

Article

Improvements to the measurement of UK GDP: an update on progress

This article will provide an update to our work and sets out a change to how we will deliver double-deflated industry gross value added (GVA) in the UK National Accounts. Progress on wider improvements to the deflators used in the UK National Accounts are also presented.

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1 . Summary

This is part of a series of articles outlining the developments we are implementing to the UK National Accounts in Blue Book 2021 (BB21), and the next steps in the enhancement of the framework used to produce [gross domestic product](#) (GDP), both in current prices and in volume terms.

This article will [provide an update](#) to our work and sets out a change to how we will deliver double deflated industry gross value added (GVA) in the UK National Accounts, which differs to the approach previously communicated. This new approach will be used to compile the volume measure of GDP in BB21, and our experimental double-deflated estimates to be published alongside Blue Book 2020. Progress on wider improvements to the deflators used in the UK National Accounts are also presented.

2 . Background

In 2016, the [Independent Review of UK Economic Statistics](#) identified opportunities for the Office for National Statistics (ONS) to develop its UK National Accounts in line with international best practice. In October 2018, we outlined ambitious plans for the [scope of Blue Book 2019](#), including the transformation of the UK National Accounts by using new data sources and methods to produce gross domestic product (GDP) under a new framework.

This framework was to estimate volume GDP through the extended application of the supply and use tables (SUTs) framework rather than through the approach of deflation using the expenditure approach to GDP. This would also bring the UK in line with international best practice – introducing double-deflated estimates of industry gross value added¹ (GVA). This is where nominal value of output and intermediate consumption for an industry is deflated by the best available price index for that transaction.

In September 2019, we introduced important elements of this new framework, but did not implement double-deflated industry GVA in the UK National Accounts to allow us more time to understand fully the impacts of introducing double-deflated GVA.

Notes for: Background

1. Gross value added (GVA) measures the contribution to the economy of each individual producer, industry or sector in the UK and is used in the estimation of gross domestic product (GDP). The relationships can be defined as: output minus intermediate consumption equals GVA, GVA plus taxes on products minus subsidies on products equals GDP.

3 . Double deflation

Estimating volume gross domestic product (GDP) through the supply and use tables (SUTs) framework is the recommended international best practice. This is because deflation is carried out in a single and coherent framework at a detailed level, rather than at the total economy level. However, there are different methods to achieving this goal as well as different sequences in doing so.

The approach we have explored to date is referred to as the H-approach in which the use table is split into several matrices, which are then deflated using a common deflator across both the supply and use of related products. However, our work since September 2019 has identified that implementing double deflation through this approach is not the optimum method at present without additional data availability for the underlying matrices of the H-approach.

While work is ongoing to improve these data constraints through research into increasing product detail and confronting inconsistencies between sources at a micro-dataset level, the outcome of these longer-term research packages is not yet available. We remain committed though, to implementing double-deflated industry gross value added (GVA) in the UK National Accounts for Blue Book 2021 (BB21), which we will now produce through an alternative approach.

This change in approach is similar to the approaches taken by many other countries, such as the [United States](#) (PDF, 212KB), [Australia](#) and the Netherlands, and offers a simplified approach to produce quality estimates without the level of detail and complexity required by the "H-approach". It does, however, move us away from the method within the [UN Handbook on Supply and Use](#) (PDF, 9.46MB).

This traditional approach internationally for double deflation, is to deflate separately the transactions by product within the SUTs framework using the best available deflator for each transaction by product. In deflating transactions independently, SUTs in volume terms will not be automatically balanced. As such, under this approach an additional step is required, which is to balance the SUTs in volume terms.

This is the method that makes best use of the UK's data to deliver double deflation and therefore, will now be adopted in calculating double deflated industry GVA in the UK National Accounts from Blue Book 2021. Further details on this method will be published within the experimental double-deflated estimates, which will be constructed through this approach, published alongside Blue Book 2020 (BB20).

The application of double-deflation within the UK National Accounts will produce better estimates of volume GVA at the industry level. At the headline level, GDP will be largely unaffected by the introduction of double deflation itself, because our existing expenditure-based system means that the aggregate measure is already produced by double deflation. There may nevertheless be changes arising from other data quality improvements.

Expenditure will predominantly continue to lead our headline volume estimate of GDP, as we feel that at this stage this still reflects our best estimate. However, we will continue to confront the data within the supply and use framework, potentially leading to changes to headline GDP where supported by data quality.

4 . Challenges

In our previous update some challenges were identified behind our [decision to not publish double-deflated industry GVA estimates in Blue Book 2019 \(BB19\)](#). These challenges remain regardless of the double deflation approach taken, and while some progress has been made, further work is required and this will continue to be delivered through our research programme.

Divergence between theoretical double-deflated estimates and published Blue Book 2019 estimates

Our theoretical application of double deflation previously presented showed [a slower rate of growth in the run-up to the 2008 and 2009 financial crisis](#) when compared against BB19-published data.

One area we identified for further research was a review of deflators before the financial crisis focusing on the divergence between the Consumer Prices Indices and Producer Price Indices. This review identified improvements to the clothing and footwear deflator, which when implemented will resolve some of this divergence. We have also initiated a wider development programme to increase the quality of deflators used in the national accounts. Both are discussed further in Section 5: Quality improvements to deflators.

In publishing our experimental double-deflated estimates at the end of October 2020, and Blue Book 2021 (BB21) estimates next year, expenditure will continue to lead our headline volume estimate of gross domestic product (GDP) for these earlier years except where any divergence can be explained and supported by data quality.

Reconciling the different approaches to measuring GDP, at a detailed level

GDP can be measured using three different approaches: production, income and expenditure. In the UK, we compile and draw on information from all three approaches and balance them together to arrive at a single estimate of GDP that uses all available data. Following our [initial theoretical application of double deflation](#), we identified that some historic balancing decisions would lead to incoherent outcomes when calculating volume estimates using double deflation. We have since initiated work to review historical balancing decisions and confront inconsistencies between sources at a micro-dataset level, both within each measure of GDP, and across the three measures of GDP. Case studies from this work are scheduled to be published at the end of September 2020 and we are able to introduce some of these improvements earlier with initial findings being incorporated into Blue Book 2020 (BB20) estimates at the end of October 2020.

5 . Quality improvements to deflators

Since our previous update we have initiated a wider development programme to increase the quality of deflators used in the national accounts, which aligns with opportunities identified in the [Independent Review of Economic Statistics \(PDF, 5.13MB\)](#). Our recent work in this area is summarised in this section along with broader work looking to improve the methods, data sources and systems used for deflators in the UK National Accounts.

Capture quality change more effectively in fast-changing industries

Some important deflation challenges arise around quality change being captured in a price series. Changes in quality should be measured as a volume change and not a price change, therefore we need to ensure that quality change is adequately accounted for in terms of volume rather than in the price series being used as deflators. This can be a challenge for the measurement of fast-growth industries, particularly those within the service sector.

To address this challenge we are collaborating with experts in the UK (for example, [Office for National Statistics \(ONS\) Fellows](#), the [Economic Statistics Centre of Excellence \(ESCoE\)](#) and ONS's [Data Science Campus](#)) and internationally (for example, [Eurostat](#), the [Voorburg Group](#)) to help us drive and prioritise our research work.

Our initial work has focused on deflation in the services industries for telecommunications. Working collectively with industry experts, the ONS has acquired additional administrative data that provide coverage of more of the activities in the telecommunications industry. We will be expanding this activity to review other services industries, such as computer hardware and software services.

Telecommunication services

Over the last three years, we have collaborated with industry representatives and academics to develop options for improving our existing methodology for deflating telecommunication services output. Details of this research can be found in work published through the [Economic Statistics Centre of Excellence](#).

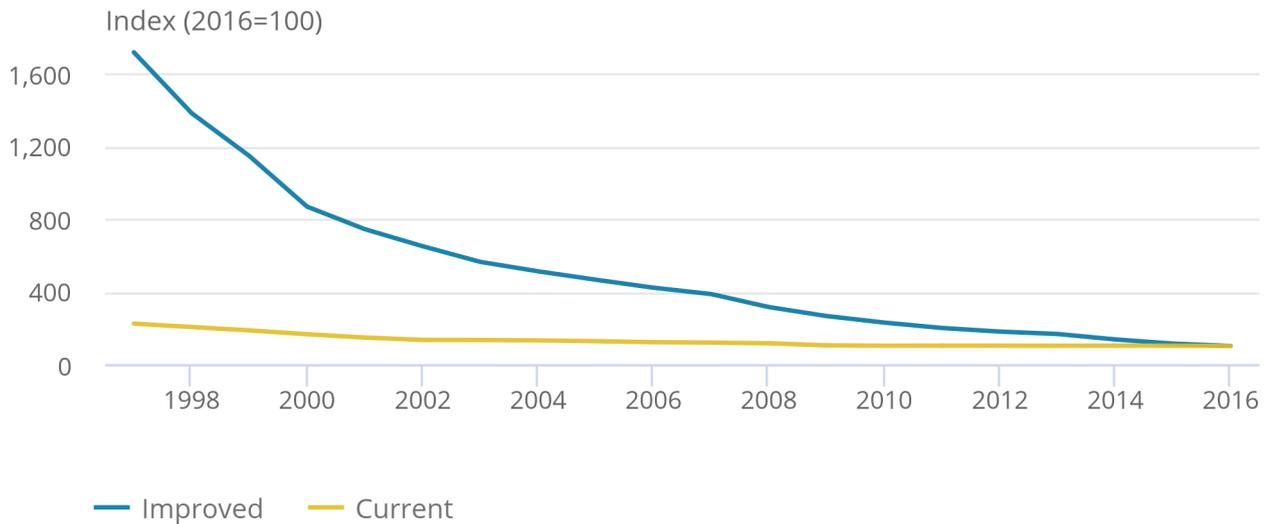
We have settled on the method which tackles, amongst others, two main issues: the under-representation of internet services within the current deflator and an improvement in the handling of access charges for telecommunications services. This new deflator presents a significant improvement to the current methodology.

Figure 1: Improved telecommunication services deflator has a stronger price decline

Current and improved telecommunication services deflator, 1997 to 2016

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Current and improved telecommunication services deflator, 1997 to 2016



Source: Office for National Statistics

The improved telecommunication services deflator better accounts for the technological changes that occurred in this industry over the past two decades such as increasing coverage and broadband speeds that have resulted from infrastructure investment and implementation of superfast fibre optic broadband as well as new generations of mobile cellular broadband.

Ideally, deflators reflect changes in the prices of goods and services, not changes in quality, which ensures that "like with like" comparisons are made. In industries where there are faster technological improvements, removing this increase in quality from the price series results in a price decline in the deflator. Reflecting this (Figure 1), the improved telecommunication services deflator has a stronger price decline, better accounting for the technological and associated quality changes that occurred in this industry over the past two decades.

The effect of the new deflator would increase the volume of output of the telecommunications sector and will likely increase the headline volume measure of GDP. However, as this improvement also impacts both how telecommunication services are consumed by other industries and are used by consumers it is not yet possible to know what the exact impact will be. Increases in the telecommunication services sector output would be partially offset by impacts to other industries, such that any increase to the volume measure of GDP will be significantly less than that driven by the increased output of the telecommunication sector.

Make better use of existing data sources and methods, improving quality and consistency of deflators across economic statistics

Chain-linking

[Annual chain-linking](#) of business price statistics will be introduced in Blue Book 2020 (BB20). This is in line with international best practice and will improve consistency with other price indices such as the Consumer Prices Index (CPI). This is a significant improvement, providing more up-to-date weighting of business inflation statistics (used as deflators in the UK National Accounts) including Producer Price Index (PPI), Export Producer Price Index (EPI), Import Producer Price Index (IPI) and Services Producer Price Index (SPPI), which we previously announced as part of a [consultation in 2017](#).

Services Producer Price Indices

Historically, in the absence of appropriate SPPIs we have made use of alternative sources to compile deflators for services in some areas of the UK National Accounts. We have recently implemented improvements to the scope and coverage of SPPI, which means there will now be areas where these alternative sources can be replaced by appropriate SPPIs. We are conducting rolling reviews to assess where we can implement improvements to the services sector deflators used in UK National Accounts and are reviewing wider improvements to services sector deflators.

Clothing and footwear

Following a review, we aim to implement improvements to the clothing and footwear deflator used in the UK National Accounts prior to 2010. In 2010, [changes to the methodology](#) used to collect clothing and footwear prices in the [consumer price inflation](#) family of indices were made. As is common with consumer price inflation methodological changes, the back series was not revised.

As a result, the household final consumption expenditure deflator for clothing and footwear is composed of two, distinct methodologies; one prior to 2010 and the other post-2010. While this retains consistency between the deflator and consumer price inflation measures, it can be viewed as sub-optimal from a deflator perspective, where it is preferable to use a consistent methodology throughout the time series.

Our improvement will align the back series being used for this deflator in the UK National Accounts with the methodological and sample improvements that have been made in the consumer price inflation family from 2010 onwards. This will allow us to reflect better the changes in clothing and footwear prices within the calculation of volume estimates of household final consumption expenditure across the entire time series. Our aim is to incorporate this improvement to the historical estimates within our experimental double-deflated estimates to be published alongside BB20 and incorporate it into the UK National Accounts for Blue Book 2021 (BB21).

Financial services

We are conducting research into other industries such as financial, insurance and pension services. Through this we are assessing how we collect both nominal and price data for financial intermediation services indirectly measured (FISIM), with the aim of improving the data collection or calculation method to improve the quality of data being used in the UK National Accounts for Blue Book 2022 (BB22).

Ensure we have efficient and effective process, which improves the production, quality assurance and narrative around deflators

Our work in this area is focused on improving methods and systems to allow better transparency and consistency in the use of deflators across the UK National Accounts. Given our new approach for delivering double deflation, the analysis and research in this area will also inform the deflator choices to be used in the experimental estimates of double deflation, published alongside BB20, and incorporate double deflation into the UK National Accounts for BB21.

Make better use of administrative sources and microdata within our compilation methods

We are looking to make better use of microdata and increased use of administrative data sources within the compilation of deflators. This will help ensure our statistics are fit for the future, allowing increased granularity and improved quality.

In the [UK National Accounts, The Blue Book: 2019](#) we introduced improvements to how deflation is carried out for trade in services, to better capture the currency mix of those transactions that are carried out in a foreign currency. We are currently looking to deliver improvements to import and export deflators, in line with the [UK Trade Development Plan](#). Our review of trade in services deflators recommended several areas for improvement, with the first improvement to the tourism deflator due in BB22.

6 . Next steps

We will publish experimental estimates of double-deflated industry gross value added (GVA) estimates alongside this year's Blue Book, to be published in late October. As we move towards the full implementation of double deflation in the UK National Accounts, we will look to make further progress on the research programme that has been identified as part of this ongoing piece of work. This includes our initial conclusions on confronting micro-datasets to better understand inconsistencies between sources and its implications for balancing gross domestic product (GDP) and further planned improvements to product-level deflators. This is part of the wider transformational programme in place for the UK National Accounts.