Office for Statistics Regulation

UK Statistics Authority

Assessment of compliance with the Code of Practice for Statistics

UK Productivity Statistics

(produced by the Office for National Statistics)

Assessment Report 356

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Office for Statistics Regulation

We provide independent regulation of all official statistics produced in the UK. Statistics are an essential public asset. We aim to enhance public confidence in the trustworthiness, quality and value of statistics produced by government.

We do this by setting the standards they must meet in the Code of Practice for Statistics. We ensure that producers of government statistics uphold these standards by conducting assessments against the Code. Those which meet the standards are given National Statistics status, indicating that they meet the highest standards of trustworthiness, quality, and value. We also report publicly on system-wide issues and on the way statistics are being used, celebrating when the standards are upheld and challenging publicly when they are not.

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Executive Summary

Judgement on National Statistics Status

ES.1 This assessment report was produced during the COVID-19 pandemic which has seen dramatic shocks to hours worked and economic output in the UK, both of which are key components of productivity statistics. Assessing the scale and impacts of the shocks on the statistics when the usual sources of data may be impaired presents major challenges to statistics producers. ONS has continued to produce and develop these statistics despite significant resource pressures and restricted data access.

ES.2 In this assessment, we make our judgements about these statistics using the experiences of users and our own research from both before and during the pandemic. Where relevant, we highlight the impact of COVID-19 on these statistics.

ES.3 We identified actions for ONS to further enhance the public value and quality of its UK productivity statistics. Where ONS's quarterly labour productivity statistics already carry National Statistics status, fulfilling the requirements of this assessment will ensure that the designation of the statistics as National Statistics can continue. In respect to statistics here that are currently official statistics, we will consider whether their designation as National Statistics is desirable following this assessment.

ES.4 The scope for this assessment is ONS's suite of UK Labour and Multi-factor Productivity statistics (published in Productivity Economic Commentary, quarterly flash estimates, accompanying data tables and microdata available through ONS's Secure Research Service), and the International Comparisons of Labour Productivity (ICP) statistics. ONS's estimates of Public Service Productivity (PSP) are not in the scope of this assessment. The Office for Statistics Regulation intends to review the PSP statistics as part of its regulatory work programme for 2021-22.

Key Findings

Quality

ES.5 Labour inputs for productivity statistics are primarily measured as hours worked, but also as numbers of workers or numbers of jobs. All these inputs draw on data from the Labour Force Survey (LFS) to some degree. Prior to the COVID-19 pandemic, there were known issues about LFS response rates, which had been steadily declining. The pandemic has had a significant impact on the way that LFS data are collected, although ONS has instigated mitigating measures Separate to this assessment, OSR looked into issues raised from the Economic Statistics Centre of Excellence on 14 January 2021 about ONS labour market estimates. ONS acknowledges that it is a complicated landscape at the moment. It intends to continue to publish data from the best sources and be open about their relative strengths and limitations so users can make informed judgements on the labour market.

ES.6 ONS has acknowledged the challenges of measuring the economy during the pandemic. In addition to the problems with measuring labour inputs there have also been difficulties in measuring the economic output of the economy. These difficulties vary according to the restrictions introduced to manage the health effects of the pandemic. ONS has warned that there may be revisions to its statistics as it manages within the restrictions. The quality of the productivity statistics may be impacted by these effects.

ES.7 ONS conducts checks of data and is aware of the operational circumstances in which its data for the productivity statistics are produced and uses other data sources where possible to corroborate its findings. ONS is aware of any coverage issues and potential sources of bias in the data collection and supply process. Information about the strengths and limitations of the data in the productivity economic commentary tends to be general mainly in the interests of producing shorter bulletins, for example noting that the statistics may be subject to 'increased uncertainty' and 'increased likelihood of larger revisions'. This does not provide any judgement on the scale of the increased uncertainty or advice to users about how it might change the reliance they place on the data. ONS should go further by being open about perceived changes to the quality of the statistics as part of the narrative of interest to users.

ES.8 ONS multi-factor productivity (MFP) statistics are theoretically superior measures to labour productivity, as they take account of the effects of multiple known inputs – in ONS's case, quality-adjusted labour input and capital services. A decline in multi-factor productivity growth has been found to be an important feature of the productivity puzzle. However, we found a reluctance among some users in the policy community to use MFP measures as they are difficult to explain to users of policy advice. ONS has helped to explain MFP in language that is accessible by publishing a simple guide to MFP. ONS should go further and establish what the barriers are to the adoption of MFP by the policy community and include in its development plans ways of encouraging the use of MFP amongst such users and ways of extending its outreach to that community.

ES.9 In 2018, ONS suspended publication of its International Comparisons of Productivity (ICP) because its estimates of UK labour productivity were not internationally comparable. There are known biases in measuring labour inputs in the UK. ONS proposed in February 2021 a short-term solution to restart publication of ICP estimates and the last publication of these statistics was in April 2018. Following the UK's exit from the European Union, users are acutely aware of the need to compare the UK's performance internationally. ONS should accelerate its plans to collaborate with its international partners, working closely with the OECD and introduce a system that is flexible enough to allow each country to make full use of its own sources, whilst still enabling the production of high-quality estimates that are suitable for international comparisons. Users told us that they very much welcome ONS's intention to start publishing estimates of ICP again.

ES.10 There is a risk to the quality of the statistics due to the reliance on informal collaborative relationships with data suppliers inside ONS. As there is a regular inflow of new staff coming into the productivity statistics team and then moving on due to staff rotation policy there is a risk of a loss of continuity and corporate memory. While we think the risk has been well-managed and there is regular engagement between data compilers and the productivity statistics team as users,

ONS should check the appropriate levels of assurance for these statistics and that its arrangements for quality assuring these statistics are sufficiently robust.

Public Value

ES.11 Overall, we found that ONS's statistics and data on productivity to be useful, easy to navigate and relevant. They support understanding of the UK economy and the economic welfare of its citizens. ONS produces a prodigious range of productivity outputs at both macro and micro-economic levels, using techniques such as growth accounting and behavioural economics. It also publishes interesting research articles on productivity.

ES.12 One of the reasons for our assessment of these statistics is to look at the extent to which the statistics help answer important questions about the productivity puzzle or puzzles. We found that there is much debate about the nature of the productivity puzzle(s). We received some feedback that ONS appears to adhere to the view that productivity is a supply-side concept and demand-side factors are indirect and second order. We also spoke to users who see the puzzle as relating to a much longer-term malaise, whereas ONS focuses on the slowdown in productivity following the financial crisis. A recent survey of UK academic economists tackled the question of which rationales behind the productivity slowdown are the most powerful, without drawing absolute agreement across the profession. The two most important causes for the productivity slowdown amongst the economists surveyed were low-demand (including due to the 2008 Global Financial Crisis, austerity, and Brexit) and labour market factors. Investment in human capital (including education and job retraining) was considered the policy most likely to improve private sector productivity. ONS does not accept that there has been bias towards supply-side explanations in its expression of the growth puzzle. The productivity analysts stand by their view of the productivity puzzle because of weak growth since the 2008 Global Financial Crisis, which is particularly acute in the UK. Overall, while there are different theories around the drivers of poor productivity growth in the UK, we found that ONS has been open about the debate and has published widely on the different rationales for the slowdown in productivity. ONS is only one body contributing to the effort to understand the drivers of the UK's productivity puzzles. The debate about the productivity puzzles is now moving on due to Brexit and the COVID-19 pandemic and we expect ONS will continue to discuss in articles and commentary the latest research about how the puzzles present in the UK.

ES.13 The statistics could be even more useful if ONS's user engagement was more effective, particularly in clearly linking development priorities to the feedback it receives though engagement. We found that while ONS was good before the pandemic at sharing its work outwardly, there is room for improvement in the way it openly takes on board feedback from different sources. It is good to see that ONS has recently launched a user survey which closed in April 2021.

ES.14 In 2018, ONS set out ambitious priorities for developing these statistics but has found making significant progress against these more challenging than anticipated, due to both the onset of the pandemic and staff changes. ONS needs to make demonstrable progress against the priorities which it has signalled to users. It also needs to be more transparent around its progress towards meeting priorities and objectives, by providing an updated development plan at the earliest opportunity. ONS has told us it will provide this update in the summer of 2021.

ONS should find a better balance between statistical production and the development of the statistics to meet users' current and future needs and priorities.

ES.15 ONS's recent move to a productivity economic commentary to replace several separate bulletins is a positive step towards telling a clearer and more holistic story of movements in productivity. Flash estimates of labour productivity produced using the latest labour market statistics and the gross value added (GVA) first quarterly estimates are published separately to the productivity bulletin. The combination of the flash estimates as well as the productivity economic commentary allows users to see more-timely estimates and later more-detailed estimates, providing balanced reporting.

ES.16 We welcome the potential offered by ONS's relatively new Management and Expectations Survey to examine the impact of COVID-19 on the main components of productivity – inputs, outputs and prices.

Trustworthiness

ES.17 We have found the people, systems, and processes within ONS that support the production of these statistics and data demonstrate a high degree of trustworthiness. Analysts are well-managed and impartial and skilled in what they do.

Next Steps

ES.18 The deadline for ONS to report back to us is September 2021, where we will review the progress that the team has made in addressing the requirements set out in this report. ONS should by the end of June 2021, publish an action plan alongside the statistics on its website which sets out its proposals for addressing the assessment requirements.

Chapter 1: Quality

Introduction

1.1 Quality means that the statistics and numerical information represent the best available estimate of what they aim to measure at a particular point in time and are not materially misleading.

1.2 Quality is analytical in nature and is a product of the professional judgements made in the specification, collection, aggregation, processing, analysis, and dissemination of data.

The Statistics

1.3 ONS delivers one of the richest sets of productivity data in terms of range and granularity in the world and an international comparison study bears this out. This includes labour productivity at both the whole-economy level, as well as disaggregated by industry and by region. Output per hour is its preferred measure of labour productivity and estimates are presented primarily in the form of indices and growth rates. Output per hour is a very useful measure at the whole economy level but becomes more unreliable below regional level in the UK where output per worker may be a more reliable indicator for sub regional areas such as Local Authorities.

1.4 Going beyond labour productivity, ONS now publishes annual and quarterly estimates of multi-factor productivity (MFP) for both the whole economy and by industry. For any given change in output, MFP measures the amount that cannot be accounted for by changes in inputs of quality-adjusted labour and capital. This means it is a theoretically superior measure to labour productivity, as it takes account of the effects of labour and capital inputs. MFP is often described as the measure of our ignorance, since as a residual measure, if one fails to take account of all inputs in the production process, MFP can reflect missing inputs. A decline in MFP growth has been found to be an important feature of the productivity puzzle.

Data Sources and Methods

1.5 Labour Productivity statistics are derived by dividing measures of output by some measure of labour input. The output measures used in the productivity statistics are taken from the Quarterly National Accounts – Gross Value Added (Output) estimates. Output measures are of real (inflation-adjusted) gross value added (GVA), for the whole economy, and sub-sectors of the economy for which productivity statistics are produced. Labour inputs for productivity statistics are primarily measured as hours worked, but also as numbers of workers or numbers of jobs. All these inputs use data from the Labour Force Survey (LFS) to some degree, which is a survey of households that collects information about employment on a headcount basis. Hours worked are available by sub-sector and by region derived from estimates of average hours.

1.6 Unit labour costs and unit wage costs are also published in the Labour Productivity Statistical Bulletin. These series measure the labour costs incurred in producing one unit of output. Although not a direct measure of productivity, an inverse relationship between these measures and productivity tends to be observed: the

higher the productivity of a worker, the lower the cost of labour per unit of output, and vice versa.

1.7 ONS publishes the Statistical First Release of UK Labour Productivity estimates around about 45 days after the end of the quarter with more detailed and revised statistics published around 95 days after the end of the quarter. The latter are designated as National Statistics.

1.8 MFP estimates are experimental statistics constructed using inputs from the Volume Index of Capital Services (VICS), quality-adjusted labour input (QALI) and output data from quarterly national accounts. MFP covers the UK market sector, which means that general government and non-profit institutions serving households are excluded from these estimates. Like labour productivity, MFP is presented in index form.

1.9 To estimate MFP growth over time, changes to both the quantity and quality of labour input in the economy need to be accounted for. The former is measured by the number of hours people work in the period, which is the same measure used for labour productivity estimates. The latter is calculated by accounting for changes to the quality and composition of that labour over time. Both are combined to estimate quality-adjusted labour input (QALI) figures. Capital inputs are estimated by calculating the volume of capital services that are employed by the economy in a period, from the existing capital stock. These estimates form the Volume Index of Capital Services (VICS) figures. Quarterly MFP growth estimates cover 10 industries of the UK market sector with annual estimates further disaggregated to 19 industries.

Findings

Data Sources

1.10 Hours worked are derived from ONS's Labour Force Survey (LFS), in conjunction with other data sources including the Business Register and Employment Survey (BRES). For many years, and well before the COVID-19 pandemic, there have been known issues about LFS response rates that had been steadily declining. LFS response rates fell from around 55% in 2009 to under 40% ten years later. OSR has previously commented on the declining response rate of the LFS for example in our 2020 assessment of employment and jobs statistics. ONS acknowledges the declining response rate as an ongoing issue. We make no specific requirement here as we required ONS in our 2020 assessment report on employment and jobs statistics to address the issue and share any relevant information with users.

1.11 The COVID-19 pandemic has had a dramatic impact on LFS data collection and ONS has instigated mitigating measures in response to this. An impact of COVID-19 has been changes to the labour market. The imputation method used for the LFS was not designed to deal with the changes experienced in the labour market in recent months. Consequently, ONS has been working on a new experimental imputation methodology. ONS has told users that it has not been possible to fully integrate this methodology into its labour market estimates yet, but early indications suggest that:

- there is little impact from the use of existing methodology on the headline measures of employment, unemployment, and economic inactivity

- there is little impact from the use of existing methodology on total hours, with measures relating to total hours slightly understating the decrease in actual number of hours worked

This early work suggests that estimates of total hours worked from the LFS remain robust. However, ONS published a warning about using its statistics on levels and changes in levels should be used with caution. Any adjustments are likely to lead to small upward revisions to productivity growth in 2020. ONS says it intends to provide more information in later releases of labour market estimates as this work develops.

1.12 There are known issues about the measurement of GDP during the pandemic. Economic impacts of COVID-19 have led to record declines in Gross Domestic Product (GDP) in advanced economies in 2020. International comparisons suggest that the UK has experienced amongst the largest contractions in volume GDP amongst the G7 advanced countries. However, international comparisons are complicated by how National Statistical Institutes (NSIs) record public service output. ONS recently published an article explaining how international comparisons of GDP have been affected by the COVID-19 pandemic. We are pleased that ONS is working alongside the Organisation for Economic Co-operation and Development (OECD) and with other NSIs to explore this in more detail, and strongly encourage this type of international collaboration.

Sound Methods

1.13 Following a fundamental review of the source data as well as investment in new systems delivering greater flexibility and efficient production processes, ONS publishes quarterly estimates of capital services for the whole market sector of the UK economy as well as breakdowns by 19 sectors. These estimates are produced on the same timetable as the Quarterly National Accounts and labour productivity statistics. We welcome ONS taking steps to meet users' needs for greater detail on capital services and producing more-timely estimates of productivity.

1.14 In its MFP estimates, ONS accounts for changes in the composition (or "quality") of the employed workforce as well as for changes in hours worked through its Quality Adjusted Labour Input (QALI) statistics. QALI weights hours worked by different types of workers by their relative income share (reflecting their contribution to economic production). ONS recently moved publication of its QALI statistics from annual to quarterly. The official estimates of QALI go back to 1970 and are for the whole economy and the market sector. They are broken down into 19 industry groups, by sex (two groups), age (three groups), and educational level (six groups). This represents almost twice as much industry detail in the MFP statistics as previously. We commend ONS on providing greater detail around the adjustment of labour inputs to MFP estimates.

1.15 In MFP, capital utilisation rates are assumed to be constant which is a reasonable assumption in long-period productivity analysis. However, during the pandemic this assumption results in a large implausible increase in capital deepening (the amount of capital that a worker can use in an hour). The increase is driven by the drop in the number of hours worked and changing patterns of capital usage across the economy during the pandemic as many offices and factories have remained empty or have been used at a reduced rate compared with previous years. Both factors have caused capital utilisation to fall.

1.16 To tackle the issue ONS recently introduced a factor in its model to allow the capital utilisation level to be adjusted. This adjustment is designed to reflect the impact of the pandemic on capital utilisation. ONS produced experimental statistics to complement its core MFP estimates but has said that the new utilisation factor has certain weaknesses. The methodology assumes that, within each industry, all workers use all types of capital in proportion to their hours worked during the lockdown and related restrictions. This has the effect that the decline in hours worked of any worker reduces utilisation of all types of capital in that industry. ONS intends to continue its work on improving the methods of adjusting for capital utilisation and has committed to publishing a research paper later in 2021 setting out a more robust approach to estimating capital utilisation in the UK. ONS's initiative in introducing this adjustment and its ongoing commitment to improve the methodology in the coming months is commended.

1.17 In 2018, ONS suspended its International Comparisons of Productivity (ICP) statistics, due to problems with data sources and classifications and methods that were not harmonised with many other countries. ONS recognised that there is an upwards bias in counting the actual hours worked in the UK relative to other countries. The lack of comparable estimates has been a significant weakness in understanding the UK's progress in addressing the productivity puzzles. ONS intends to reinstate estimates of ICP in 2021, with detailed explanation of the limitations of the comparisons as they are.

1.18 ONS is also currently developing a new UK-tailored method for establishing ICP, making use of the full range of sources to find the best estimate for each component adjustment, and to align these as closely as possible with national account concepts. ONS intends to replicate its provisional findings for multiple time periods, with the view that its estimates may ultimately be included in quarterly productivity publications. ONS also aims to identify additional sources to triangulate each component derived from the LFS, to arrive at estimates of hours actually worked, which would be more in line with other countries and with National Accounts concepts. These adjustments have been identified as playing a major role in previously inconsistent international comparisons. ONS demonstrate a creative approach here to improving its statistics and data.

1.19 In the short term, ONS is also exploring the possibility of producing international comparisons of productivity within ranges of uncertainty. These ranges will represent the likely range of difference between levels of productivity in other countries relative to the UK. They will allow a reader to tell if the gap was likely to be large or small, but it would not be possible to estimate a significance level as in statistical methods. ONS told us that it intends to collaborate with others such as the Organisation for Economic Co-operation and Development (OECD). We strongly encourage ONS to work with the OECD and with other NSIs to understand their measures and data in more detail and to inform the construction of uncertainty bands for ICP estimates. Given the importance of understanding the gap in productivity between the UK and its major trading competitors, we wholeheartedly encourage ONS in taking the various steps planned to re-establish these statistics.

1.20 We are aware of the difficulties in presenting these uncertainty bands to users. While ONS has invited users to feedback on its proposals, given the novelty and complexity of the approach, ONS should be proactive in talking to users about its plans to communicate international comparisons of UK labour productivity within

ranges of uncertainty and test understanding of the estimates as they develop them.

Public Service Productivity (PSP)

There are well-documented quality questions around the measurement of Public Service Productivity (PSP) in the UK, many of which have been further exacerbated by changing circumstances during the pandemic. Some of these questions relate to the quality of estimates of public service outputs (for example this correspondence from December 2020, and OSR's reply). Since public services have no market price, which private sector outputs have, measuring productivity of public services, and in particular adjusting the outputs for changes in quality, is complex. While around half of public services by value are quality adjusted in public service productivity estimates, there are many areas where there is no quality adjustment including children's social care, policing, the fire service, military defence, and public administration.

Measurement of healthcare and education outputs have been particularly affected during the pandemic, due to school closures and changing priorities in hospitals. There are also issues associated with trying to measure new outputs triggered by the pandemic such as the Test and Trace programmes. Not all countries measure public services output in the conceptually sound way that the UK does. ONS is obviously learning about the impacts of changes and as it receives more data and there will be opportunities to inform users and stakeholders of how it is taking account of novel public services arising from the pandemic. As part of its response, ONS undertook work last year to adjust estimates of education output. ONS also took a very positive step in respect to its GDP figures just before Christmas 2020 when its headline estimates of health care output included an explicit adjustment for the Test and Trace system. This prepared the groundwork to capture in GDP the UK mass vaccination programme that began in early December 2020.

Quality Assurance

1.21 There is a raised risk to the quality of the statistics due to the reliance on informal collaborative relationships with ONS colleagues who are data suppliers. The productivity statistics team has not documented with the compiler teams:

- data requirements for statistical purposes
- data transfer process
- arrangements for data protection
- sign-off arrangements by data suppliers
- content specification

The risk is further elevated as there is regular inflow of new staff coming into the productivity statistics team and then moving on quickly due to the ONS staff rotation policy. The specific risk is of a loss of continuity and corporate memory. We believe that the risk is currently well-managed as there is regular engagement between data compliers and the productivity statistics team and compiler team members attend the productivity team's curiosity sessions.

1.22 The Office for Statistics Regulation has produced a Regulatory Standard on the Quality Assurance of Administrative Data (QAAD) for statistical producers. Using the associated QAAD toolkit helps statistical producers decide on the level of assurance required, and put in place appropriate quality assurance measures. While the OSR Regulatory Standard was developed for quality assuring administrative data the accompanying toolkit is helpful in quality assuring any

source data, regardless of where the data come from. Using the QAAD toolkit, ONS should consider the level of assurance required, and ensure that its processes to assure the quality of data are appropriate.

Table 1: Quality – Findings and Requirements

Findings	Examples	Requirement
Data Sources The current principal risks to data quality for productivity statistics are (i) declining survey returns from the LFS, (ii) COVID-19 impacts on data collection, (iii) methods and classifications which over-estimate hours worked and (iv) resource constraints limiting the time for developing data sources and methods.	• ONS's quarterly LFS performance and quality monitoring report has considered the potential impact of methodological changes on response rate and respondent incentives, and recently introduced operational changes • Imputation used for the LFS was not designed to deal with the changes experienced in the labour market in recent months. However, the latest estimates suggest the use of the existing methodology has little impact on total hours	1. ONS should do more to explain the impact of economic shocks such as COVID-19 on data sources used in calculating productivity specifically alerting users to the bias and possible distortive effects on the statistics of imputation methods, weightings, and self-employment hours
Sound Methods ONS has been slow to address the issues in comparing UK labour productivity internationally. ONS cannot resolve the lack of comparability alone and intended to work with partners well before the onset of the COVID-19 pandemic. The COVID-19 pandemic will have slowed the partnership working.	• Point estimates such as those previously published in the ONS's ICP bulletin present spurious accuracy, potentially giving users false confidence in the precision of the results • ONS plans to estimate the size of uncertainty bands, representing the likely range of difference between levels of productivity in other countries relative to the UK • ONS currently intends to introduce a novel method to make international comparisons of labour productivity which will require careful testing to make sure that users can reasonably interpret the data	2. ONS should: • prioritise its plans to collaborate with its international partners to introduce a system that is flexible enough to allow each country to make full use of its own sources, whilst still enabling the production of high-quality estimates that are suitable for international comparisons • ensure that less-expert users are considered when ONS looks to present estimates of international comparisons of productivity, and uncertainty bands in particular

Findings	Examples	Requirement

Quality Assurance
 	
There is a raised risk to the quality of the statistics due to the reliance on informal collaborative relationships with ONS internal data suppliers. The risk is further elevated as there is regular inflow of new staff coming into to the productivity statistics team and then quickly moving on due to staff rotation policy
	• The productivity statistics team has not documented with the compiler teams:
	  • data requirements for statistical purposes
	  • data transfer process
	  • arrangements for data protection
	  • sign-off arrangements by data suppliers
	  • content specification
		3. ONS should use the QAAD toolkit to consider the level of assurance required and ensure that its processes to assure the quality of data are appropriate.

Chapter 2: Public Value

Introduction

2.1 Value means that the statistics and other numerical information are accessible, remain relevant and benefit society; helping the public to understand important issues and answer key questions.

2.2 Value is a product of the interface between the statistics or other numerical information and those who use them as a basis for forming judgements.

Findings

Insights about the UK Productivity Puzzle(s)

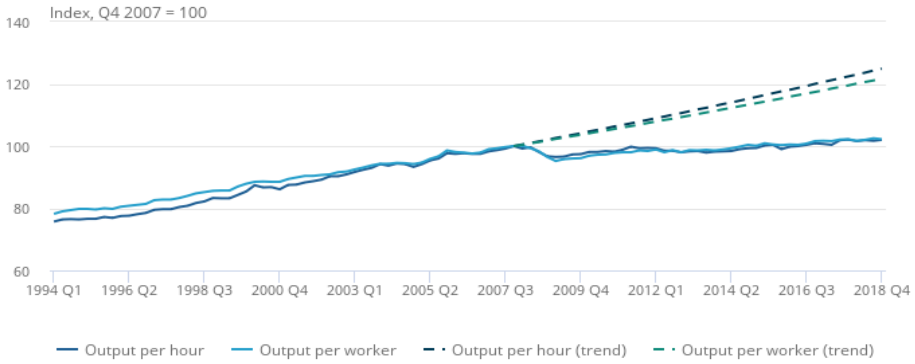
2.3 One of the reasons for our assessment of these statistics is to look at the extent to which the data help answer important questions about the productivity puzzle or puzzles. We found from our engagement with users and our desk research that there is much debate about the nature of the productivity puzzle(s). Some users reflected that ONS adheres to the view that productivity is a supply-side concept and that demand-side factors are indirect and second order. ONS also focuses on the slowdown in productivity following the financial crisis whereas some we spoke to see the puzzle as relating to a much longer-term malaise. A recent survey of UK academic economists tackled the question of which rationales behind the productivity slowdown are the most powerful, without drawing absolute agreement across the profession. The two most important causes for the productivity slowdown amongst the economists surveyed were low-demand (including due to the 2008 Global Financial Crisis, austerity, and Brexit) and labour market factors.

2.4 ONS does not accept that there has been bias towards supply-side explanations in its expression of the growth puzzle and stands by its view of the productivity puzzle as weak growth since the 2008 Global Financial Crisis, particularly acute in the UK.

2.5 Some users expressed concerns that ONS has framed the puzzle as a growth puzzle primarily focussing on why UK productivity growth rates had not returned to the 2% annual year-on-year growth levels that predated the 2008 Global Financial Crisis (GFC). Figure 1 below was commonly presented by ONS as an illustration of the growth puzzle, depicting the growth gap against a long-term steady 2% linear annual year on year growth. As can be seen from the chart title for Figure 1, ONS frames the growth puzzle as the gap against a continuation beyond the GFC of annual growth of around 2%.

Figure 1: Productivity, as measured by output per hour, was 18.3% beneath its pre-downturn trend

Output per hour and output per worker, seasonally adjusted, UK, Quarter 1 (Jan to March) 1994 to Quarter 4 (Oct to Dec) 2018



Source: Office for National Statistics

Source: ONS – Labour Productivity, UK: October to December 2018. Figure 1.

2.6 There are alternate assumptions that ONS could have made in projecting productivity trends into the future as shown in Figure 1 which might have offered different interpretations of the period before the financial crash and following the crash. ONS has now changed its presentation of the productivity puzzle and no longer uses the graph in Figure 1. A concern expressed to us has been that the projection of ongoing productivity growth at a rate of 2% per annum was assumed in Government business cases for investment such as transport investment. We checked this and in respect of transport evaluation we are satisfied that more contemporary assumptions about UK productivity growth are being used for evaluation of business cases corresponding to estimates from the OBR.

2.7 We found that ONS has been open about the debate and has published widely on the different rationales for the slowdown in productivity. We recognise that it is challenging for ONS to reflect the extent of the debate on the causes of the productivity puzzles within the confines of occasional statistical commentary. ONS is only one body contributing to the effort to understand the drivers of the UK's productivity puzzles. Debate about the productivity puzzles is moving on due to the pandemic. ONS has carried out and commissioned work to shed light on the nature of the significant turning point in growth in 2008 including:

- work on 'double deflated' measures of output and the intended introduction of double-deflated real output measures later in 2021, which we wrote to ONS about in January 2021
- improving the measurement of prices of communications services is being taken forward by the deflators improvement programme
- the movement of economic activity outside the production boundary has been taken forward by ONS Fellow Diane Coyle and others
- the introduction of a Management and Expectations Survey which will help to examine the impact of economic shocks such as the COVID-19 pandemic on the main components of productivity – inputs, outputs and prices

2.8 All the areas above may contribute to further understanding the 'puzzle'; however, it is too early to draw any conclusions that could feed through to ONS's data. As ONS has limited capability to shed light on understanding the recent economic history in its productivity commentary it will need to find the headroom to provide such insights through its occasional research articles. To produce these, ONS productivity analysts and statisticians need to ensure an appropriate balance between statistical production, the development of the statistics to meet users' needs and publishing insightful analysis which informs understanding of the impacts of economic shocks on different aspects of the productivity puzzles. ONS productivity analysts are engaging with the new Productivity Institute which has been set up to examine this issue.

Clarity about what is happening to UK productivity

2.9 ONS's recent move to a single productivity bulletin to replace several separate bulletins is a positive step towards telling a clearer and more holistic story of movements in productivity. Flash estimates of labour productivity produced using the latest labour market statistics and the gross value added (GVA) first quarterly estimates are published separately to the productivity bulletin. The combination of the flash estimates and the productivity economic commentary allows users to see more-timely estimates and later more-detailed estimates, providing balanced reporting. Many users told us they are broadly happy with ONS's productivity statistical bulletins, but they also pointed out that headline estimates change little from one quarter to the next, and comparisons over longer time periods are more meaningful. They would like to see more discussion of the reasons for longer-term changes, and the statistical uncertainty around the changes. Improving the presentation of the statistics will help aid appropriate interpretation of the statistics. One user suggested that infographics or short videos could be a useful way of helping the understanding of the story of productivity in the UK. ONS productivity analysts told us they were constrained by the limitations of the ONS webpage capabilities. However, we consider that enhanced use of alternative platforms such as Twitter, which ONS has been using to good effect, could add helpful insights for users. The 'At A Glance' tables in the productivity bulletin could be presented in a way that is less-complex for users. ONS might find it valuable to look at how the Australian Productivity Commission presents its 'At A Glance' statistics.

2.10 Productivity analysts in ONS said they recognise the broad interest in productivity statistics and make efforts to communicate with a wide range of users. However, these statistics are also vital inputs used by key users for very important purposes, such as the Bank of England for setting interest rates. ONS thus necessarily focuses more of its efforts on these users than the public, although it tries to cater for all. Our assessment is that ONS should go further and ensure that its statistics are communicated in such a way that promotes use by all types of users.

2.11 ONS provides only cursory information about the strengths and limitations of these statistics and data in statistical bulletins and provides links for users to more extensive quality and methods information (QMI). This minimises the burden for users that do not wish to examine lengthy methodology documentation and means that information about quality does exist for those that are interested. However, we judge that more information upfront about whether there have been changes in the understanding of the statisticians about the statistics' suitability for their intended

uses would be helpful. We understand that measures introduced in May 2021 to have word limits on ONS bulletins might delay the full implementation of this.

Relevance to Users

2.12 ONS engages with bodies that have proven interests in productivity. They include ONS Economic Experts Working Group, the Economic Statistics Centre of Excellence (ESCoE) and the Devolved Economic Statistics Coordination Group. ONS also engages with other stakeholders such as the Bank of England, HM Treasury, Office for Budget Responsibility and the Department for Business, Energy and Industrial Strategy and productivity research bodies such as the Productivity Insights Network and the Productivity Institute at the University of Manchester. ONS was good before the pandemic at sharing its work outwardly. ONS told us that such engagement has informed its understanding of the use and potential use of its statistics and data. We consider that ONS could be clearer about how feedback it receives about its statistics from its engagement leads to the developments it proposes to the statistics.

2.13 ONS had not approached some of the users we spoke to in the last few years with a view to seeking their feedback about using the statistics. We recognise that analysts in the productivity team face competing demands between producing high quality statistics and meeting wider users' needs, particularly as these often require additional engagement and resources. Outreach to users such as microdata users might lead to developments in the data and the usability of data that would aid their use. We recognise that secure data users do not always engage with ONS productivity analysts directly and may engage with other staff in ONS. To meet the needs of all users there may need to be better coordination of engagement with statistics and data users inside ONS. To be effective, user engagement needs to be planned and collaborative. ONS might find guidance that OSR recently published on user engagement helpful in suggesting ways to engage better with its existing users and identify new potential stakeholders.

2.14 Two significant reports in the last five years have influenced ONS's development of its productivity statistics suite. Based on an international review of productivity that ONS commissioned and a recommendation arising from the independent review of economic statistics carried out by Sir Charles Bean, ONS recently prioritised the development of more-frequent (quarterly) multi-factor productivity statistics. During our engagement with users, we found that whilst users welcome more-timely statistics, they were more ambivalent about more-frequent statistics; being far-more interested in long-term compositional changes and in-depth analysis. MFP statistics users told us that they use the quarterly estimates but notice that the quarterly changes tend to be modest. Since the onset of the pandemic, while ONS has largely continued to produce frequent, timely statistics, it has not been able to fully carry out intended developments of the statistics and at the same time publish the same volume of impressive insightful research. ONS should be transparent about the extent to which the views received from users, potential users and other stakeholders can be addressed. Feedback should be provided to them about how their needs can and cannot be met, being transparent about reasons for the decisions made and any constraints. The productivity statistics team recently ran a user survey, which will help better understand the needs of its users and develop priorities for the statistics that support them; we commend this initiative. Additionally, ONS is also planning to run a Productivity

Statistics User Event in the third week of May 2021. These initiatives could help to inform ONS about users' priorities.

2.15 ONS's productivity outputs are used by a wide range of users. We found MFP to be favoured by more expert users, whilst others reported that it is a difficult concept to communicate to stakeholders, particularly in the policymaking space. ONS plans to develop the MFP measures, but we advise that more effort on promoting the adoption of the MFP measures is likely to be needed as well.

2.16 ONS set out ambitious development priorities for these statistics in 2018, but has found making progress against these more challenging than anticipated, due to both the onset of the pandemic and staff changes. ONS told us that it is updating its development plan for the statistics and plans to publish this in May 2021. A plan that is more discriminating about what is possible to achieve in the medium-term and what ambitions may take longer to realise will help to ensure that priorities are met going forward.

Table 2: Value – Findings and Requirements

Findings	Examples	Requirement
Insights about productivity in the UK Economic shocks such as the COVID-19 pandemic and Brexit mean that there's even greater urgency in understanding ONS's latest research. Limited ONS people resources mean that continuing to provide new insights into UK productivity has been and continues to be challenging	• There is an exciting research and development programme which may throw light on the nature of the significant turning point in the UK's productivity growth in 2008 • ONS has published several useful analytical articles but the rate of new articles has slowed • ONS produces thousands of datasets on labour productivity. Additionally, it produces multi-factor, regional and firm-level productivity data. Volume production and maintenance of the required production system creates pressure on people resources leaving limited capacity for publishing research insights and development of the statistics • There are no dedicated development resources in the ONS productivity teams	4. ONS should find a more appropriate balance, in conjunction with users, between statistical production, the development of the statistics to meet users' needs and publishing insightful analysis which informs understanding of the impacts of economic shocks on different aspects of the productivity puzzles

Findings	Examples	Requirement
Clarity and Insight Presentation of the story of productivity in the UK is disjointed and often overly influenced by recent movements. Comment on productivity, particularly about multi-factor productivity can assume a high-level of background understanding on behalf of the users. ONS provides cursory information alongside its statistics about the strengths and limitations of the statistics and data.	• Descriptions and narrative around changes and trends can often use difficult language which could be off-putting to less-expert users • There's an inconsistency in using changes in growth as log percentage changes for the different suites of productivity statistics. Multi-factor productivity changes are presented as log changes but ONS appears to have stopped presenting log percentage growth in labour productivity • Users may not gain an understanding of changes to the quality of the statistics as descriptions of changes to the quality in the statistics bulletin are vague • Users told us that they would like ONS to better communicate and explain the capital stocks data to users and how to use it	5. ONS should: • provide commentary that joins up what's happening to trends in productivity and explains the evolving story of productivity in the UK • explain the reasons for its selection of the periods for presenting productivity trends • further develop the use of platforms such as Twitter to illustrate the statistics better, including with suitable data visualisations such as charts, maps, and tables to help aid interpretation of the statistics • check that presentation of the statistics and data meets the needs of different types of users • improve the accessibility and readability of productivity data for programming languages • find ways of articulating the statistician's judgement about the fitness of purpose of the productivity statistics

Findings	Examples	Requirement
Relevance to Users ONS reaches out to users through user events which tend to focus on communications to users. These events offer few opportunities for feedback from users. There are some gaps in the bodies ONS engages with.	• ONS could do more to proactively engage with all kinds of users • We received some feedback that problems with accessing secure productivity microdata persist and that the ONS team engaging with secure access users of productivity data could engage more fully with such users to understand and meet their needs as far as possible • Users favour deeper analysis of trends and compositional changes over more-regular statistics • There seems to be a slow adoption of the MFP statistics in the policy community • OSR has issued guidance on user engagement which might be a source of innovative ways of engaging with stakeholders	6. ONS should: • find the right people to engage with, have productive conversations with those people and follow through on those conversations in terms of developing the statistics and statistics services • establish the barriers to the adoption of MFP by the policy communities, encourage the use of MFP amongst such users and extend its outreach to that community • be transparent about the extent to which the views received from users, potential users and other stakeholders can be addressed.

Chapter 3: Trustworthiness

Introduction

3.1 Trustworthiness means that the statistics and other numerical information are produced free from vested interest, based on the best professional judgement of statisticians and other analysts.

3.2 Trustworthiness is a product of the people, systems and processes within organisations that enable and support the production of statistics and other numerical information.

Findings

3.3 The people, systems, and processes within ONS that enable and support the production of these statistics and data are worthy of trust. Analysts are well-managed and impartial and skilled in what they do.

3.4 ONS follows all statutory obligations and internationally endorsed guidelines governing the collection of data, confidentiality, and release. ONS issues all statistical reports separately from any other statement or comment about the figures and ensures that no statements or comments – based on prior knowledge – are issued to the press or published ahead of the publication of the statistics.

3.5 ONS is among a relatively small group of National Statistical Institutes issuing press releases announcing the publication of productivity data. ONS sends press releases to both the general and specialised print media as well as to general and specialised radio and general and specialised TV broadcast media. ONS also uses Twitter to inform the public about the publication of new productivity data.

3.6 Release dates for ONS's statistical releases are pre-announced a year in advance on the ONS website. ONS limits access to the statistics in their final form to those involved in the production of the statistics and the preparation of the release, and for quality assurance and operational purposes.

Annex 1: About the Statistics

Uses and Users

A1.1 The main users and uses of the series include:

- HM Treasury (HMT) and the Office for Budget Responsibility (OBR) – use assessment of trends in productivity growth to estimate the underlying trends in economic output, employment, and, hence, future growth and the capacity of the economy to support government spending. Quarterly labour productivity estimates are used to calculate the productivity performance of the UK over economic cycles. HM Treasury sets out the Government's strategy for raising productivity and is jointly responsible with the Department for Business, Energy, and Industrial Strategy (BEIS) for delivering improvement in productivity performance. The Office for Budget Responsibility was created in 2010 to provide independent and authoritative analysis of the UK's public finances.
- Bank of England (BoE) – use productivity analysis to understand actual and trend levels of output, which enables it to assess current and future inflationary pressures in the economy, which is essential for monetary policy.
- Department for Business, Energy, and Industrial Strategy (BEIS) – is responsible for improving national and regional productivity performance, for managing drivers of productivity growth (investment, innovation, skills, enterprise formation and competition) and for improving industry competitiveness in the market sector.
- Government statisticians and analysts in devolved nations are interested in assessing regional productivity measures compared to other regions within the UK, given their effect on regional living standards and welfare.
- Businesses – are interested in understanding the implications of productivity trends for the UK's economic outlook and therefore for economic policy. They also use industry level productivity estimates as a benchmark to compare their own productivity performance.
- Researchers and Academics – productivity analysis is often included in papers and presentations on the economic performance of the UK.
- International Agencies – the International Monetary Fund (IMF), Organisation for Economic Co-operation and Development (OECD) and Eurostat compare productivity levels across countries and provide some insight into why differences exist.

A1.2 Users are often looking for granularity – such as industry by region, city-regions, rural-urban and European sub-region comparisons. MFP can inform estimates of the productive capacity of the UK economy and highlight areas where policymakers may want to focus on to improve economic growth.