as National Statistics should not be interpreted to mean that the statistics are always correct. For example, whilst the *Code* requires statistics to be produced to a level of accuracy that meets users' needs, it also recognises that errors can occur – in which case it requires them to be corrected and publicised.

Assessment reports will not normally comment further on a set of statistics, for example on their validity as social or economic measures. However, reports may point to such questions if the Authority believes that further research would be desirable.

Assessment reports typically provide an overview of any noteworthy features of the methods used to produce the statistics, and will highlight substantial concerns about quality. Assessment reports also describe aspects of the ways in which the producer addresses the 'sound methods and assured quality' principle of the *Code*, but do not themselves constitute a review of the methods used to produce the statistics. However the *Code* requires producers to "seek to achieve continuous improvement in statistical processes by, for example, undertaking regular reviews".

The Authority may grant designation on condition that the producer body takes steps, within a stated timeframe, to fully meet the *Code's* requirements. This is to avoid public confusion and does not reduce the obligation to comply with the *Code*.

The Authority grants designation on the basis of three main sources of information:

- i. factual evidence and assurances by senior statisticians in the producer body;
- ii. the views of users who we contact, or who contact us, and;
- iii. our own review activity.

Should further information come to light subsequently which changes the Authority's analysis, it may withdraw the Assessment report and revise it as necessary.

It is a statutory requirement on the producer body to ensure that it continues to produce the set of statistics designated as National Statistics in compliance with the *Code of Practice*.

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Foreword

The initial assessment of UK National Accounts was carried out by the Authority in 2011. This initial assessment did not, however, include the statistics from the supply and use tables or the input-output analytical tables which are covered in this Assessment report, because they were considered to be supplementary tables to the National Accounts and therefore not appropriate for National Statistics designation. This is therefore the first assessment of these important statistical series.

Since 2011, ONS has enhanced these statistics by developing a stand-alone publication covering the supply and use tables, including commentary, and by publishing input-output analytical tables for the first time since 2009. ONS intends to publish them on an annual basis in future.

Set against these enhancements, we are concerned that an important set of data used in the construction of detailed tables – data on purchases by businesses – has not been updated since 2004. ONS has sensibly sought to use alternative data sources, and use informed judgement where the purchases data are clearly misleading or out-of-date. However over time, there is a risk that there is a growing gap between the purchases data (last available in a comprehensive way in 2004) and the actual nature of economic activity, so that the tables may not now adequately reflect more than a decade's changes to the structure of the economy. The best solution to this problem may be to gather new purchases data. We are pleased to see that ONS is putting plans in place to reinstate the Purchases Survey, but results are not expected to be available until 2017. In the meantime, ONS needs to be clearer about the limitations in the tables, how it has substituted informed judgement where the data are inadequate, and the impact of the limitations in purchases data on the usefulness of the tables. In light of this, until data from the Purchases Survey, or an alternative data source, become available the Authority considers that these statistics should not currently be designated as National Statistics.

We have identified, both in this report and in our assessment of the Annual and Quarterly National Accounts (Assessment Report 299), that the lack of contemporary data on purchases by businesses has impaired the use of the supply and use tables at a detailed level. We are assured, however, by the range of measures that ONS has taken, that the data are robust at a broad level of aggregation. As a consequence, the estimates of GDP continue to comply with the Code of Practice for Official Statistics, subject to meeting the Requirements in Assessment Report 299.

We are encouraged by ONS's efforts to make improvements to the statistics in the supply and use tables, and look forward to seeing ONS make further improvements as they seek to gain National Statistics status.

Ed Humpherson
Director General for Regulation, UK Statistics Authority

1 Summary of findings

1.1 Introduction

1.1.1 This is one of a series of reports¹ prepared under the provisions of the *Statistics and Registration Service Act 2007*². The report covers the following set of statistics in the National Accounts, produced by the Office for National Statistics and reported in:

- *Supply and Use Tables*³ (SUT)
- *Input-Output Analytical Tables*⁴ (IOAT)

1.1.2 This report forms part of a broader assessment of the Annual and Quarterly National Accounts produced by ONS. Assessment report 299 examines the statistics published in: *The Blue Book, Second Estimate of GDP, Quarterly National Accounts* and *UK Economic Accounts*.

1.1.3 This report was prepared by the Authority's Assessment team, and approved by the Regulation Committee on behalf of the Board of the Statistics Authority, based on the advice of the Director General for Regulation.

1.2 Decision concerning designation as National Statistics

1.2.1 Although Supply and Use Tables (SUTs) and Input-Output Analytical Tables (IOATs) were produced and published before the *Statistics and Registration Service Act 2007* came into force they were not included in the first round of the Statistics Authority's assessments of legacy National Statistics. They were considered to be supplementary tables to the National Accounts outputs which were assessed in Assessment Report 100⁵, published in March 2011; therefore they were not formally designated as National Statistics in their own right. This is therefore the first assessment of these statistics against the *Code of Practice for Official Statistics*⁶, which is required to gain National Statistics status.

1.2.2 *SUT* and *IOAT* are non-standard statistical reports, published as secondary analyses, additional to, and separate from, the regular principal statistical reports relating to the National Accounts. The profile and use of these statistics has increased in recent years and they are amongst the UK's most prominent macro-economic statistics. Since July 2013 they have been enhanced by being accompanied by commentary to aid user interpretation of the statistics. They have been included in this re-assessment due to ONS identifying defined user needs which are specifically related to the statistics in these tables, the

¹ <http://www.statisticsauthority.gov.uk/assessment/assessment-reports/index.html>

² http://www.opsi.gov.uk/Acts/acts2007/pdf/ukpga_20070018_en.pdf

³ <http://www.ons.gov.uk/ons/rel/input-output/input-output-supply-and-use-tables/index.html>

⁴ <http://www.ons.gov.uk/ons/rel/input-output/input-output-analytical-tables/index.html>

⁵ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-100---uk-annual-and-quarterly-national-accounts.pdf>

⁶ <http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html>

introduction of commentary on SUTs to help explain the statistics⁷, and the re-introduction of the publication of IOATs.

- 1.2.3 The National Statistics Quality Review (NSQR) on the National Accounts and the Balance of Payments⁸, published by ONS in July 2014, underlined the importance of supply and use balancing to the quality of the National Accounts and proposed a range of improvements to the methods leading to the creation of the tables. ONS told the Assessment team that most of the improvements identified through this assessment, as well as the NSQR, can be implemented quickly, and that it has already started to implement some of the Requirements. The Statistics Authority welcomes this. However, Requirement 7 requires that a key data source of the SUTs and IOATs – about the purchases made by businesses for use as part of their production processes – be brought more up to date. ONS told us that this Requirement cannot be met until 2017 at the earliest. This is longer than the usual time allowed for Requirements to be met, which is three months. The Statistics Authority has therefore determined that the statistics published in *SUT* and *IOAT* should not currently carry the National Statistics designation.
- 1.2.4 The Authority considers that, due to a range of measures taken by ONS to mitigate the effects of the lack of up-to-date data on purchases made by businesses, sufficient reassurance has been provided that the principal utility of the SUTS – to provide a framework for the statisticians to confront and balance estimates of supply and demand at a broad level of aggregation in the production of the National Accounts – has been maintained. The decision to not designate SUTs and IOATs as National Statistics therefore does not affect the National Statistics status of National Accounts data at the broad level of aggregation, including the GDP statistics.

1.3 Summary of strengths and weaknesses

- 1.3.1 The quality of the SUTs and IOATs is restricted since one of the key data sources, the Purchases Inquiry (PI), has not been run since 2004. The lack of up-to-date purchases data means that the latest SUTs and IOATs do not take full account of changes to the economy, both within the UK and globally, since 2004. During this time there has been a UK and worldwide recession, and there has been a significant change in the structure of the economy, with many new products being produced. ONS took the decision in 2013 to re-instate the PI and it has produced a timetable for this work. The newly named Purchases Survey is due to be carried out in 2016, with initial data due early in 2017.
- 1.3.2 ONS does not provide sufficient transparency with regards to implausible entries or errors found in the statistics. ONS has been alerted to implausible entries in the tables by users but did not promptly alert other users as it classed these as minor issues. ONS did not highlight these implausible entries, or the potential limitations of the statistics as a consequence, in the published

⁷ <http://www.ons.gov.uk/ons/rel/input-output/input-output-supply-and-use-tables/commentary-on-supply-and-use-balanced-estimates-of-annual-gdp--1997-2011/index.html>

⁸ <http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-reviews/list-of-current-national-statistics-quality-reviews/nsqr-series--2--report-no--2--review-of-national-accounts-and-balance-of-payments.pdf>

documentation, which could have led to the statistics being used inappropriately.

- 1.3.3 Some common themes have emerged from conducting a broader assessment of all of the Annual and Quarterly National Accounts at the same time. These include the need to communicate better the uncertainty associated with some of the key statistics; the need for better narrative accompanying the statistics about what the statistics mean and clarity about the quality and reliability of the statistics. At the same time, it is clear that ONS is making continuing efforts to present the statistics in more easily digestible ways.

1.4 Detailed recommendations

- 1.4.1 The Assessment team identified some areas where it felt that ONS should improve the production and presentation of statistics in *SUT* and *IOAT*. Those which are essential for ONS to address in order to strengthen its compliance with the *Code* and to enable designation as National Statistics are listed – as Requirements – in section 1.5, alongside a short summary of the key findings that led to each Requirement being made. Other recommended changes, which the Assessment team considers would improve the statistics and the service provided to users but which are not formally required for their designation as National Statistics, are listed – as Suggestions – in section 1.6.

1.5 Requirements for designation as National Statistics

- 1.5.1 This section includes those improvements that ONS is required to make in respect of its statistics on SUTs and IOATs in order to fully comply with the *Code of Practice for Official Statistics*, and to enable designation as National Statistics.

Finding	Requirement
ONS does not engage with a wide enough range of users. ONS should:	<p>1</p> <ul style="list-style-type: none"> a) Take steps to engage more effectively with users of the SUTs and IOATs b) Publish documentation on the Purchases Survey User Group to its ONS website c) Set up a UK SUT User Group, which includes key users of SUTs and IOATs, to identify key uses of the data and inform future developmental work <p>(para 3.2).</p>
ONS has not consulted with users about their use of the statistics or on future changes to the statistics. ONS should:	<p>2</p> <ul style="list-style-type: none"> a) Consult users on future changes to the production and publication of the SUTs b) Take full account of users' views in publishing future SUTs <p>(para 3.3).</p>
ONS does not publish	<p>3</p> <p>Publish information about the uses, users,</p>

sufficient information about the uses of the statistics, the extent to which users' needs are met, or users' views of the statistics. ONS should:		and users' views of the SUTs and IOATs (para 3.4).
ONS applies corrections to the statistics where large implausible entries or errors are found but they do not correct smaller errors. When errors are identified but not corrected, ONS does not sufficiently inform users of the errors or the impact that they may have on the use of the statistics. ONS should:	4	<p>a) Respond promptly to users' concerns over potential implausible entries or errors in the data, including an explanation about the issue that has been raised</p> <p>b) If an error has occurred, alert users to the error and provide an explanation about how it will be dealt with</p> <p>(para 3.6).</p>
ONS has not updated a key data source of the SUTs and IOATs – the Purchases Inquiry – since 2004. ONS should:	5	Update the 2004 Purchases Inquiry data used in the production of SUTs with data from the latest Purchases Survey, or an alternative data source, when they become available (para 3.10).
ONS does not publish documentation on the quality assurance procedures that have been put in place to prevent the publication of implausible entries in the SUTs. ONS should:	6	Publish documentation on the actions that it has taken to improve its quality assurance processes to ensure that implausible entries do not appear in published tables (para 3.11).
ONS does not provide sufficient information about the comparability of the SUTs with similar statistics in other UK countries and in the rest of the world. ONS should:	7	Provide users with links from <i>SUT</i> and <i>IOAT</i> to equivalent statistics for other countries where available (para 3.14).
ONS's website has a number of different sections that provide information on Supply	8	Improve the accessibility of the SUTs and IOATs, including links to relevant documents to aid users' interpretation and

and Use tables but these sections are not easy to access, do not contain sufficient cross-referencing and do not provide consistent information. ONS should:		understanding of the statistics (para 3.19).
ONS does not provide users with information on the main messages and trends found in the statistics, or the strengths and limitations. ONS should:	9	<p>a) Provide commentary in <i>SUT</i> and <i>IOAT</i> on the main messages from the statistics</p> <p>b) Ensure that there are adequate metadata included in <i>SUT</i> and <i>IOAT</i> which guides users about where they can find information about context for the statistics and their likely uses, the strengths and limitations of the statistics in relation to their potential use, and information about the quality of the statistics, and other key metadata</p> <p>As part of meeting this requirement ONS should consider the points detailed in annex 1 and annex 2 (para 3.22).</p>
ONS does not publish the statistics in an open format, such as CSV. ONS should:	10	Publish the data associated with the SUTs and IOATs in an open format that equates to at least a three-star level under the Five Star Scheme (para 3.23).
ONS does not publish the publication date of <i>IOAT</i> on the GOV.UK release calendar. ONS should:	11	Publish the anticipated publication date of <i>IOAT</i> on the GOV.UK release calendar (para 3.25).
ONS does not include contact details for the responsible statistician in <i>SUT</i> . ONS should:	12	Include contact details in future releases of <i>SUT</i> (para 3.26).
ONS does not have adequate procedures in place to assure itself of the quality of administrative data used in compiling the National Accounts. ONS should:	13	<p>Clarify its arrangements for auditing the quality of administrative data used to compile the National Accounts by</p> <p>a) Publishing information about the quality audit arrangements for all the external sources of administrative data used to produce the National Accounts;</p> <p>b) Considering the Authority's Report <i>Quality Assurance and Audit Arrangements for Administrative Data</i> and the National Statistician's <i>Interim</i></p>

		<p><i>Guidance</i> in implementing this Requirement (para 3.29).</p>
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1.6 Suggestions for extracting maximum value from the statistics

1.6.1 This section includes some suggestions for improvement to ONS’s statistics on supply and use tables and input-output analytical tables, in the interest of the public good. These are not formally required for designation, but the Assessment team considers that their implementation will improve public confidence in the production, management and dissemination of official statistics.

We suggest that ONS:

1	Publish a specific corrections policy for SUTs and IOATs explaining under what circumstances the tables will be corrected, and link to these from the associated statistical reports (para 3.6).
2	Investigate publishing a specific methods and classification revisions and corrections history for its National Accounts outputs, clearly linked from the National Accounts publication pages, including hyperlinks to the information and briefing that was provided to users at the time of the revisions or corrections, outlining the changes and reasons underpinning them (para 3.6).
3	Review the content and presentation of <i>A guide to the Supply and Use process</i> to make it easier for users to understand (para 3.20).
4	More clearly signpost <i>How is GDP calculated?</i> from the various SUT sections of its website and the relevant SUTs and IOATs publications and documents (para 3.20).
5	Publish a more-detailed guide to SUTs and IOATs (para 3.21).
6	Add links to the user guides from <i>SUT</i> and <i>IOAT</i> (para 3.21).

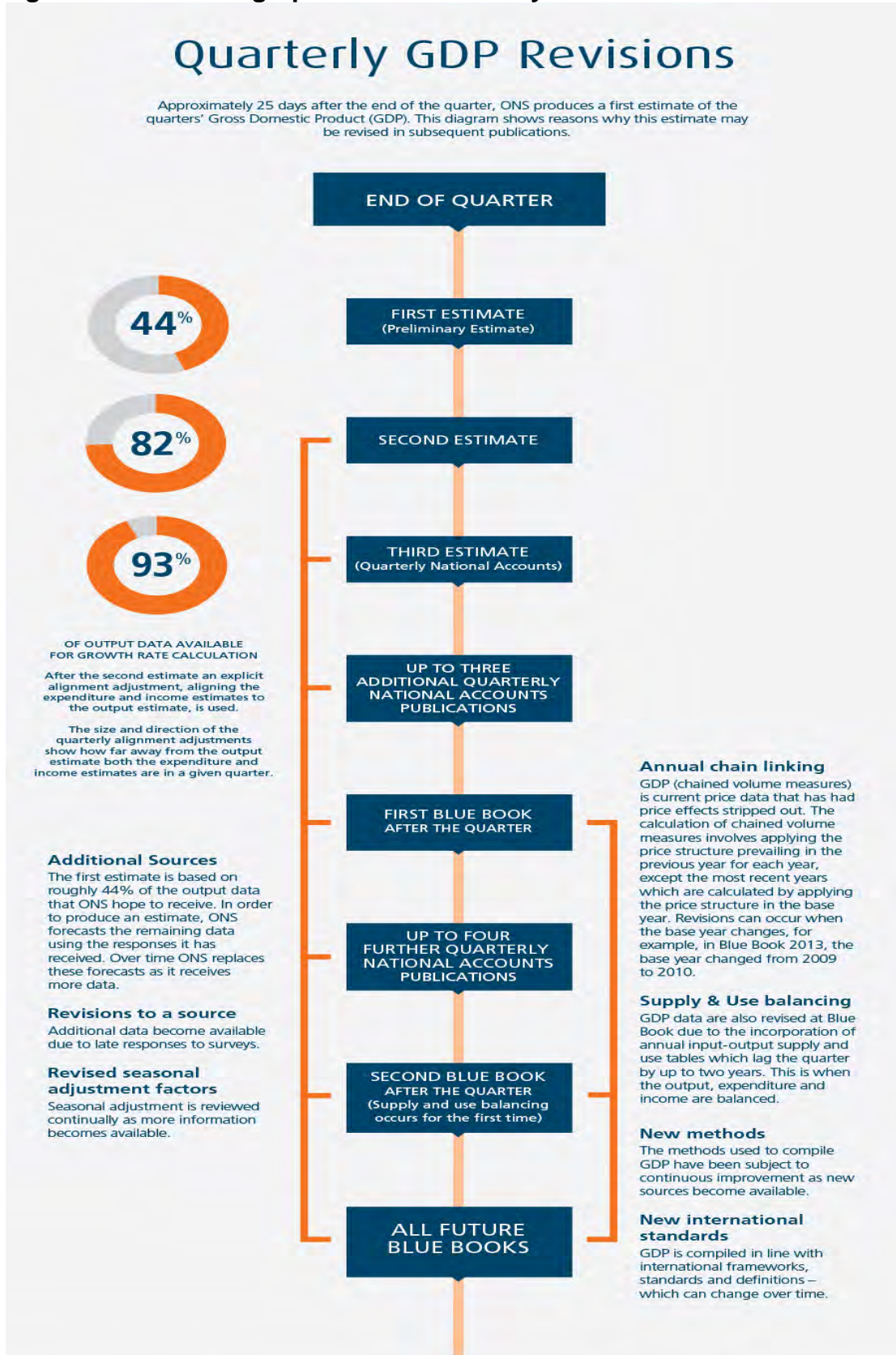
2 Subject of the assessment

- 2.1 ONS produces the UK Annual and Quarterly National Accounts (the National Accounts) using an accounting framework that provides a systematic and detailed statistical description of the UK economy. From September 2014, the accounting framework adopts the concepts and definitions in the European System of National and Regional Accounts 2010⁹ (ESA 2010). ESA 2010 is consistent with the United Nations' System of National Accounts 2008¹⁰ (2008 SNA) but includes some differences, making it more suitable for implementation within the EU where it is a legal requirement for countries to base the compilation of their national accounts on ESA 2010.
- 2.2 The first UK official national accounts were developed during the Second World War and the UN introduced international guidelines shortly thereafter in 1947 to promote better comparisons of economic indicators. By agreeing on the definition of different monetary transactions, such as what counts as investment by businesses, National Accounts figures became broadly comparable between countries. The annual National Accounts (Blue Book) was first published in 1952 and during the late 1980s the compilation of the National Accounts was centralised in the Central Statistical Office (the predecessor to the ONS).
- 2.3 The National Accounts describe the complex transactions in the economy among four main participants: individual households, government, legal entities (such as companies) and institutions outside the UK border (known as the rest of the world). ONS groups participants into sectors, for example, the government sector and the household sector, and the National Accounts include grouped economic transactions between these sectors. Examples of transactions include government expenditure, interest payments, capital expenditure and a company issuing shares. The National Accounts framework, covering the UK economy as a whole, as well as individual sectors, brings these sectors and transactions together to provide a coherent and consistent description of output, income, consumption and wealth.
- 2.4 The National Accounts contain the components required to compile aggregate measures of economic activity, such as gross domestic product (GDP). GDP is a measure of the value of all the economic activity in the UK in a particular time period. ONS estimates GDP in three different ways, based on the availability of different data sources, and it gives priority to presenting a single estimate. All three approaches should, in theory, produce the same estimate of GDP. Different data sources are used for each approach, which leads to the estimates containing errors and omissions. There are therefore a number of revisions to the estimate of GDP and its components as more data sources become available, leading to a more reliable estimate. ONS has published an infographic about quarterly GDP revisions, explaining this process as in Figure 2.1 below:

⁹ <http://ec.europa.eu/eurostat/web/esa-2010/overview>

¹⁰ <http://unstats.un.org/unsd/nationalaccount/sna.asp>

Figure 2.1: ONS Infographic about Quarterly GDP revisions



- 2.5 The headline statistics in the National Accounts statistical reports are:
- annual and quarterly GDP estimates of levels and growth
 - annual and quarterly sector and financial accounts
 - financial and non-financial balance sheet
- 2.6 ONS publishes its first (or preliminary) estimate of GDP using the production approach¹¹ around 25 days after the reference quarter in *Gross Domestic Product: Preliminary Estimate*¹². This estimate incorporates only 44 per cent of the output data that ONS expects to receive in total. ONS forecasts the remaining 56 per cent of data based on the data received up to that point. The *Second Estimate of GDP* improves on the preliminary estimate, using around 80 per cent actual output data. ONS publishes the *Second Estimate of GDP* around 55 days after the end of the quarter to which the estimate relates. Actual data in the *Second Estimate of GDP* replaces much of the forecast data used in producing the preliminary estimate. The *Quarterly National Accounts (QNA)* presents a third estimate of GDP (Month 3 estimates) for the quarter and includes, for the first time, information on the expenditure¹³ and income¹⁴ approaches to GDP for the quarter. Also included in *QNA* are data on the institutional sector accounts, including the household savings ratio and real household disposable income. ONS updates its third estimates in subsequent releases of *QNA* leading eventually to the first annual estimate of GDP in *Blue Book*¹⁵, normally around six months after the end of the calendar year.
- 2.7 ONS publishes *United Kingdom Economic Accounts* on the same day as *Quarterly National Accounts* and the report provides detailed quarterly estimates of national output, income and expenditure for the UK and contains much of the information in the *Quarterly National Accounts* and the *Balance of Payments*¹⁶, as well as significant amounts of data not elsewhere available. This extra content includes non-seasonally adjusted components of GDP, detailed quarterly sector accounts and detailed quarterly balance of payments data. It contains tables showing the main aggregates of GDP and balance of payments, plus income and capital accounts, financial accounts and financial balance sheets by sector.
- 2.8 *Blue Book* is the flagship annual publication for the UK National Accounts. *Blue Book* includes supply and use tables for all but the most recent year and annual versions of the key national accounts aggregates in the *UK Economic Accounts*. Included in *Blue Book* is a special chapter devoted to extra public sector data and a chapter devoted to the environmental accounts. The annual *Blue Book* production process also provides the opportunity for ONS to introduce major methodological or conceptual changes. The *Blue Book* estimate of GDP takes account of new and more comprehensive annual data

¹¹ The production approach measure is the sum of value added through the production of goods and services within the economy

¹² <http://www.ons.gov.uk/ons/rel/gva/gross-domestic-product--preliminary-estimate/q3-2014/index.html>

¹³ The expenditure approach measures the total final expenditure on all finished goods and services produced within the economy

¹⁴ The income approach measures the total income generated by the production of goods and services within the economy. This includes income earned by companies, employees and the self-employed

¹⁵ <http://www.ons.gov.uk/ons/rel/naa1-rd/united-kingdom-national-accounts/the-blue-book--2014-edition/index.html>

¹⁶ <http://ons.gov.uk/ons/taxonomy/index.html?nscl=Balance+of+Payments>

sources than those used to produce the preliminary, the second and the quarterly estimates of GDP. *Blue Book* provides detailed annual estimates of national output, income and expenditure for the UK for the most recent nine years. It provides full accounts by sector, including financial and non-financial corporations, central and local government and households.

- 2.9 The SUTs are a set of matrices that show the structure of the economy, including the flow of goods and services and the relationships and interdependencies between producers and consumers. They provide the main macroeconomic aggregates, such as GDP, components of value added, output by industry, imports, and exports, within a consistent and balanced set of tables. The Supply table shows the output of each product by each industry, and imports of products, distributors' trade margins on products and taxes less subsidies on products. The Use table shows the demand for each product by each industry, consumers, government and exports, along with the income components of Gross Value Added for each industry, such as labour costs and profits. The SUTs are built up from a range of different data sources, including survey and administrative data produced by ONS, other government departments, and other external sources.
- 2.10 One of the key uses of the SUTs is to reconcile the three different approaches to estimating GDP. Until the SUTs are produced there remain 'statistical discrepancies' between the three estimates of GDP; the production approach, the income approach and the expenditure approach. Since the SUTs provide a comprehensive view of the whole of the economy, they are the only data source that can be used to estimate GDP using all three approaches. The statistics team are able to remove these discrepancies through the process of balancing the SUTs. ONS uses the supply and use framework to investigate the differences between the estimates of supply and use of different products to different industries. This balancing process results in a single, reconciled estimate of GDP which the output, income and expenditure data informs. ONS then publishes the annual estimates from supply and use balancing in *Blue Book* around 18 months after the end of the year¹⁷.
- 2.11 After the SUTs are produced they are then used to derive the IOATs. The IOATs consist of an Input-Output table, which describes how products are used to produce further products in order to meet final demand, along with other tables that are derived from the Input-Output table. The IOATs are a useful tool in conducting economic modelling, for example, studies into relative price changes, or the impact of changes in final demand of a certain product on the economy as a whole.
- 2.12 The latest sets of SUTs and IOATs are fully compliant with the concepts and definitions defined in the European System of National and Regional Accounts 1995¹⁸ (ESA 1995), which are in turn consistent with the United Nations' System of National Accounts 1993¹⁹ (1993 SNA). From September 2014, ONS has begun to implement the necessary changes to bring the SUTs in line with ESA 2010. This development work is due to be completed in 2019, after which the SUTs, and subsequently the IOATs, will be fully compliant with ESA 2010.

¹⁷ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/national-accounts/a-guide-to-supply-and-use-process/index.html>

¹⁸ <http://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/-/CA-15-96-001>

¹⁹ <http://unstats.un.org/unsd/nationalaccount/sna1993.asp>

Both the Supply and the Use tables are broken down into 114 industry groups by 114 product groups. These industry and product groups are classified using the UK Standard Industrial Classification 2007²⁰ (SIC 2007), and the Statistical Classification of Products by Activity 2008²¹ (CPA 2008), which are used across the European Union for the classification of economic activities²² (NACE Rev.2).

- 2.13 Integrated within the system of National Accounts are many other sets of statistics not in the scope of this assessment, all of which have been the subject of assessments by the UK Statistics Authority. These are the Balance of Payments²³; Retail Sales²⁴; Short-Term Economic Output Indicators²⁵; Prodcom²⁶; International Transactions²⁷; Public Sector Finance statistics²⁸ and UK Environmental Accounts²⁹.
- 2.14 Business, research and education communities, the media and the public use the National Accounts to provide a basis for analysing the UK's economic performance. The statistics make it possible to monitor the major economic flows such as output, consumption and saving by individual sectors of the economy or the economy as a whole. The National Accounts aid the investigation of the causal mechanisms at work within the economy through macroeconomic models and can lead to economic forecasts. Assessments of the recent behaviour and current state of the economy and forecasts of likely future trends help in the formulation of the UK's economic policy. The Bank of England uses the National Accounts in setting monetary policy and HM Treasury uses them in setting wider economic policy. The Office for Budget Responsibility (OBR) uses the National Accounts to make independent assessments of the public finances and the economy for each Budget and Autumn Statement.
- 2.15 Economists, journalists and a wide range of organisations and individuals use the statistics to assess the performance of the UK economy. The statistics influence popular and political judgements about the success of economic policy. Private businesses use statistics from the National Accounts in deciding

²⁰ <http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/standard-industrial-classification/index.html>

²¹

http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=CPA_2008&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC

²² <http://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/-/KS-RA-07-015>

²³ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-45---balance-of-payments-statistics.pdf>

²⁴ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-279---statistics-on-retail-sales.pdf>

²⁵ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-278---statistics-on-gdp--iop-and-ios.pdf>

²⁶ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-233---statistics-on-uk-manufacturers--sales-by-product--prodcom-.pdf>

²⁷ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-164---statistics-on-international-transactions.pdf>

²⁸ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-144---statistics-on-public-sector-finances.pdf>

²⁹ <http://www.statisticsauthority.gov.uk/assessment/assessment/assessment-reports/assessment-report-118---environmental-accounts.pdf>

between alternative investment options, and banks use the statistics when making decisions about lending and borrowing and when advising clients.

- 2.16 Large parts of the National Accounts have legal standing in the European Union (EU). Gross National Income (GNI) forms part of the National Accounts and the EU uses the GNI as the basis for assessing how much the UK should contribute to the EU's budget. The statistical office of the EU (Eurostat) and the European Central Bank (ECB) use UK National Accounts as data sources for the consolidated EU accounts that they compile. The International Monetary Fund (IMF) uses the UK's National Accounts as part of its monitoring of the stability and sustainability of international markets.
- 2.17 In order to supplement the core National Accounts, ONS also compiles satellite accounts to cover activities linked to the economy, but separate from the core accounts. Satellite accounts analyse specific types of activity or the impact of certain activities in a wider, not necessarily purely economic, context. In the UK National Accounts framework, the only satellite accounts currently produced are the environmental accounts³⁰ (which ONS publishes separately, in addition to the summary form in *Blue Book*); the experimental tourism satellite account³¹ and the household satellite account³².
- 2.18 ONS draws together data from many different sources to compile the National Accounts. These different sources not only help to ensure that the National Accounts are comprehensive, but they provide different perspectives on the economy, for example, sales by retailers and purchases by households. By comparing and contrasting these different sources, the National Accounts present a view of the economy which is consistent and coherent.
- 2.19 ONS itself produces many of the data sources for the National Accounts, including the following:
- The Inter-Departmental Business Register (IDBR)³³, which holds information on over two million enterprises, and is used as a sampling frame and source of general information for ONS's business surveys
 - The Monthly Business Survey³⁴, which is the primary data source for the output measure of GDP
 - The two primary sources of data for Household Final Consumption Expenditure, which are the Retail Sales Inquiry³⁵ and the Living Costs and Food Survey³⁶

The main sources of prices data are the Consumer Prices Index³⁷, the Producer Price Indices³⁸ and the Services Producer Price Indices³⁹.

³⁰ <http://www.ons.gov.uk/ons/rel/environmental/uk-environmental-accounts/index.html>

³¹ <http://www.ons.gov.uk/ons/rel/tourism/tourism-satellite-account/index.html>

³² <http://www.ons.gov.uk/ons/rel/wellbeing/household-satellite-accounts/index.html>

³³ <http://www.ons.gov.uk/ons/about-ons/products-and-services/idbr/index.html>

³⁴ <http://www.ons.gov.uk/ons/about-ons/get-involved/taking-part-in-a-survey/information-for-businesses/a-to-z-of-business-surveys/monthly-business-survey--production-and-services-/index.html>

³⁵ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/retail-sales/index.html>

³⁶ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/social-and-welfare-methodology/living-costs-and-food-survey/index.html>

³⁷ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/consumer-price-indices/index.html>

³⁸ <http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Producer+Price+Indices>

³⁹ <http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Services+Producer+Price+Indices>

- 2.20 Other important sources of data for the National Accounts include the Annual Survey of Hours and Earnings⁴⁰ (ASHE), the Annual Business Survey⁴¹ (ABS) and the International Passenger Survey⁴² (IPS). External suppliers of data include HM Revenue & Customs (which provides ONS with data on wages and salaries) and the Bank of England (which provides ONS with a range of financial data).
- 2.21 The move from the 1995 version of ESA to ESA 2010 reflects significant changes to the international standards adopted by all EU Member States. National Statistical Institutes such as ONS for the UK have introduced these new standards, along with other improvements, to ensure that the UK National Accounts produce consistent, comparable and reliable economic statistics. ESA 2010 introduces a number of new concepts including reclassifying, for example, research and development and weapons systems expenditure as investments rather than expenditure. EU Member States are also required to produce data on the treatment of pension entitlement which under the new standards they now recognise as liabilities. The new standards also result in changes to table layouts, the addition of new time series and the removal of others. The scale of the developments brought about by the adoption of these new standards made the programme of changes one of the most demanding the ONS has faced in recent years.
- 2.22 ONS publishes *SUT* and *IOAT* in PDF, with time series data tables published in Excel formats. This equates to a level of two stars under the Five Star Scheme that forms part of the Open Standards Principles proposed in the *Open Data White Paper: Unleashing the Potential*⁴³ and adopted as UK government policy in November 2012⁴⁴. Five stars represent the highest star rating within the Scheme.
- 2.23 The total staff working on National Accounts, including compilation areas and all the development areas for ESA 2010 methods and systems changes, is 238 (this excludes regional accounts, public sector finances and balance of payments).

⁴⁰ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/labour-market/annual-survey-of-hours-and-earnings/index.html>

⁴¹ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/business-and-energy/annual-business-survey/index.html>

⁴² <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/travel-and-transport-methodology/international-passenger-survey-methodology/index.html>

⁴³ http://data.gov.uk/sites/default/files/Open_data_White_Paper.pdf

⁴⁴ <https://www.gov.uk/government/publications/open-standards-principles/open-standards-principles>

Assessment findings

Principle 1: Meeting user needs

The production, management and dissemination of official statistics should meet the requirements of informed decision-making by government, public services, business, researchers and the public.

- 3.1 ONS does not actively engage with users to ensure that the Supply and Use Tables (SUTs) and the Input-Output Analytical Tables (IOATs) sufficiently meet their requirements. ONS has set up a generic inbox which users of the SUTs and IOATs use to ask a range of technical questions. ONS told us that it uses this inbox to respond to users' queries and 'to inform key users about upcoming publications and changes'. However, users told us that they would like more engagement with ONS. In particular, they would like the opportunity to feed into ONS's future development of the SUTs and IOATs and quality assurance aspects of their production, in order to enhance the quality of the products and to maximise the potential uses.
- 3.2 The SUTs and IOATs statistical team is represented on a Purchases Survey User Group, which is led by another division of ONS – the Business Outputs Division. The Purchases Survey is a new survey to replace the Purchases Inquiry, which is a key data source of the SUTs (see para 3.10). The main aim of the Purchases Survey User Group will be to identify the external requirements of the Purchases Survey data and highlight any risks or issues associated with ONS's current plans for implementation. This will include feeding into discussions on survey and questionnaire design to maximise the use of the Purchases Survey data, and carrying out quality assurance of the new data to ensure that they are fit for purpose. The group currently consists of key users from within ONS and other government departments, such as Department of Energy and Climate Change (DECC), Department for Business, Innovation and Skills (BIS), Department for Environment, Food and Rural Affairs (Defra) and representatives from the three devolved administrations, as well as the Bank of England. ONS told us that it plans to extend the membership to cover a broader user group. The group has met twice, in August and October 2014, but ONS has not included any papers from the group on its website. As members of this group, the SUTs and IOATs statistical team told us that it plans to use this group, in the short term, to engage with users and gauge their views on the Purchases Survey and the impact that it will have on the SUTs, and to discuss any other key concerns that users may have about the SUTs. In the longer term, ONS told us that it is considering setting up a UK SUT User Group to gather insight and intelligence on SUTs from academia, the business sector and other government departments. ONS told us that it plans for the membership of the UK SUT User Group to be the same as the Purchases Survey User Group. Currently the Purchases Survey User Group only contains one member that does not come from a government department and therefore it does not represent the views of the wider user group, such as external consultants or academics. ONS is currently a member of the Scottish Government Input-Output Expert Users Group (IOEUG), which meets about twice a year to develop an understanding of the range of uses of the Scottish Supply Use and Input-Output tables and to discuss developmental work and

new analysis on SUTs and IOATs. ONS told us that it is considering whether the membership of its UK SUT User Group might be based on that of the Scottish Government IOEUG, extended to include additional membership from the rest of the UK as well as from the business sector. As part of the designation as National Statistics, ONS should: a) take steps to engage more effectively with users of the SUTs and IOATs; b) publish documentation on the Purchases Survey User Group to its ONS website; and c) set up a UK SUT User Group, which includes key users, both from within and outside government, of SUTs and IOATs, to identify key uses of the data and inform future developmental work⁴⁵ (Requirement 1).

- 3.3 The introduction of ESA 2010, CPA 2008 and SIC 2007 has led to a range of changes to definitions and methodologies related to the SUTs. The introduction of SIC 2007 required substantial changes to be made to the structure of the SUTs with regards to the number of industries and the detail of the breakdowns. In 2009, as part of its preparation for introducing SIC 2007, ONS carried out a consultation with key users in other government departments, such as HM Treasury, HM Revenue & Customs and the Bank of England, to establish the level of product and industry detail required by users in the SUTs. ONS told us that it also consulted with some organisations outside of government, such as the Chemical Industry Association. However ONS did not open this consultation up to a wider range of users, either via a notice on its website, or through emailing known users, to assess how these changes might impact on their interpretation and use of the statistics. As part of the designation as National Statistics, ONS should: a) consult users on future changes to the production and publication of the SUTs; and b) take full account of users' views in publishing future SUTs⁴⁶ (Requirement 2).
- 3.4 ONS does not publish information specifically on the uses of the SUTs and IOATs, the extent to which the full range of users' needs are met through the published statistics, or users' views of the statistics. ONS has published some information on uses and users of the *Quarterly National Accounts* in its Quality and Methods Information (QMI)⁴⁷, but this QMI does not provide specific examples of how the SUTs or IOATs have been used by different types of users. As part of the designation as National Statistics, ONS should publish information about the uses, users, and users' views of the SUTs and IOATs⁴⁸ (Requirement 3). As part of meeting this Requirement ONS should refer to the types of use put forward in the Statistics Authority's Monitoring Brief, *The Use Made of Official Statistics*⁴⁹.

⁴⁵ In relation to Principle 1, Practice 1 of the *Code of Practice*

⁴⁶ In relation to Principle 1, Practice 1 and Protocol 1, Practice 7 of the *Code of Practice*

⁴⁷ <http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/economic-statistics/gross-domestic-product--gdp-.pdf>

⁴⁸ In relation to Principle 1, Practices 2 and 5 of the *Code of Practice*

⁴⁹ <http://www.statisticsauthority.gov.uk/assessment/monitoring/monitoring-reviews/monitoring-brief-6-2010---the-use-made-of-official-statistics.pdf>

Principle 2: Impartiality and objectivity

Official statistics, and information about statistical processes, should be managed impartially and objectively.

- 3.5 ONS has published a National Accounts revisions policy, which focuses on how ONS deals with planned revisions – which are a result of updated data or methods. ONS has not published a policy explaining how it handles corrections – which is where an error has been identified in either the data or the methods. For example, ONS told us that only errors that have an impact on the headline aggregate data are corrected immediately; due to the time-consuming and complex nature of the production process of SUTs and IOATs all other corrections are made as part of the next set of tables.
- 3.6 The SUTs and IOATs contain a vast array of data from a range of different sources. The process of compiling and balancing the tables is complex and requires informed judgements to be made by the 15-20 members of ONS's staff who are involved in it. As a result the tables can contain entries which may appear to be implausible, for example, the 2011 edition of the tables showed no purchases of wood by the paper manufacturing industry. There appears to be a lack of transparency by ONS with regards to these apparently implausible entries found in the data. The statistics team told us that when users report implausible entries, or errors, that have a very significant impact on the SUTs and IOATs, ONS updates its website with a revised version of the statistical report and issues a statement that explains the reason for the amendment. For example, an error was found in table 6 in *SUT 2012*⁵⁰, which ONS quickly corrected and included a statement on its website to alert users to the error. However the reason for the correction, or the magnitude of the error, was not clearly explained. Users also told us of occasions when they had alerted ONS to other implausible entries in SUTs and IOATs but that ONS had deemed these to be minor and therefore had not made any amendments. ONS did not make other users aware of these issues, or the impact that they may have on the use made of these statistics. The NSQR report also identified this as an issue and has made two suggestions with regards to errors and corrections. These suggestions are:
- '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; and
 - 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.'

As part of the designation as National Statistics, ONS should: a) respond promptly to users' concerns over potential implausible entries or errors in the data, including an explanation about the issue that has been raised; and b) if an error has occurred, alert users to the error and provide an explanation about

⁵⁰ <http://www.ons.gov.uk/ons/rel/input-output/input-output-supply-and-use-tables/commentary-on-supply-and-use-balanced-estimates-of-annual-gdp--1997-2011/index.html>

how it will be dealt with⁵¹ (Requirement 4). We suggest that ONS publish a specific corrections policy for SUTs and IOATs explaining under what circumstances the tables will be corrected, and link to these from the associated statistical reports. We further suggest that ONS investigate publishing a specific methods and classification revisions and corrections history for its National Accounts outputs, clearly linked from the National Accounts publication pages, including hyperlinks to the information and briefing that was provided to users at the time of the revisions or corrections, outlining the changes and reasons underpinning them.

- 3.7 *SUT* informs users of the introduction of ESA 2010 regulations to the SUTs next year, which will involve some significant changes to methods and classifications. ONS told us that it plans to publish a more-detailed document explaining what these changes are and the impact that they are likely to have on the statistics.

⁵¹ In relation to Principle 2, Practice 7 of the *Code of Practice*

Principle 3: Integrity

At all stages in the production, management and dissemination of official statistics, the public interest should prevail over organisational, political or personal interests.

- 3.8 No incidents of political pressures, abuses of trust or complaints relating to professional integrity, quality or standards were reported to, or identified by, the Assessment team.

Principle 4: Sound methods and assured quality

Statistical methods should be consistent with scientific principles and internationally recognised best practices, and be fully documented. Quality should be monitored and assured taking account of internationally agreed practices.

- 3.9 One of the key data sources used in the production of the SUTs is the Purchases Inquiry (PI), which was formerly an annual survey of the purchases made by businesses for use in their production process (this is called intermediate consumption), by industry. It is used to provide more-detailed product breakdowns of the Annual Business Survey (ABS) purchases data, which is the main data source for many of the industries within the SUTs. In 2007 the PI was suspended to reduce costs as part of ONS's drive to make efficiency savings. This suspension was expected to be for one year only but the survey has not yet been reinstated. The last fully processed and quality assured purchases data relate to 2004. Current estimates of industries' intermediate consumption by product do partially reflect current patterns of intermediate consumption by businesses, since the ABS data, which include 18 categories of products purchased by industries, is updated on an annual basis. However, they do not take account of more detailed changes in the purchases made by businesses in some industries over the last ten years. For example, advances in technology have resulted in large changes to the product purchases of certain industries since 2004, which are not wholly accounted for in the SUTs. The lack of up-to-date data means that the SUTs, and subsequently the IOATs, which are based on the SUTs, do not take full account of changes to the economy since 2004, which may have a substantial impact on the tables and how they should be interpreted. It also means that ONS does not meet the EU guidance⁵², that source data used to produce the SUTs should be updated at least every five years.
- 3.10 ONS told us that in order to compensate for the lack of up-to-date PI data it has 'made greater use of internal and expert user knowledge when making improvements to the granular balances, by taking on board comments from the BBQAG (Blue Book Quality Assurance Group) and external stakeholders in academia'. ONS has also undertaken a range of methodological changes to the production of the SUTs due to the introduction of ESA 2010, SIC 2007 and CPA 2008. ONS in its *Commentary on the Supply and Use balanced estimates of annual GDP, 1997-2011*⁵³ states that the main aggregate estimates, GVA and GDP, and the broad industry and product-level estimates are robust. Due to the range of measures taken by ONS to mitigate the effects of the lack of up-to-date detailed PI data, the Assessment team is sufficiently reassured that ONS has maintained the principal utility of the Supply and Use Tables – to provide a framework for the statisticians to confront and balance estimates of supply and demand at a broad level of aggregation in the production of the National Accounts. However, the Assessment team considers that the lack of up-to-date PI data means that detailed information within the SUTs and IOATs are not of sufficient quality to meet the *Code*. The NSQR gave a high priority to

⁵² <http://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/-/KS-RA-07-013>

⁵³ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/input-output/articles-and-analyses/commentary-on-supply-and-use-balanced-estimates-of-annual-gdp--1997-2011.pdf>

the ‘urgent re-instatement of the PI or some alternate data source that provides input data on a frequency dependent on the pace of change in the industry’⁵⁴. In order to meet the recommendations made in the NSQR, and to comply with the EU guidance, ONS has made the decision to (a) set up a new annual PI (which will be renamed as the Purchases Survey) and (b) investigate interim improvements to measures of industry intermediate consumption by product. The article *A New ONS Business Survey to Collect Purchases Data*⁵⁵ provides a timetable for delivery of new purchases data. The new survey is expected to be reinstated in 2016, with the first set of available data due in early 2017 at the earliest. As part of the designation as National Statistics, ONS should update the 2004 Purchases Inquiry data used in the production of SUTs with data from the latest Purchases Survey, or an alternative data source, when they become available⁵⁶ (Requirement 5). In Assessment Report 299, the Authority required that ONS publish its development plans for resuming the Purchases Survey, and update the *GDP Quality and Methodology Information*⁵⁷ to discuss the likely effects on the quality of the GDP statistics caused by the lack of up-to-date purchases data.

- 3.11 ONS has received examples of concerns on behalf of users about the quality of the SUTs, including some examples of implausible entries. The latest set of SUTs has corrected these issues. However a more thorough quality assurance process may have prevented these from being published in previous years. ONS told us that it has recently made improvements to its quality assurance processes, including incorporating the expertise of external experts and a wide range of expert analytical staff within ONS. As part of the designation as National Statistics, ONS should publish documentation on the actions that it has taken to improve its quality assurance processes to ensure that implausible entries do not appear in published tables⁵⁸ (Requirement 6).
- 3.12 Due to the introduction of ESA 2010, ONS is now required to produce SUTs at Previous Year’s Prices (PYP) on an annual basis. The NSQR made some recommendations on systems improvements that ONS should carry out, along with a work plan, to enable it to achieve this by 2017.
- 3.13 The NSQR also made a recommendation regarding how ONS allocates adjustments to estimates of output as part of the SUT balancing process; the adjustments are currently only made to the services sector and not to production or other sectors. The NSQR judged that, since the measurement of the service sector is now much better, the present approach is outdated and made a high priority recommendation for a change in the process. ONS said in its response to the NSQR⁵⁹, that this practice reflected a position where the

⁵⁴ See paragraph 4.2.1.1 of the NSQR <http://www.ons.gov.uk/ons/rel/naa1-rd/national-statistics-quality-review/-nsqr-series--2--report-no--2--review-of-national-accounts-and-balance-of-payments/index.html>

⁵⁵ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/national-accounts/articles/2011-present/a-new-business-surve-to-collect-purchases-for-intermediate-consumption.pdf>

⁵⁶ In relation to Principle 4, Practices 2 and 6 of the *Code of Practice*

⁵⁷ <http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/economic-statistics/gross-domestic-product--gdp-.pdf>

⁵⁸ In relation to Principle 4. Practice 1 of the *Code of Practice*

⁵⁹ <http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-reviews/list-of-current-national-statistics-quality-reviews/ons-response-to-national-statistics-quality-review-of-national-accounts-and-balance-of-payments.pdf>

service sector was a smaller part of the UK economy and there was smaller coverage by ONS surveys. ONS has undertaken to change this process but has not yet published the timescales for this change.

- 3.14 The SUTs and IOATs are currently compiled in line with ESA95⁶⁰, using SIC 2007 industry classifications and CPA 2008 product classifications. They are therefore consistent with the annual Scottish SUTs and IOATs⁶¹, produced by the Scottish Government. In 2010, the Welsh Economy Research Unit of Cardiff Business School published *Input-Output tables for Wales 2007*⁶², and in 2007, the Economic Research Institute of Northern Ireland derived Northern Ireland Input-Output tables for 2004⁶³, which are based on the UK SUTs for 2004. The Wales and Northern Ireland tables are not wholly consistent with the latest UK SUTs and IOATs but may still provide users with useful comparisons. Additionally, the World Input-Output Database (WIOD)⁶⁴ contains input-output tables for the world as a whole and for 40 individual countries. ONS does not provide comparisons with, or links to, SUTs or IOATs from other countries. As part of the designation as National Statistics, ONS should provide users with links from *SUT* and *IOAT* to equivalent statistics for other countries where available⁶⁵ (Requirement 7).

⁶⁰ See footnote 18

⁶¹ <http://www.scotland.gov.uk/Topics/Statistics/Browse/Economy/Input-Output>

⁶² http://business.cardiff.ac.uk/sites/default/files/IO_2007_Final_30_6.pdf

⁶³ <http://eservices.afbini.gov.uk/erini/pdf/EriniMon32.pdf>

⁶⁴ http://www.wiod.org/new_site/home.htm

⁶⁵ In relation to Principle 4. Practice 6 of the *Code of Practice*

Principle 5: Confidentiality

Private information about individual persons (including bodies corporate) compiled in the production of official statistics is confidential, and should be used for statistical purposes only.

- 3.15 The statistics team itself does not collect any of the data used to compile the National Accounts; other ONS areas or external suppliers provide the data. Suppliers provide the ONS statistics team with the data at an aggregated level with means that data remains confidential. ONS has assured us that it takes all necessary steps to protect the confidentiality of the data that it collects. For example, ONS considers some of the data in the detailed Supply table (114 industries by 114 products) to be commercially sensitive and therefore ONS publishes only an aggregated table (10 industries by 10 products).

Principle 6: Proportionate burden

The cost burden on data suppliers should not be excessive and should be assessed relative to the benefits arising from the use of the statistics.

3.16 ONS estimated and reported the costs of responding to statistical surveys used as data sources for the National Accounts in its annual compliance plans in 2011/12 at approximately £1.4 million for the ABS, which is the principal business data source for the statistics in *SUT* and *IOAT*. ONS is introducing a new programme of Electronic Data Collection⁶⁶, which it expects will increase online data collection for both business and social surveys.

⁶⁶ <http://www.ons.gov.uk/ons/media-centre/statements/government-major-projects-portfolio-data-for-ons--2014/office-for-national-statistics-data---xls-format.xls>

Principle 7: Resources

The resources made available for statistical activities should be sufficient to meet the requirements of this Code and should be used efficiently and effectively.

- 3.17 The retention of statistical and technical skills is a significant challenge for many National Statistical Institutes. Users expressed some concerns to the Assessment team and to the NSQR team about the levels of technical expertise and the recruitment and retention of experienced staff. The re-assessment of the Short-term Economic Output Indicators (STEOI)⁶⁷ required ONS to present evidence that its recruitment and retention arrangements ensure that:
- appropriately skilled people are employed and retained in the production of the short-term economic output indicators; and
 - are based on an appropriate competence framework.
- 3.18 ONS told us that, following the STEOI assessment, it now targets recruitment of appropriately skilled candidates through relevant social media, increasing the number of economists, and developing a strategic workforce plan. ONS has identified an additional need to develop increasing numbers of specialist roles and move away from generalist and administrative roles while it transforms its data collection operation. ONS also told us that in order to resolve resource issues within National Accounts, a National Accounts Resources Working Group has initiated activities aimed at addressing matters such as recruitment, retention and capability. National Accounts senior managers monitor resources at weekly meetings and at the National Accounts Management Board, and take action as required. We welcome the action that ONS has been taking following the re-assessment of the Short Term Economic Output Indicators and see these as positive steps in conserving and developing the necessary skills to produce the National Accounts to a high standard.

⁶⁷ See footnote 25

Principle 8: Frankness and accessibility

Official statistics, accompanied by full and frank commentary, should be readily accessible to all users.

- 3.19 ONS's website contains a comprehensive library of information about methods and quality on National Accounts and each of the National Accounts statistical reports has its own product page. The SUTs webpage⁶⁸ is a useful tool for bringing together all the relevant documents relating to this topic; however it is currently not being used as effectively as it could be. The Summaries and Publications tab is not kept up to date; as at 11 January 2015, the latest publications on it are dated from January 2014, rather than the most recent *IOAT* and *SUT*, which were published in February 2014 and October 2014 respectively. This page is also inconsistent with the Input-Output Supply and Use Tables page⁶⁹ in the Release Calendar section of ONS's website, which contains a different list of publications on SUTs and IOATs. The SUTs webpage also contains no links to relevant articles or information on data sources, methodology and quality, some of which can be found in the Input-Output UK National Accounts pages⁷⁰ in the Guidance and Methodology section of ONS's website. Additional relevant documents can also be found in the National Accounts Guidance and Methodology section of the ONS website⁷¹. However, there are no clear links to or from this page and the equivalent Input-Output UK National Accounts webpage. As part of the designation as National Statistics, ONS should improve the accessibility of the SUTs and IOATs, including links to relevant documents to aid users' interpretation and understanding of the statistics⁷² (Requirement 8).
- 3.20 ONS has published *A guide to the Supply and Use process*⁷³, which it intends should provide more-accessible information about the methods used to produce the SUTs. There is scope to make this guide more user-friendly by simplifying the language (including by explaining some of the technical terms, such as 'final demand'), and supplementing the text with some diagrams and flowcharts. For example, the infographic *How is GDP calculated?*⁷⁴ is a simple illustration of the supply and use balancing process, which could usefully be included in *A short guide to the Supply and Use process*. We suggest that ONS review the content and presentation of *A short guide to the Supply and Use process* to make it easier for users to understand. We also suggest that ONS more clearly signpost *How is GDP calculated?* from the various SUT sections of its website and the relevant SUTs and IOATs publications and documents.
- 3.21 ONS has published a variety of documents that contain varying levels of detail on data sources, methodology and quality assurance of SUTs and IOATs. Some of the information relating to SUTs and IOATs is contained within documents relating to other elements of National Accounts and is difficult for

⁶⁸ <http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Supply+and+Use+Tables#tab-sum-pub>

⁶⁹ <http://www.ons.gov.uk/ons/rel/input-output/input-output-supply-and-use-tables/index.html>

⁷⁰ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/input-output/index.html>

⁷¹ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/national-accounts/index.html>

⁷² In relation to Principle 8, Practice 4 of the *Code of Practice*

⁷³ See footnote 17

⁷⁴ <http://www.ons.gov.uk/ons/rel/naa2/second-estimate-of-gdp/q4-2013/sty-calculating-gdp.html>

users of SUTs and IOATs to find. *A guide to the Supply and Use process* helps to bring together some of this information into a simple user guide to aid interpretation for non-expert users. However, a more-detailed user guide or methodology document, which brings together the more technical information from the various different sources, including information on data sources and methodology, would be useful for expert users. We suggest that ONS publish a more-detailed guide to SUTs and IOATs. We also suggest that ONS add links to the user guides from *SUT* and *IOAT*.

- 3.22 GDP can be estimated using three approaches: the production approach, income approach and expenditure approach (see para 2.6). The SUTs are the only data source that can measure GDP using all three approaches, and they are primarily used by ONS to balance these three different measures in order to produce a single estimate of GDP, synthesised from the three approaches. The commentary that accompanies the tables is in the form of an article, *SUT*, which focuses on the revisions made to the GDP figures as a consequence of the SUTs. It therefore does not conform to the standards of a statistical report set by the UK Statistics Authority⁷⁵. For example it does not highlight the main issues and key messages to be taken from the latest set of SUTs, it does not contain information about short- and long-term trends, the strengths and limitations of the statistics or add any context. *IOAT* includes useful information about how the SUTs and IOATs are produced but, like *SUT*, it does not provide information about the key messages from the latest set of data or add any context. It also contains some technical language that non-expert users may find difficult to understand. In particular, it would benefit from a simpler explanation of how to use the IOATs, including some examples. As part of the designation as National Statistics, ONS should: a) provide commentary in *SUT* and *IOAT* on the main messages from the statistics; and b) ensure that there are adequate metadata included in *SUT* and *IOAT* which guide users about where they can find information about context for the statistics and their likely uses, the strengths and limitations of the statistics in relation to their potential use, and information about the quality of the statistics, and other key metadata⁷⁶ (Requirement 9). As part of meeting this requirement ONS should consider the points detailed in annex 1 and annex 2.
- 3.23 *SUT* and *IOAT* are both published in PDF format and the tables are available in Excel format. This equates to two stars under the Five Star Scheme that forms part of the Open Standards Principles proposed in the *Open Data White Paper: Unleashing the Potential*⁷⁷ and adopted as government policy in November 2012⁷⁸. As part of the designation as National Statistics, ONS should publish the data associated with the SUTs and IOATs in an open format that equates to at least a three-star level under the Five Star Scheme⁷⁹ (Requirement 10).

⁷⁵ <http://www.statisticsauthority.gov.uk/news/standards-for-statistical-reports.html>

⁷⁶ In relation to Principle 8, Practices 1 and 2 of the *Code of Practice*

⁷⁷ http://data.gov.uk/sites/default/files/Open_data_White_Paper.pdf

⁷⁸ <https://www.gov.uk/government/publications/open-standards-principles/open-standards-principles>

⁷⁹ In relation to Principle 8, Practice 6 of the *Code of Practice*

Protocol 1: User engagement

Effective user engagement is fundamental both to trust in statistics and securing maximum public value. This Protocol draws together the relevant practices set out elsewhere in the Code and expands on the requirements in relation to consultation.

3.24 The requirements for this Protocol are covered elsewhere in this report.

Protocol 2: Release practices

Statistical reports should be released into the public domain in an orderly manner that promotes public confidence and gives equal access to all, subject to relevant legislation.

- 3.25 All of the National Accounts outputs are published according to a timetable that, during 2014, was migrated from the National Statistics Publication Hub and is now hosted on the GOV.UK release calendar⁸⁰. This release calendar contains a timetable for the release of all National Accounts and related publications over the next 12 months, with the exception *IOAT*. *SUT* is usually published annually, on the same day as the *Blue Book* is published. *IOAT* should be published once every five years, according to the Eurostat Manual of Supply, Use and Input-Output Tables⁸¹. ONS published its most recent set of IOATs in February 2014 and intends to publish these tables on an annual basis in future, with the next set due to be published in Summer or Autumn 2015. As part of the designation of as National Statistics, ONS should publish the anticipated publication date of *IOAT* on the GOV.UK release calendar⁸² (Requirement 11).
- 3.26 *IOAT*⁸³ contains the name and contact details of the responsible statistician, but *SUT*⁸⁴ contains the name of the authors of the article but no contact details. As part of the designation as National Statistics, ONS should include contact details in future releases of *SUT*⁸⁵ (Requirement 12).
- 3.27 No pre-release access is given in relation to *SUT* and *IOAT*.

⁸⁰ <https://www.gov.uk/government/statistics/announcements>

⁸¹ See footnote 52

⁸² In relation to Protocol 2, Practice 3 of the *Code of Practice*

⁸³ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/input-output/articles-and-analyses/united-kingdom-input-output-analytical-tables-2010.pdf>

⁸⁴ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/input-output/articles-and-analyses/commentary-on-supply-and-use-balanced-estimates-of-annual-gdp--1997-2012.pdf>

⁸⁵ In relation to Protocol 2, Practice 6 of the *Code of Practice*

Protocol 3: The use of administrative sources for statistical purposes

Administrative sources should be fully exploited for statistical purposes, subject to adherence to appropriate safeguards.

3.28 ONS's Statement of Administrative Sources⁸⁶ lists around 14 sources of administrative data from outside ONS that it uses in compiling the SUTs and IOATs, including other government departments, trade associations and private companies. Responsibility for arranging the quality assurance of these externally sourced data rests with individual teams within ONS, with little overall co-ordination. There is a risk that without clarification there will be confusion about who is responsible for arranging the quality assurance of the different external sources.

3.29 The Assessment team views the statistics in *SUT* and *IOAT* as attracting high public interest with multiple and varied sources and that the risk to data quality might be also assessed as high. Where the statistics team within ONS receive data from other statistics producers they should expect to receive information from whomever is the prime recipient from the original data suppliers about:

- any potential or actual risks to the data from the collection or recording of information
- the nature of any checks or safeguards of the data built into the collection and supply process
- any specific data issues that have implications for the statistics

As part of the designation as National Statistics, ONS should clarify its arrangements for auditing the quality of administrative data used to compile the National Accounts by: a) publishing information about the quality audit arrangements for all the external sources of administrative data used to produce the National Accounts; b) considering the Authority's Report *Quality Assurance and Audit Arrangements for Administrative Data*⁸⁷ and the National Statistician's *Interim Guidance*⁸⁸ in implementing this Requirement⁸⁹ (Requirement 13).

⁸⁶ <http://www.ons.gov.uk/ons/guide-method/the-national-statistics-standard/code-of-practice/statement-of-administrative-sources/statistical-usage-of-administrative-or-management-sources/statement-of-administrative-sources.xls>

⁸⁷ <http://www.statisticsauthority.gov.uk/assessment/monitoring/administrative-data-and-official-statistics/quality-assurance-and-audit-arrangements-for-administrative-data---exposure-draft.pdf>

⁸⁸ <https://gss.civilservice.gov.uk/wp-content/uploads/2012/12/Interim-Admin-Data-guidance.pdf>

⁸⁹ In relation to Protocol 3, Practice 5 of the *Code of Practice*

Annex 1: Compliance with Standards for Statistical Reports

- A1.1 In November 2012, the Statistics Authority issued a statement on *Standards for Statistical Reports*⁹⁰. While this is not part of the *Code of Practice for Official Statistics*, the Authority regards it as advice that will promote both understanding and compliance with the *Code*. In relation to the statistical reports associated with Supply and Use Tables and the Input-Output analytical tables, this annex comments on compliance with the statement on standards. The comments included in this annex are based on a review of *Commentary on Supply and Use balanced estimates of annual GDP, 1997-2012*⁹¹ and *United Kingdom Input-Output Analytical Tables 2010*⁹².
- A1.2 In implementing any Requirements of this report (at paragraph 1.5) which relate to the content of statistical reports, we encourage ONS to apply the standards as fully as possible.

Include an impartial narrative in plain English that draws out the main messages from the statistics

- A1.3 The commentary in *SUT* and *IOAT* does not highlight the key messages from the statistics or include any context on how these statistics relate to the wider economy, other than to state that they are used to reconcile the GDP estimates. *SUT* focuses on the revisions between the current year's set of SUTs and the previous year's, but does not explain the impact of these revisions. For example, Table 1a shows that growth rates for GDP in 2009, the year of the recession, have been revised from -3.1 per cent in the 2013 SUTs, to -2.4 per cent in the 2014 SUTs, indicating that the recession was not as severe as earlier GDP figures suggested, but the report does not comment on how users should interpret the statistics in the light of the revision. More broadly, the commentary in both *SUT* and *IOAT* does not describe any of the relationships between producers and consumers, or the interdependencies between industries, and it does not provide analysis of the changes in these relationships over time, that can be explained through the SUTs and IOATs.
- A1.4 Both *SUT* and *IOAT* cover complex topics which require simplification in order for them to be accessible to non-expert users. However, the language used in both reports is often complicated and difficult for non-expert users to understand, and there are many references to technical terms, such as 'chained volume', 'basic prices' and 'seasonal adjustment', that are not explained. The reports would benefit from a glossary to explain the technical terms and concepts. The use of diagrams (figures 1 to 4) used in *IOAT* to explain the structure of the SUTs and IOATs are useful in explaining the basic concepts more easily, but the report also contains some detailed and complicated information on methodology. It would be useful if the report was split into a simple user-friendly section, with the more complicated information in a separate document or in an annex.

⁹⁰ See footnote 75

⁹¹ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/input-output/articles-and-analyses/commentary-on-supply-and-use-balanced-estimates-of-annual-gdp--1997-2012.pdf>

⁹² <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/input-output/articles-and-analyses/united-kingdom-input-output-analytical-tables-2010.pdf>

A1.5 There are several references within *SUT* and *IOAT* to other relevant papers and articles that users may find useful. However it would seem more logical to produce a complete and coherent document, such as a user guide, to bring all this information together in a more user-friendly format. The user guide could contain information on data sources, definitions and methodology.

Include information about the context and likely uses of the statistics

A1.6 Neither *SUT* or *IOAT* provide sufficient information about what the statistics are, or can be, used for and by whom. The commentary includes no information on the policy context of these statistics, or what decisions they are used to inform. *IOAT* includes technical descriptions of the theory and assumptions used in the production of the IOATs but it does not provide the users with a simple explanation on how to use the tables. The report would benefit from some examples of how the IOATs can be used; in particular, some worked examples of how to use the multipliers⁹³ would enhance users' understanding of the tables and encourage more use of them.

A1.7 *SUT* does not include any references to comparable statistics for other countries within the UK or the rest of the world; in particular, the Scottish SUTs and the 40 countries that are included in the World Input-Output Database⁹⁴. *IOAT* includes a link to the Scottish Government Input-Output Methodology Guide but it does not provide comparisons with the Scottish IOATs or explain how comparable the two sets of tables are.

Include information about the strengths and limitations of the statistics in relation to their potential use

A1.8 The commentary in *SUT* and *IOAT* does not provide sufficient information about the strengths and limitations of the statistics in relation to their potential uses. For example, *IOAT* states that monetary value estimates in the tables 'cannot be regarded as being accurate to the number of digits shown', however no further explanation is provided on the magnitude of this issue and the limitations of the statistics for users.

A1.9 *SUT* provides detailed information about the different revisions that are applied to the statistics, including a range of tables showing the magnitude of these revisions. However it does not explain the impact of these revisions on the interpretation of the data. The report also includes useful information about likely future changes to the SUTs, such as the re-introduction of the PI in 2017 and additional implementation of ESA 2010 regulations.

⁹³ Multipliers are derived from IOATs and they allow users to make estimates of the effects of changes in the economy. For example, an increase in output in the agriculture industry will lead to an increase in output in industries that supply products to the agriculture industry. An output multiplier provides a measure of the combined increase in output for the whole economy.

⁹⁴ See footnote 64

Be professionally sound

A1.10 *SUT* commentary refers to 114 industries and 114 products but *A guide to the Supply and Use process*⁹⁵ refers to 112 industries and 112 products. This inconsistency should be corrected.

Include, or link to, appropriate metadata

A1.11 *IOAT* contains a National Statistics logo and the web pages for both *IOATs*⁹⁶ and *SUTs*⁹⁷ refer to these sets of statistics as National Statistics. These statistics have previously been considered as supplementary tables to the National Accounts National Statistics publications, but this status is not made clear.

A1.12 *SUT* is published annually and *IOAT* is published around every five years, however neither publication provides a clear indication of the timing of the next release, and they are not currently included in the GOV.UK release calendar⁹⁸. *SUT* also does not provide contact details for the responsible statistician.

⁹⁵ See footnote 17

⁹⁶ <http://www.ons.gov.uk/ons/rel/input-output/input-output-analytical-tables/index.html>

⁹⁷ <http://www.ons.gov.uk/ons/rel/input-output/input-output-supply-and-use-tables/index.html>

⁹⁸ See footnote 80

Annex 2: Summary of assessment process and users' views

- A2.1 This assessment was conducted from December 2013 to January 2015.
- A2.2 The Assessment team – Donna Hosie, Iain Russell and Sandy Stewart, and previous members of the team (Neil Wilson, Russell Whyte and Gary Gant) – agreed the scope of and timetable for this assessment with representatives of ONS in December 2013. The Written Evidence for Assessment was provided on 24 February 2014. The Assessment team subsequently met ONS during April and again in November 2014, following the publication of the NSQR and *Blue Book 2014*⁹⁹, which incorporated ESA 2010 changes, to review compliance with the *Code of Practice*, taking account of the written evidence provided and other relevant sources of evidence. There was a hiatus during this re-assessment as the statistical team was focusing its efforts on implementing the changes to the National Accounts as part of ESA 2010 implementation as well as other changes. This resulted in the re-assessment pausing in early May 2014 and re-starting in early November 2014.

Summary of users contacted, and issues raised

- A2.3 Part of the assessment process involves our consideration of the views of users. We approach some known and potential users of the set of statistics, and we invite comments via an open note on the Authority's website. This process is not a statistical survey, but it enables us to gain some insights about the extent to which the statistics meet users' needs and the extent to which users feel that the producers of those statistics engage with them. We are aware that responses from users may not be representative of wider views, and we take account of this in the way that we prepare Assessment reports.
- A2.4 The Assessment team received 41 responses from two user consultations, one in relation to the Short-term Economic Output Indicators where users also commended more widely about the National Accounts, and one dedicated to the Annual and Quarterly National Accounts, which covered the Blue Book, Second Estimate of GDP, Quarterly National Accounts, UK Economic Accounts and Supply and Use Tables. The response to these consultations were supplemented by a further 19 responses to the NSQR, which ONS shared with the Assessment team in order to avoid overburdening users. The total respondents from all the consultations relating to these statistics came from bodies grouped as follows:

Academic & Research	9
Business	12
Prime Stakeholders (e.g. Bank of England)	5
Trade, employer and lobby groups	8
Other Government Departments, NDPBs and Parliaments	8
Consultants	9
Local Authorities	1
Data Suppliers	6
Media	2

⁹⁹ <http://www.ons.gov.uk/ons/rel/naa1-rd/united-kingdom-national-accounts/the-blue-book--2014-edition/index.html>

- A2.5 Of those users who told us that they used the SUTs or the IOATs, the main uses of these statistics were to:
- develop the Scottish Supply and Use tables, which are used on a regular basis to show the likely impacts of government policies
 - investigate long-term trends in the economy
 - examine productivity in local authorities
 - inform industry forecast models, which are used by commercial clients to carry out strategic planning and economic risk assessments
 - analyse current state of the economy to inform asset allocation decisions in relation to investments
- A2.6 Users related their concerns about errors, revisions and corrections. They expressed a range of views about the presence or absence of information on the quality and reliability of the statistics including the following:
- errors, revisions and corrections: which some users felt could have been avoided through more rigorous quality assurance checks.
 - the impact of significant changes to the data due to the revisions process when they substantially alter the interpretation of previous analysis that has been carried out, or markedly changing forecasts that have been produced using previous sets of data
 - poor quality of some of the data sources used in the production of the tables and possible bias
 - ten-year-old purchases data being used in the production of SUTs, which does not meet EU best practice criterion of updating base data at least every five years
 - final data on intermediate consumption differing considerably from the raw input data for some industries indicating that some of the data sources may give a poor representation of the current composition of the economy
 - some errors that have been identified in the ABS data at the regional level that are not corrected when producing the national level data
- A2.7 Users also told us that they would like some additional outputs and documentation. These include:
- more information about the level of uncertainty with regards to the statistics, with this being more clearly disseminated in the statistical reports
 - a greater level of detail on the ONS data production methodology
 - an industry-by-industry table, as well as the product-by-product table
 - more detailed data on the financial sector to allow more analysis to be done with regards to concerns over the financial crisis
- A2.8 Most users told us that they found the commentary useful. They were particularly interested in commentary that included information relating to changes in methodology, or revisions that have been made or are due to be made, and the impact of those revisions on the statistics. One user told us that they would like to see simpler, less-technical language used to allow the statistics to be accessible to a wider range of less-expert users, although they acknowledged that some progress had already been made in this area.
- A2.9 Overall, users told us that they were happy with their engagement with the ONS statistics teams, with most finding them to be helpful, providing clear and

expert responses quickly and efficiently. One user also commented that ONS were good at pre-announcing timing of decisions and changes to methods.

Key documents/links provided

Written Evidence for Assessment document

Annex 3: Glossary

Final consumption expenditure

The expenditure on those goods and services used for the direct satisfaction of individual needs or the collective needs of members of the community, as distinct from their purchase for use in the productive process.

Gross domestic product (GDP)

The total value of output in the economic territory.

Gross national income (GNI)

GNI is gross domestic product less net taxes on production and imports, less compensation of employees and property income payable to the rest of the world plus the corresponding items receivable from the rest of the world.

Gross and net savings ratio

The saving ratio estimates the amounts of money households have available to save (known as gross saving) as a percentage of their total disposable income (known as total available households' resources). Gross saving estimates the difference between households' total available resources (mainly wages received, revenue of the self-employed, social benefits and net income such as interest on savings and dividends from shares but excluding taxes on income and wealth) and their current consumption (expenditure on goods and services). The "net" approach deducts households' consumption of fixed capital (CFC) from both savings denoted and also from the disposable income.

Gross Value Added (GVA) (value added)

The value generated by any unit engaged in production and the contributions of individual sectors or industries to gross domestic product. It is measured at basic prices, excluding taxes less subsidies on products.

Households

Individuals or small groups of individuals as consumers and in some cases as entrepreneurs producing goods and market services (where it would not be appropriate to hive-off such activities and treated them as those of a quasi-corporation).

Institutional unit

Institutional units are the individual bodies that form the building blocks of economic sectors. An institutional unit has decision-making autonomy in respect of its principal function and either keeps a complete set of accounts or is in a position to compile, if required, a complete set of accounts which would be meaningful from both an economic and a legal viewpoint.

Satellite accounts

Satellite accounts describe areas or activities not dealt with by core economic accounts. These areas/activities typically require too much detail for inclusion in the core accounts or they operate with a different conceptual framework. Internal satellite accounts re-present information within the production boundary. External satellite accounts present new information not covered by the core accounts.

