

GDP revisions, unemployment and factory gate prices: Regulating the quality of UK economic statistics.

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Abstract

The landscape of economic statistics in the UK is changing, with more new and innovative data available than ever before. There have been multiple economic shocks in the last few years including the COVID-19 pandemic, geopolitical instability and increases in the cost of living. These have brought increased interest in economic statistics. The regulatory landscape has also changed: the UK's departure from the EU means Eurostat will no longer verify the quality of UK economic statistics. As the UK's independent regulator of statistics, we are building on our years of experience of assessing statistics against our [Code of Practice](#) for Statistics, to ensure that users can have confidence in the quality of these statistics in the UK.

Key to this work is the development of a programme of 'Spotlight on Quality' assessments of UK economic statistics. We developed a framework and tools for carrying out these assessments based on our Code of Practice for Statistics and drawing on international frameworks such as the ESS Quality Assurance framework and the IMF Data Quality Assessment Framework. These assessments consider how the quality of statistics is ensured and communicated through suitable data sources, sound methods, adequate quality assurance and appropriate resources and prioritisation. We will talk through our framework and the key findings from our first Spotlight on Quality assessments.

During Autumn 2023 we carried out rapid reviews of the quality of revisions to the UK's Gross Domestic Product and experimental Labour Market statistics estimates in response to stakeholder concerns. More recently in Spring 2024 we carried out a review of the reintroduction of LFS-derived labour market statistics. These reviews examined the processes and quality assurance used, the potential improvements that can enhance quality, through use of alternative data collection techniques or additional datasets, and the clarity of communicating uncertainty of estimates to users, particularly in the current economic climate where the landscape is continuously changing. We will explore our findings from these reviews and their wider applicability.

Keywords: quality, economic statistics, regulation framework

1. Introduction

The vision of OSR is simple: statistics that serve the public good. These are statistics that have public value, are high quality and are produced by people and organisations that are trustworthy. High-quality statistics fit their intended uses, are based on appropriate data and methods and are not materially misleading. Ensuring quality requires skilled professional judgement in collecting, preparing, analysing and publishing statistics and data in ways that

meet the needs of people who want to use them. It is important to recognise that no data sources are perfect. There are always strengths and limitations with any data.

Economic statistics are essential for measuring and understanding the performance and structure of the UK economy. They provide information on key indicators such as output, prices, income, profits, productivity and trade. They also support the formulation and evaluation of fiscal and monetary policies, the allocation of resources and the comparison of economic performance across countries and regions. These statistics are used by a wide range of users, including government, businesses, researchers, media and the public.

OSR regulates the production of economic statistics through assessments against its Code of Practice for Statistics. However, the need for enhanced scrutiny of the quality of economic statistics has driven OSR to develop a quality-focused framework of indicators against which to assess quality specifically.

Key to this work is the development of a programme for regulating UK economic statistics: 'Spotlight on Quality', for which OSR designed a framework and other supporting regulatory tools. The new framework for assessments is based on international frameworks, such as the European Statistical System's Quality Assurance framework and the International Monetary Fund's Data Quality Assessment Framework, building on the principles of the Code of Practice for Statistics, which sets the standards that producers of official statistics in the UK should commit to. Compliance with the Code of Practice for Statistics gives users, citizens and statistics producers the confidence that published government statistics have public value, are high quality and are produced by people and organisations that are trustworthy.

Assessments based on the new framework consider how the quality of statistics is ensured and communicated through suitable data sources, sound methods, adequate quality assurance and appropriate resources and prioritisation.

This paper will provide an overview of the framework and the key findings from the first Spotlight on Quality assessments as well as reviews of the quality of revisions to the UK's estimates of Gross Domestic Product (GDP), experimental Labour Market statistics and the reintroduction of LFS-derived labour market statistics.

This paper aims to provide a constructive assessment of these outputs based on documents published by ONS and the OSR 2023 and 2024, respectively. We hope that our findings will

contribute to the wider debate on how to improve the quality and communication of economic statistics in the UK and beyond.

2. The Spotlight on Quality Framework

The Spotlight on Quality framework was developed from the practices in the Quality pillar of the Code of Practice for Statistics, the International Monetary Fund's Data Quality Assessment Framework (IMF DQAF) and the Quality Assurance Framework of the European Statistical System (ESS QAF). These frameworks include indicators at a range of levels that are relevant to ensuring the quality of statistics.

The Spotlight on Quality framework is structured around four principles. The first captures foundational factors that impact on quality, such as resources, development plans and prioritisation, and is based largely on practices from the Trustworthiness and Value pillars. The latter three are based on the three principles in the Quality pillar of the Code of Practice for Statistics. Each of the four principles of the Spotlight on Quality framework has been designed to ensure the statistics fit their intended uses, are based on appropriate data and methods and are not materially misleading. This includes using appropriate systems and resources to produce statistics and data in ways that facilitate quality assurance and enhance trust in the statistics. We discuss each of the four principles of the Spotlight on Quality framework and the indicators used to review them.

2.1 Resources, plans and prioritisation

This principle covers the factors that enable the production of high-quality statistics, such as the availability and allocation of resources, the development and implementation of plans, and the prioritisation of user needs. The following are indicators of statistics produced with resources, plans and prioritisation in mind:

- The producer has sufficient resources and skills to produce statistics that are fit for purpose and meet user needs.
- The producer has a clear and coherent development plan that is informed by user feedback and addresses known quality issues.
- The producer prioritises the production of statistics that have high public value and discontinues or reduces the frequency of statistics that have lower public value.

2.2 Suitable data sources

This principle covers the factors that relate to the appropriateness and quality of the data sources used to produce statistics, such as the coverage, accuracy, timeliness and coherence of the data. It includes the following indicators:

- The producer uses data sources that are relevant to and representative of the concepts and populations that the statistics aim to measure.
- The producer assesses and minimises the errors and biases that may affect the data sources and applies appropriate adjustments or corrections where necessary.
- The producer uses data sources that are timely and frequent enough to meet user needs and reflect changes in the phenomena that the statistics measure.
- The producer ensures that the data sources are consistent and comparable with other relevant data sources and statistics, both within and across countries.

2.3 Sound methods

This principle covers the factors that relate to the validity and reliability of the methods used to produce statistics, such as the design, testing, documentation and review of the methods. Indicators that statistics have been produced using sound methods are as follows:

- The producer uses methods that are fit for purpose and reflect international standards and best practice.
- The producer tests and validates the methods and ensures that they produce statistics that are accurate, precise and stable.
- The producer documents and explains the methods and any changes or improvements to them.
- The producer reviews and evaluates the methods and seeks external input or peer review where appropriate.

2.4 Assured quality

This principle covers the factors that relate to the quality assurance and communication of the statistics, such as the checks, analysis, presentation and dissemination of the statistics. It includes the following indicators:

- The producer carries out comprehensive and proportionate quality assurance checks on the data sources, methods and statistics and identifies and resolves any quality issues.
- The producer analyses and explains the quality and limitations of the statistics, including any uncertainty, variability, revisions or gaps in the data.

- The producer presents and disseminates the statistics in a clear, accessible and timely way, using appropriate formats, charts and tables.
- The producer engages with users and stakeholders and responds to their feedback and queries.

For each indicator in the framework, more detail is provided on what the indicator seeks to measure and the reasons for its inclusion in this framework, including where a similar indicator is included in international quality assessment frameworks. Examples of some of the questions that will be covered are also provided.

The framework has been peer reviewed ahead of publication by colleagues in some producer and user organisations in the UK, and by colleagues in international organisations with experience in assessing the quality of a range of statistics.

3 Findings from the Spotlight on Quality assessments

OSR carried out pilot assessments using the Spotlight on Quality framework on the Producer Price Indices (PPIs) and the Profitability of UK Companies and Gross Operating Surplus of non-financial corporations statistics. Both assessments resulted in reports that set out areas of good practice along with requirements for ONS to improve the quality and value of the statistics. This section summarises the main findings and recommendations from these assessments, as well as the actions that ONS has committed to take or is already taking to address them.

3.1 Producer Price Indices

PPIs measure changes in the prices of goods bought and sold primarily by UK manufacturers, including input prices (the prices of materials and fuels purchased) and output prices (the prices of goods sold to the domestic market). The assessment of the PPIs found that some important methodological changes were implemented that improved the quality and international comparability of the PPIs, such as the annual rebasing and chain-linking of the indices, which ensures that the PPIs are better able to adapt to structural changes in the UK economy. The assessment also identified several areas where improvements needed to be made and actions that ONS could take to enhance the quality and value of these statistics, such as:

- Reviewing and updating the samples of the three surveys used to collect price data for the PPIs, as they have become outdated and unrepresentative, leading to low

response rates, high imputation and poor-quality indices for some sectors and industries.

- Replacing the legacy Ingres-based system that is used to produce the PPIs, as it is inflexible, vulnerable to errors and hinders the development of the production process. Migrating to a more robust, flexible and sustainable system that enables the use of new sources and methods is recommended.
- Strengthening the quality assurance process for the PPIs by implementing the outstanding recommendations from an internal review, reviewing the suitability and quality of all current data sources and improving its understanding of the quality assurance carried out by data suppliers.
- Rationalising the number of indices produced by focusing on producing high-quality indices that meet user needs and reducing the number of low-quality or unused indices.
- Enhancing communication of the quality and uncertainty of the PPIs by providing more information on data sources, methodology and quality assurance, using visual tools to illustrate uncertainty and presenting the indices in a more user-friendly way.

We identified eight requirements aimed at improving the quality and value of the PPIs and ensuring that they meet the standards of the Code of Practice for Statistics. This assessment supported ONS in developing an [action plan](#) setting out how it intends to improve the quality of the PPIs, and asked that ONS report back to OSR every six months on its progress on implementing the actions.

3.2 Profitability of UK companies and Gross Operating Surplus statistics

These statistics measure the rates of return and the income generated by UK businesses from their production activities. The assessment of these statistics found that some major improvements had been introduced to the quality and international comparability of these statistics in recent years, mainly through developments that brought the methods in line with international best practice and users' needs. However, the assessment also identified several quality issues and challenges that needed to be addressed, such as:

- Working with data suppliers, especially HM Revenue and Customs (HMRC), to better understand the quality of the data sources used to produce the statistics and the adjustments that are applied to them.
- Improving the production processes and systems to facilitate more interaction and information sharing on data quality between different data suppliers.

- Improving documentation and communicating quality information to users, such as that on the methods, data sources, limitations, uncertainties and revisions of the statistics.
- Ensuring sufficient knowledge transfer and documentation to maintain business continuity and staff expertise, especially in the light of staff turnover and loss of experience.
- Engaging more with users outside of the organisation to better understand their needs and the extent to which the current statistics meet them and being transparent about the reasons and constraints for not meeting some users' needs.

The assessment report identified five requirements for improving the quality of the statistics to the standards required by the Code of Practice for Statistics. In response to the findings, ONS is aiming to publish a development plan explaining how it intends to address these requirements and reports back to OSR regularly on its implementation progress.

4. Communicating quality and uncertainty in economic statistics

Producing and communicating economic statistics is not a straightforward task. It involves several challenges, such as data availability and quality, methodological complexity, conceptual consistency, measurement uncertainty, user diversity and public trust. These challenges have been exacerbated by the COVID-19 pandemic and other economic shocks which have disrupted the normal patterns of economic activity and data collection, and increased the demand for timely and granular statistics. They also highlight the importance of economic statistics for informing the policy response and the public understanding of the economic and social impacts of such events.

Among OSR's efforts to regulate the quality of economic statistics were two reviews on the revisions to the UK GDP and two reviews on labour market statistics.

4.1 Reviewing the quality of revisions to estimates of UK Gross Domestic Product (GDP)

GDP is the most widely used measure of the size and growth of the economy. It represents the total value of goods and services produced in the UK in a given period, usually a quarter or a year.

ONS produces and publishes quarterly estimates of GDP using the three approaches recommended by international guidance – production, income and expenditure – but with different levels of detail and timeliness. The first estimate of GDP for a quarter is published

around 40 days after the end of the quarter, and is based mainly on the production approach, using data from surveys of businesses and government. The second estimate of GDP for a quarter is published around 55 days after the end of the quarter and incorporates more data from the expenditure and income approaches, as well as revisions to the production approach. The third estimate of GDP for a quarter is published around 90 days after the end of the quarter and includes further data and revisions from all three approaches. ONS also publishes annual estimates of GDP, which are more comprehensive and accurate than the quarterly estimates, as they use more data sources and better-quality methods.

Revisions to GDP estimates are normal and unavoidable, as more and better data become available over time and methods are improved. Revisions are an inherent part of the measurement process, rather than the correction of errors. Revisions are also consistent with international practice, as most countries revise their GDP estimates as new information emerges. Users of GDP statistics recognise that revisions are necessary and inevitable and that having access to early estimates is valuable, even if they are subject to change.

However, revisions to GDP estimates can also generate criticism and controversy, especially when they are large or unexpected, or when they challenge the prevailing narratives or perceptions about the UK economy. This was the case in autumn 2023, when ONS revised upwards its estimates of GDP growth during the COVID-19 pandemic, reducing the size of the contraction in 2020 and increasing the size of the recovery in 2021. These revisions were mainly driven by new data from the expenditure and income approaches, which showed stronger household spending and business profits than previously estimated. The revisions also reflected methodological improvements, such as the implementation of annual rebasing and chain-linking, which made the GDP estimates more responsive to structural changes in the economy.

The revisions in autumn 2023 were the largest since the financial crisis of 2008 and 2009 and attracted considerable media attention and public debate. Some commentators praised ONS for improving the accuracy and reliability of its GDP estimates, while others questioned the quality and credibility of its data and methods. Some users also expressed confusion and frustration about the uncertainty and volatility of the GDP estimates, and the implications for policy and research.

In response to the criticism and feedback, OSR conducted a review of ONS's approach to revising its estimates of GDP, which was published in February 2024. The review examined the data sources, methods, quality assurance and communication of the GDP revisions and compared them with the international standards and practices. The review also consulted a range of users and stakeholders, including government, businesses, academics, media and international organisations.

The review concluded that the ONS's approach to revisions is appropriate and well managed, and that the more extreme criticisms that ONS received are misplaced. There were particular challenges in measuring GDP during the pandemic, when the changes in the size and composition of economic activity were relatively large and unusual compared to conventional recessions and recoveries. The review also recognised that the revisions in autumn 2023 were not surprising, given the nature and timing of the new data and methods that were introduced. We found that ONS's approach to revisions is consistent with the international best practice and user needs, and that ONS follows a transparent and regular schedule for revising its GDP estimates.

However, the review also identified some areas for improvement, and set out a number of requirements for ONS to enhance the quality and communication of its GDP revisions. These requirements are summarised below:

- Communicating GDP estimates, uncertainty and revisions: ONS needs to improve the communication of the uncertainty around GDP estimates as they evolve and the reason and implications of revisions. It should provide more qualitative and quantitative tools to enhance users' trust. Similarly, providing more context and analysis for the revisions, such as the magnitude of revisions relative to the size of GDP growth, and the comparison of revisions during economic turning points with earlier periods of structural change, would help users make well-informed decisions.
- Understanding the use of the statistics: ONS needs to enhance the understanding of the wide user base for early and more-mature estimates of GDP, and how these users interpret and use the statistics, given their uncertainty and revisions, is important. Making it easier for users to find and access explanatory information on revisions by presenting it in a central and accessible place rather than scattering it across different publications and articles supports transparency.
- Quality-assuring revisions to reflect the main economic story: ONS should provide users with clearer information on how data sources that contribute to revisions reflect

changes in the structure of the economy, and how they are quality assured and validated, is important. Ensuring that the revisions are consistent and coherent with other economic statistics and indicators, and that they capture the main economic story and trends, enhances user trust and the quality of the statistics.

- Improving access to data: ONS needs to review what data sources and estimation methods can be used to reduce reliance on the production approach for early estimates of GDP, and to strengthen the expenditure and income approaches, is critical. Seeking to access more-timely and more-comprehensive data sources for all three approaches, especially during volatile periods, and to account for how producers adjust their intermediate expenditure in response to economic uncertainty, is becoming more important. Therefore, working collaboratively with other government departments and agencies to enhance data sharing and linking is vital.

The review identified eight requirements for improving the communication of revisions of GDP. In response to these findings, ONS significantly improved its explanation of the [uncertainty in GDP estimates](#). These included an expanded narrative that makes information about revisions more prominent; a better explanation of small changes; and improved clarity in how it sets out the differences between the three ways of compiling GDP estimates. Supporting [blog](#) posts were also used to explain uncertainty in economic statistics to users, including a [clear explanation](#) on uncertainty and recessions from 2022, which offered some key observations in interpreting economic statistics. ONS also announced that it [plans](#) to further enhance the quality and presentation of GDP statistics.

4.2 Reviewing the quality of labour market statistics

ONS has been developing a new Transformed Labour Force Survey (TLFS) using an online-first multimode survey that has been running alongside the existing Labour Force Survey (LFS) since March 2020. These ambitions were well supported across the user community, with a recognition that the declining response rates and [challenges faced in survey data collection during the pandemic](#) meant that action needed to be taken to improve the quality of estimates derived from the LFS.

In October 2023, ONS suspended the production of labour market statistics derived from the LFS due to identified data quality issues. Estimates from the TLFS are not yet ready to be used as the new survey tool is still being developed and its outputs quality assured. Therefore, alternative estimates of UK employment, unemployment and economic inactivity were rapidly developed using additional data sources. These experimental statistics replaced the usual

LFS-derived estimates, aiming to meet user needs while an LFS improvement plan was implemented.

Following the introduction of the new experimental series, OSR conducted a [review](#) focused on the experimental labour market estimates published by ONS on 24 October 2023. The findings from the review are summarised below:

- The suitability of the revised methodology and quality assurance approach to produce headline labour market estimates: The review found that this had partly been explained in the [blog](#) post that ONS published alongside its labour market estimates. However, to help users better understand the suitability of the experimental statistics, more information was needed detailing how the data sources were selected, outlining any potential sources of bias and uncertainty in these data and the quality assurance process.
- The clarity of communication with users on what the new series can and cannot be used for: The review found that more clarity was needed on what the series can and cannot be used for, including a clearer explanation of the uncertainty around these estimates to allow appropriate use and meet user needs.
- The extent to which these statistics meet users' needs and communication of plans for improving them in the future: The review found that the new experimental series provided labour market estimates at a UK level only, meaning that a large amount of insight at sub-national and disaggregated levels (such as ethnicity and disability data) was missing, which was having a detrimental impact on users. There was a lack of clarity amongst users about what labour market statistics would be available in the coming months. ONS had published some information on its plans for the release of labour market data for the forthcoming months and committed to further update publications. The review highlighted that ONS should continue to share its plans and updates to the LFS and how it will transition to the TLFS throughout the coming months.
- Learning lessons in managing quality during transformation: The review found that whilst ONS had made its best effort to produce a headline estimate for users after the decision was made that the LFS data were not of sufficient quality to publish, ONS could have done more to prevent these circumstances from arising. However, the review also acknowledged that these decisions require the balancing of resources across outputs.

In February 2024, ONS re-introduced LFS-derived labour market statistics. Following this, OSR carried out a further review of these statistics against the Code ahead of the transition to the Transformed Labour Force Survey (TLFS). The findings from the review are summarised below.

- Meeting user need with clear communication of plans and priorities: The review found that generally these estimates were viewed as an improvement compared with those based on the experimental approach used previously, as the data provide a wider set of labour market metrics, such as economic inactivity by reason. However, the small sample size was still affecting the quality of the estimates as the results for some of the breakdowns showed large sampling variability, and to help users plan their work more detail was needed about ONS's plan for further reweighting, longitudinal and household data.
- Accessibility of updates and communications: The review found that while several updates were published on the LFS, such as its [plans for improvement and reintroduction](#) and a [further update](#) on its improvement plans and the reweighting article, these outputs were published across the ONS website with no clear signposting. To improve the accessibility of these useful outputs ONS should consider how this information can be more clearly communicated alongside its results.
- Explaining how the data should be used: The review found that the [reweighting methods article](#) included warnings for users about the ongoing volatility of the LFS were clearly provided, advising caution and for users to refer to a range of sources to piece together the full picture, such as Workforce Jobs, claimant count data and Pay As You Earn Real Time Information (PAYE RTI) estimates. To help guide less-experienced users in interpreting the statistics, ONS could better signposting to existing documents such as ONS's [Comparison of labour market data sources](#) and consider how to better describe the uncertainty instead of using non-specific words like 'volatility' and 'caution'.
- Transition to the TLFS: The review found that users welcomed the reintroduction of the LFS-based estimates, but as the LFS continues to go through a period of instability, users of the data would also like greater clarity about the process of transition to the TLFS and how this relates to improvement plans for the LFS, as the two are increasingly interlinked.

These two reviews identified several requirements to help meet user needs and ensure that the labour market estimates published between now and the transition to the

Transformed LFS (TLFS) are as good as they can be, taking into account the context and user need, and are clearly and coherently communicated. ONS has already begun to implement many of these requirements and we continue to support and challenge them as they develop their labour market statistics.

5 Conclusions

Producing and communicating economic statistics is a complex task and can be even more challenging during periods of economic shocks such as the COVID-19 pandemic, where normal patterns of economic activity can be significantly disrupted. It is also during these times of unprecedented uncertainty when good-quality, reliable and robust economic statistics are vital for informing policy response and communicating the economic and social impacts to the public.

Developing a regulatory framework that is flexible enough to adapt to the ongoing economic uncertainty and communicating it clearly are important for enhancing user trust in these vital statistics. This approach builds trust and confidence in the quality of the numbers being produced and ensures users can use them appropriately and with proportionate confidence.

Regulating the quality of economic statistics requires more than the application of a single framework; it is most effective when it is supported by a combination of tools, such as quality reviews, which enhance transparency in the uncertainty that these statistics have. It also requires users to have clear information on what the statistics can and cannot be used for.

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