Compendium

An update on the transformation of the UK National Accounts

The next stages of our transformational work programme for the UK National Accounts, building on the new framework for producing current price and volume estimates of gross domestic product in the UK, introduced in Blue Book 2019.

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1 . Main points

- Blue Book 2019 marks a significant step in our transformation of the UK National Accounts, where we have implemented a new framework to inform the estimates for headline gross domestic product (GDP) and in which there has been more emphasis on data confrontation in the balancing of current price and volume estimates.

- Our work so far has highlighted a number of challenges in meeting the data demands of the new framework – and this will form the basis of prioritising our development work and is integral to our ability to produce high-quality estimates of double-deflated estimates of gross value added (GVA).

- We have initiated research, which includes improving the congruence of our microdata used in compiling GDP to help ensure we reflect our best quality information, a continuation of our deflator development programme with more alignment to the needs of double deflation, and a review of the level of detail we use to compile GDP.

- We plan to publish experimental estimates of double-deflated GVA alongside Blue Book 2020 and to implement double deflation into the UK National Accounts in Blue Book 2021 – the scope of this implementation will be conditional on the findings of our research programme and wider consultations.

2 . Introduction

The need for high-quality estimates on the UK economy has long been recognised by policymakers, economists and the wider public. This is in part reflected by the number of high-profile reviews that have been carried out on economic statistics in recent decades, whose scope have primarily reflected the pressing challenges of their time.

The most recent ones, led by Dame Kate Barker and Art Ridgeway (National Statistics Quality Review: National Accounts and Balance of Payments, 2014) and Sir Charles Bean (Independent Review of UK Economic Statistics (PDF, 5.13MB), 2016), relate to the statistical challenges that national statistical institutes face today. Many of these reflect the challenges of digitalisation and globalisation – features of the so-called modern economy – and specifically the increasing difficulty of measuring output and productivity in a "modern, dynamic and increasingly diverse and digital economy".

In identifying the needs and priorities of our users, several recommendations have been put forward to improve the compilation of the UK National Accounts. These range from tackling the long-standing statistical limitations to reflecting the changing structure and characteristics of the economy to exploiting more effectively existing and new data sources and technologies. This has helped transform the UK National Accounts. In recent years, this has led to a number of high-profile changes to the production of headline estimates of gross domestic product (GDP), which include the following.

A new GDP publication model

In looking to improve the trade-off between timeliness and accuracy of early estimates of GDP, specifically with a view of producing a higher-quality initial estimate that would be less susceptible to revision, we introduced a new GDP publication model in the UK in July 2018[1]. This was based on looking to incorporate richer information from the three approaches to GDP – output, expenditure and income – so providing the scope for a more informed picture of the UK economy. This also enabled the UK to become one of a select few countries to produce estimates of monthly GDP.

Value Added Tax

In contrast to some other national statistical institutes, short-term estimates in the UK National Accounts have traditionally been compiled using business and household surveys. There had been relatively limited use of administrative estimates, which have the potential to provide richer and more comprehensive estimates of activity taking place in the UK. In December 2017, we introduced Value Added Tax (VAT) turnover returns from 630,000 businesses in producing estimates of GDP to supplement turnover estimates from the returns from 45,000 businesses in the Monthly Business Survey[2].

Surveys

There are a wide range of challenges in recording services output as services become more complex and more important to the economy.The new Annual Survey of Goods and Services has led to a significant improvement in providing detailed information on the goods and services produced by each service industry. Furthermore, the need for up-to-date information on products used in production is of high importance, given how production processes change over time in response to advances in information and communications technology, the emergence of new industries and products, import substitution, organisational changes and behavioural responses to movements in input prices. We have reintroduced the Purchases Survey, which provides an up-to-date and more detailed estimate of the goods and services purchased by businesses by product as part of their production process.

A new framework

The aim of this article is to provide an overview of the next stages of our transformational work programme, building on the new framework for producing current price and volume estimates of GDP in the UK that was introduced in Blue Book 2019.

One of the core features of this framework is that it improves the coherency and consistency of how we produce GDP. Given the challenging nature of producing reconciled estimates of GDP, we will look to implement this in stages over the coming years. This confrontation in how we now produce GDP in a supply and use tables (SUTs) framework has played an important role in identifying some of the remaining challenges and helping drive our future development plans.

As we make progress on this next stage of transforming the UK National Accounts, we will take the next steps in producing double-deflated estimates of gross value added (GVA) in line with international best practice – the first time that these will be produced in the UK.

Notes for: Introduction

1. Previously, we produced three estimates of UK GDP each quarter, published 25, 55 and 85 days respectively after the reference quarter. That preliminary estimate was based only on the output measure of GDP. We have now moved to producing two estimates each quarter, in which the new first quarterly estimate of GDP is now published 40 days after the end of the reference quarter. It incorporates information from the output, expenditure and the income measure of GDP.

2. The purpose of incorporating VAT turnover estimates is to improve coverage of smaller businesses for selected industries. They are incorporated in the UK National Accounts with approximately a six month lag, so are not reflected in early estimates of monthly and quarterly GDP. We are continuing to assess and quality assure the VAT estimates, with a view to expand their scope in the construction, production and services industries.

3 . A new framework for gross domestic product (GDP)

In the UK National Accounts, balanced estimates of current price gross domestic product (GDP) have historically been produced in a supply and use (SUTs) framework. Volume estimates of GDP were then produced using the expenditure approach to deflate nominal GDP. Previous analysis highlighted that, while the expenditure approach to GDP reflected the best information that has been available in the UK, better quality estimates could be used by also using information from the production measure for some parts of the economy. In addition, there were a number of conceptual challenges in how this was previously undertaken.

Reconciliation of volume estimate

Whilst current price estimates are fully reconciled in a SUT framework using a 112 product by 112 industry matrix, volume estimates are effectively reconciled at the aggregate GDP level only. Although the detailed estimates are used to inform the approach, balancing adjustments are applied inconsistently and can lead to implausible implied deflators.

Separate current price and volume balancing

The process is very sequential and does not allow to revisit the approach to balancing in current prices once deflation has taken place and volume estimates are available. As such, information that could be used to inform the current price balance is not available, which may have led to different balancing decisions.

Blue Book 2019

The wider implementation of this new framework has helped enable progress on these points. We anticipated the scale of these improvements to be significant. Given the extent of these challenges and the importance to understand fully the impacts of double deflation on industry gross value added (GVA), we decided to use our pre-existing approach to produce industry-level estimates this year and that it will be more appropriate to implement double deflation in stages over the coming years. That said, Blue Book 2019 marks the first step on this journey, and some of this progress has helped inform headline GDP estimates this year. In particular:

- progress in incorporating a wider set of more appropriate available product deflators for each transaction, confronting these at a detailed level for the first time

- integrated the institutional sectors into the balancing process of the SUTs framework, enabling us to check simultaneously the coherence of current price GDP, volume GDP and the sector and financial accounts in their compilation

- improved our estimates of current price GDP by using new data sources to give information on the diversification of the services economy and the costs incurred by businesses

4 . Double deflation

The implementation of this new framework will also enable the production of double-deflated gross value added (GVA) at the industry level for the first time in the UK. Double deflation has long been considered the best way to produce volume estimates of GVA, and so has been a core theme of the National Statistics Quality Review: National Accounts and Balance of Payments (2014) and the Independent Review of UK Economic Statistics (PDF, 5.13MB) (2016). This is where the nominal value of output and intermediate consumption for an industry is deflated by the best available price index for that transaction. In the absence of output and input being deflated separately, it can be shown that this can lead to a bias in estimates of industry-level GVA.

Double deflation helps improve our understanding of productivity analysis. Under single deflation, the price movements are implicitly the same for output that is sold and intermediate inputs that are bought. If this does not hold, then single-deflated estimates of industry-level GVA will be subject to bias – and this will be more pronounced:

- the larger the difference between output and input prices

- the higher the share of intermediate consumption of GVA[1]

Whilst this new framework has the potential to help produce more coherent and consistent estimates of gross domestic product (GDP), one of the major challenges is that it is highly dependent on high-quality information feeding into the compilation process. As identified in some of these reviews, there are instances where this is not always the case – and that can lead to producing estimates that may not always appear economically coherent. As such, the experience of this year's Blue Book has helped us identify priority areas where further improvements are needed – and this will form the basis of developing the UK National Accounts over the coming years. These include the following.

Data source review

Building on these findings of this year's Blue Book, we will look to carry out a systematic assessment of our current data sources, identifying where new ones may be required to improve how economic activity is recorded. This will help us improve how we produced balanced estimates of current price and volume GDP. We will also undertake more research in being able to improve how we reflect insights from our microeconomic analysis in producing our macroeconomic estimates.

Deflators

In undertaking a review of how our deflators scored against a range of quality considerations in this year's Blue Book, we identified a number of high-priority improvements that are integral to understanding the impact of double deflation. We will look to implement some of these improvements over the coming years, which will include understanding the extent to which we capture domestic and foreign price movements in our goods and services deflators and the appropriateness of how we adjust for changes in quality over time. It has long been recognised that this has been a pressing concern in the services industries, particularly those that are prominent in the modern economy.

Another feature is the need to improve our reconciliation of supply-side and demand-side deflators, as this will help us produce more consistent estimates in balancing supply and use of current price and volume estimates of GDP at a product level. Our work this year also highlighted that there is a need to review some of our historical estimates, particularly those pre-2008.

Products

The supply and use table (SUT) framework is the most comprehensive one available, in which we look to balance demand and supply for each good and service at the lowest level possible. This necessitates having precise information at this level, and so we will review the quality of the products in the SUT framework.

This will specifically be in relation to the underlying current price estimates and deflators at the product level, and how this relates to the balancing process of current price volume estimates. There may also be scope to exploring the feasibility of expanding the product breakdown in the SUT framework, particularly as economic activity becomes more heterogeneous in nature in the modern economy.

Reconciliation of SUT and quarterly balancing

In tackling some of the limitations that are inherent in the absence of double deflation, this will help identify where we may be able to improve the process of SUT balancing and so lead to producing estimates of GDP in a more coherent and consistent manner. This will include research into the link between annual estimates of industry-level estimates of double-deflated estimates of GVA and quarterly estimates that are produced by single extrapolation in those periods that have not been balanced in a SUT framework.

It will also reflect how we are now able to produce more consistent estimates of current price and volume GDP in a SUT framework, and how this is better reflected in producing quarterly estimates in those years that have not been fully balanced.

Blue Book 2020 and 2021

Given that we expect applying the SUT framework to be a challenging process , we plan to publish experimental estimates of double-deflated GVA in Blue Book 2020 and to implement double deflation into the UK National Accounts in Blue Book 2021. The scope of this implementation will be conditional on the findings of our research programme and wider consultations while, as part of continual improvements, we will also continue to look at some of the wider principles of this new framework in producing current price and volume estimates of GDP in subsequent Blue Books.

Notes for: Double deflation

1. Furthermore, for those periods that have not yet been subject to full balancing in a SUT framework we estimate headline and industry-level volume GVA using single extrapolation. That is, the change in output is considered a proxy of the change in GVA. That may hold in stable times of the cycle, though it could be argued that it is less likely to be the case around turning points or if there are sharp movements in the relative price of output and input.

5 . Conclusions

In the Independent Review of Economic Statistics, several challenges are identified in how we measure the UK economy. It was recommended that work be undertaken to further develop our statistics, which included:

- developing estimates of double-deflated volume measures of GDP

- exploring the scope for improving early estimates of GDP through the use of administrative data, including by making greater use of information from the expenditure and income measures

- putting in place more detailed and complete flow of funds statistics

- better measurement of the services sector, including the need for more detailed deflators and volume indices

- further developing regional statistics harnessing the potential for administrative data

In recent years, we have undertaken a work programme to help respond to these challenges. We have introduced a new gross domestic product (GDP) publication model to improve the trade-off between the timeliness and accuracy of early estimates, which has allowed the UK to be one of the first countries to develop monthly estimates of GDP. We have incorporated estimates of Value Added Tax (VAT) turnover to improve how we produce the output measure, which also helps enable the production of timely and more frequent estimates of regional GDP. Furthermore, we continue to make considerable progress in the development from-whom-to-whom flow of funds.

Blue Book 2019 marks a significant step in our transformation of the UK National Accounts, where we have used the foundations of a new framework to inform the estimates for headline GDP. There has been more emphasis on data confrontation in the balancing of current price and volume estimates, while we have incorporated new survey information to improve our understanding of the structure of how GDP is produced. However, this new framework has also highlighted the next steps we need to take in producing the UK National Accounts, and this forms the basis of the next stages of our development of the compilation process. This is integral to our ability to produce high-quality estimates of double-deflated estimates of gross value added (GVA) for the first time in the UK. Given the extent of the challenges, we have decided that it will be more appropriate to implement double deflation in stages over the coming years and not this year as initially planned. That said, this new framework has also highlighted the next steps we need to take in producing the UK National Accounts, and this forms the basis of the next stages of our development of the compilation process. This is integral to our ability to produce high-quality estimates of double-deflated estimates of GVA for the first time in the UK.

We plan to publish experimental estimates of double-deflated GVA in Blue Book 2020, reflecting initial progress on the research areas identified here. As these are developed further, we aim to incorporate double-deflated estimates of real GVA into the UK National Accounts in Blue Book 2021.

The scope of this implementation will be conditional on the findings of our research programme and wider consultations, which will provide further insights into some of the feasibility considerations, particularly to historical estimates. Once fully implemented, its impact is expected to lead to improved quality estimates of volume GDP and productivity analysis.

6 . Authors

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