

Article

# National Accounts articles: Blue Book 2019 indicative impacts on GDP current price and chained volume measure estimates: 1997 to 2016

In Blue Book 2019, Office for National Statistics (ONS) will introduce a new framework to produce GDP, both in current prices and in volume terms. Estimates of the impact to current price and chained volume measure estimates for gross domestic product (GDP) from 1997 to 2016, planned for publication in September 2019.



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## Table of contents

1. [Executive Summary](#)
2. [Introduction](#)
3. [Blue Book 2019](#)
4. [Indicative Impacts](#)
5. [Conclusions](#)
6. [Annex A: The “H-Approach”](#)
7. [Annex B: Provisional publication schedule for Blue Book and Pink Book 2019](#)

# 1 . Executive Summary

This article details provisional estimates of the total impact of all the improvements to current price (or nominal) and chained volume measure (CVM or real) gross domestic product (GDP) up to 2016, in the Blue Book 2019 – consistent with the Quarterly national accounts (QNA) due to be published on 30 September 2019.

This article focuses on the period from 1997 to 2016 and brings together both current price and CVM annual revisions along with the GDP implied deflator.

All of the methodological improvements for the period 1997 to 2016 have already been outlined in the scope article of 11 October 2018 [Latest developments and changes to be implemented in Blue Book and Pink Book 2019](#) and further detailed methodological articles are planned over the next two months.

The total package of current price GDP changes increases the size of the economy in 2016 by approximately £26.0 billion, around 1.3% of GDP.

Average growth of real GDP over the period from 1998 to 2016 has been revised up 0.1 percentage point to 2.1% per year.

The average annual GDP implied deflator over the period from 1998 to 2016 remains unchanged at 1.9% per year, although within this total there are some offsetting revisions to individual expenditure component deflators.

## 2 . Introduction

In October 2018, we outlined our ambitious plans for the scope of Blue Book 2019, including how we would transform the UK National Accounts by using new data sources and methods to produce gross domestic product (GDP). This new framework involves confronting the estimates from the three approaches to estimating GDP – production, income and expenditure<sup>1</sup> – using the Supply and Use Tables (SUTs) framework. This has historically been applied to set the current price level of UK GDP, but we have extended its application as the basis for the level of volume GDP. [Annex A](#) provides further information on the “H-Approach”.

We have made considerable progress in improving how we compile estimates of GDP, where we have used the [foundations of the “H-Approach”](#) to inform headline GDP estimates in Blue Book 2019.

We have made 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.

We have integrated fully the institutional sectors<sup>2</sup> 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.

We have 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 through the introduction of the Annual Survey of Goods and Services and the reintroduction of the Annual Purchases Survey. As well as enhancing our understanding of the modern economy, these surveys will be enablers in implementing double deflation in the UK National Accounts. In taking on these new data, we have undertaken a full rebalance of GDP for all years from 1997 to 2016.

We anticipated the scale of these improvements to be significant and this has proven to be the case. Given the extent of these challenges and the importance to understand fully the impacts of double deflation on industry gross value added (GVA), we have opted to use our pre-existing approach to produce industry-level estimates this year, before a planned full implementation of this framework as part of Blue Book 2020. The aim is now for double-deflated estimates of UK GVA to be produced for the first time then, as part of our wider transformation programme. This provides the benefit of using the insights of the new framework to inform headline estimates of GDP in this year's Blue Book, while allowing additional time for full quality assurance at the lower level which will be reflected in next year's Blue Book.

This paper provides a summary of these indicative estimates, which are included for the period 1997 to 2016. Further analysis will be published in due course, which will provide additional lower-level estimates of these indicative impacts ahead of the publication of Blue Book 2019. Users may wish to note that we are exceptionally not going to fully reconcile 2017 annual GDP estimates in Blue Book 2019, instead producing an indicative balance to allow further time for final quality assurance of the estimates. The reference year and last base year for all chained volume measure estimates will remain as 2016.

The remainder of this article is structured as follows:

- Section 3 outlines the improvements to the data, methods and framework used to produce GDP
- Section 4 outlines the indicative impact of these changes on GDP and its main components
- Section 5 provides conclusions

Our plans for further articles outlining the improvements to be introduced in Blue Book 2019 and their impacts on key economic aggregates can be found in [Annex B](#).

#### **Notes for: Introduction**

1. Production refers to the sum of all production activity within an economy; income refers to the sum of all factor incomes within an economy; expenditure refers to the sum of all final expenditures (less imports) within an economy.
2. The institutions sectors include households, non-profit institution serving households, private non-financial corporations, financial corporations and government.

## **3 . Blue Book 2019**

### **A new framework for gross domestic product**

In the UK National Accounts, balanced estimates of current price gross domestic product (GDP) are produced in a Supply and Use Tables (SUTs) framework. Historically volume estimates of GDP are then produced using the expenditure approach to deflate nominal GDP. As part of our wider transformational programme, a new framework<sup>1</sup> will be fully implemented over the coming years. Blue Book 2019 is the first major step in the journey we outlined in [October 2018](#), where these foundations have informed how real GDP estimates have been produced. The improvements in Blue Book 2019 will deliver a number of benefits, which include:

- there has been much more emphasis on data confrontation in the balancing of current price and volume estimates through the SUTs framework; this produces more coherent estimates of GDP as a more holistic approach is taken of all the information available in the production of these estimates
- the expenditure approach has traditionally been the determinant of annual benchmarked volume GDP estimates; research has been undertaken to identify the best deflator at a product level for each transaction in the UK National Accounts from those deflators that are currently available, therefore improving the volume estimate of GDP
- the institutional sector accounts have been introduced into the SUTs framework, allowing this information to feed into the balancing process, providing a much broader dataset to support the quality assurance process and thereby improving coherence within the UK National Accounts
- the provision of an integrated framework for identifying the main areas for further development, which can be targeted as we move through our transformation journey

A full review of the suite of all available deflators has been undertaken, specifically with a view to identifying the most appropriate one for each product in the transactions of the UK National Accounts. The information used to assess the deflator choices was based on a range of quality considerations, such that those judged most appropriate would be used in this new framework. The [Eurostat Handbook on Price and Volume Measures In National Accounts](#) provides an overview of the main considerations on the conceptual quality, implicitly reflecting the quality of how data are collected for each deflator. This covers:

- the completeness of the coverage of the product heading by the indicator, identifying whether the indicator covers all the products under the heading or just a selection of those products, such as only those that are sold to households
- the conceptual consistency between the indicator and the concepts of the UK National Accounts
- the valuation basis of the indicator – for example, market output should be recorded in basic prices, whilst final consumption expenditure should be recorded in purchasers' prices
- the indicator should take quality changes into account, recording them accordingly within the volume estimates

Having delivered the core foundations, we will now build on these over the coming years with the full introduction of double deflation, further improvements to deflators and the introduction of flow of funds estimates.

## **New, improved data sources**

Blue Book 2019 has benefitted from the new Annual Survey of Goods and Services and the Annual Purchases Survey. These surveys have improved the quality of the current price estimates, providing new insights on the diversification of the services economy and the costs incurred by businesses in their production processes. The Annual Survey of Goods and Services estimates the goods and services produced by each industry, which will provide a more complete picture of output by product – particularly for the service industries, which comprise around four-fifths of UK output. The Annual Purchases Survey will provide a much richer understanding of the pattern of intermediate consumption by industry, thereby providing more accurate estimates of current price gross value added (GVA) for each industry. These new survey estimates are integral to the production of double-deflated estimates of GVA, which require high-quality information on the output and intermediate inputs into the production processes for each industry, which is now planned for Blue Book 2020.

In recent years, improvements have been introduced in a layered manner, in which these have essentially been added on top of previous estimates of GDP. As such, it has not been possible to review the way in which balancing has been carried out in previous years and whether this could be improved. The introduction of a new framework has allowed for a full balancing process to be undertaken, which is based on the latest estimates available, in which unbalanced estimates from each compilation area of the UK National Accounts are now confronted in a Supply and Use Tables (SUTs) framework for the years 1997 to 2016.

## Methods improvements

There are also a number of methodological improvements<sup>2</sup> that will be incorporated into Blue Book 2019, impacting upon current price and volume estimates of GDP. The main ones are outlined in the following text.

## Capital stocks

There are a number of improvements being introduced to the estimation of capital stocks and therefore the consumption of fixed capital (CFC), which include:

- a review of the life length of fixed assets has been undertaken, allowing some of these to be improved, delivering improved consistency with the approach taken in other countries; these are typically shorter in length, which translates to there being higher CFC, all else being equal
- improvements have been made to the classification of stocks by asset, industry and the institutional sector; moreover, the Perpetual Inventory Method (PIM)<sup>3</sup>, which helps produce the estimates of capital stock, is now being run at a lower level of aggregation which improves the accuracy of these estimates
- the age-efficiency profile of a capital asset is the rate at which the physical contribution to production of the capital asset declines over time, as a result of wear and tear; hyperbolic age-efficiency will be implemented, which is where an asset loses little of its productive value in the early years of its life but loses much more of this value as it nears the end of its life length. This will replace the previously used linear age profile in which there is a constant decline in the productive value over its service life

Consumption of fixed capital is integral to how some current price non-market output is estimated – that is, the output of government and non-profit institutions serving households – and hence these changes impact on GDP. In the absence of market prices to value those goods and services that are provided for free, the sum-of-costs approach is used to estimate the value of non-market output. This is where the cost of production<sup>4</sup> is said to equal the value of that output, which includes the cost of using up capital (such as wear and tear).

## Change in inventories

A number of methodological improvements are being made to the calculation of change in inventories, which is now calculated on an industry by product basis. This allows for a more accurate estimate to be produced in a Supply and Use Tables (SUTs) framework. Deflation is now carried out on a product by asset basis for the first time, instead of at industry level.

The improved interaction in a SUTs framework has allowed for more coherence checks across the GDP approaches, which are used to provide estimates of intermediate consumption and output by product. This has provided an opportunity to compare those estimates produced from inventories against output measured from other sources, identifying mismatches which can then be addressed, such as the removal of inventories work-in-progress from the services industries.

## Research and development

In Blue Book 2014, expenditure on research and development (R&D) was capitalised as a fixed asset for the first time in the UK National Accounts. We have taken on more up-to-date survey returns, mostly impacting 2013 onwards, while better aligning the measures across the National Accounts so that R&D is now treated as a fully balanced concept. We have also taken the opportunity to apply more consistent treatment across all components when calculating the sum-of-costs for non-market sectors.

## Value Added Tax

Producers pay Value Added Tax (VAT) on materials that are used in the course of production but are able to claim those VAT payments back from HM Revenue and Customs (HMRC). In instances where the government is a “producer”, however, it does not pay VAT accrued on materials used in the production of public services, nor does it receive the repayment for such expenditure. Therefore, these transactions must be imputed in order to record intermediate consumption at purchases prices. VAT refunds provide an estimate of the amount of VAT that would have been claimed back by local authorities and central government departments had they paid VAT on an equivalent basis to the private sector.

In collaboration with HMRC and HM Treasury, we have completed a review of our recording of estimates of VAT refunds, improving our recording of these refunds associated with the National Health Service, Academies, the British Broadcasting Corporation and Police Commissioners. There has been an increase in the value of government final and intermediate consumption and the sum-of-costs output of government. That said, given that this tax is recorded as income and expenditure for both local government or central government respectively, any updates to VAT refunds data have no impact on general government net borrowing.

## Trade

There are a number of improvements coming into effect in Blue Book 2019 that will lead to revisions to current price and volume estimates of gross trade flows. These include the following areas.

Improved estimates of the handling of intragroup transactions between resident and non-resident companies, which are part of the same group entity. Intragroup fees include those that relate to investment banking, advisory, brokerage, underwriting, insurance, loans and advances, while intragroup cost recharges are applied when the costs of a centrally managed service are allocated and charged to each group entity. In each instance, these are applied when a service is being provided. Whilst transactions between UK institutions have been captured in the income and output measures of GDP, transactions between residents and non-residents will now be captured accordingly within trade in services for the first time.

There are improvements to the adjustments that are applied so that trade in goods estimates are consistent with the Balance of Payments. HM Revenue and Customs (HMRC) records the physical movement of goods in and out of the UK. However, for the purposes of the Balance of Payments, adjustments need to be applied so that they are on a change of economic ownership basis. In some instances, goods change economic ownership but do not leave or enter the UK, while not all goods that leave or enter the UK represent a change of economic ownership.

The method to produce the price index used to deflate fuel for trade has been updated, to incorporating more comprehensive granular information and so provides a more accurate estimate of the volumes of each commodity traded on an import and export basis. There have also been improvements to how deflation is carried out for trade in services, which will better capture the currency mix of those transactions that are carried out in a foreign currency.

### Notes for: Blue Book 2019

1. The “H-Approach” refers to the full framework set out in the [United Nations System of National Accounts 2008](#), which covers SUTs as well as their extension to input and output tables and beyond. See [Annex A](#) for a high-level overview.
2. There are a range of other improvements that will be implemented in Blue Book 2019 to improve our estimates but have not been covered here. This is due to these revisions being smaller in magnitude and frequently offsetting against each other so that headline GDP is largely unaffected. Some of these additional improvements will be covered in individual articles published over the summer, explaining the improvements made and impacts upon the UK National Accounts.
3. A PIM enables balance sheets or stocks to be calculated from the associated investment flows, by accumulating past purchases of assets over their estimated service lives to estimate a gross capital stock measure. to calculate estimates of consumption of fixed capital and net capital stock, it is also necessary to specify a depreciation function to account for the fact that assets lose value over time as a result of being subject to wear and tear as the asset ages.
4. The sum of production costs includes intermediate consumption; compensation of employees; consumption of fixed capital and other taxes on production.

## 4 . Indicative Impacts

This section shows the impact of all the improvements being introduced on current price and volume gross domestic product (GDP) growth and some of the key components of GDP. Figure 1 shows the revisions to the annual profile of nominal GDP growth from 1998 to 2016, highlighting how the underlying trends in the pre- and post-crisis periods are largely unchanged. Average nominal GDP growth for the period 1998 to 2007 remains unchanged at 5.0%, while there has been a slight upward revision to the period from 2010 to 2016, up from 3.6% to 3.7%. While there has not been a marked change to the underlying picture around the financial crisis, there have been more notable revisions to specific years. These revisions range from negative 0.2 to 0.4 percentage points, while the mean revision over this entire period is 0.1 percentage points. The mean absolute revision is 0.2 percentage points.

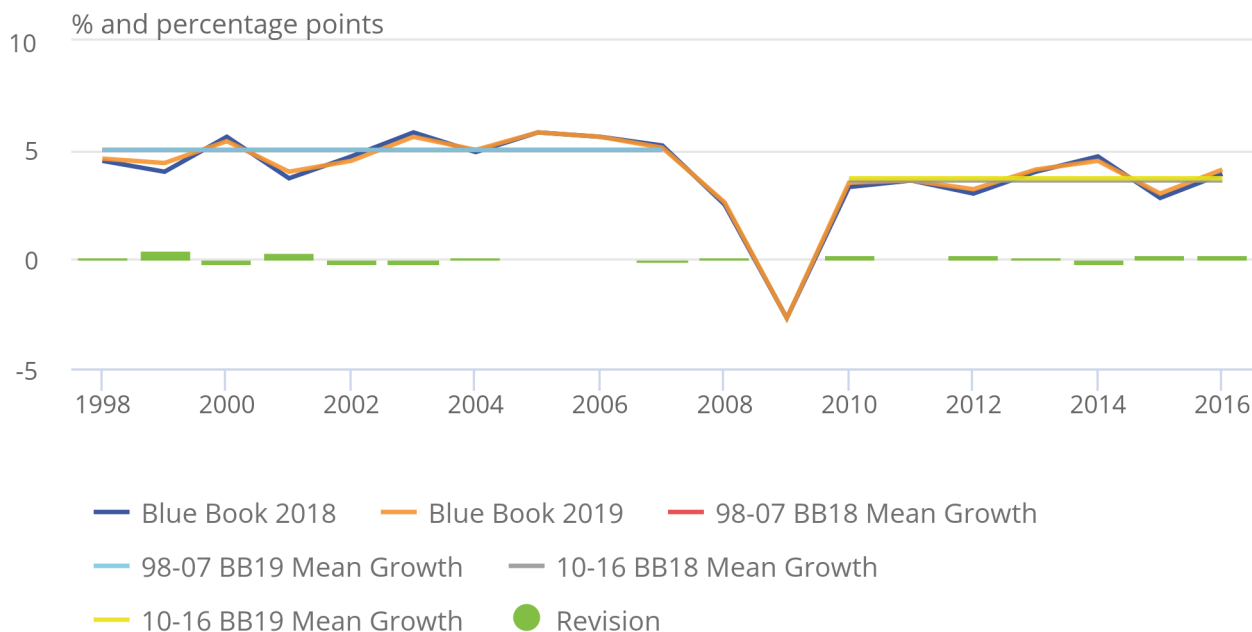
Gross national income (GNI) is defined as GDP plus net income received from abroad (sometimes referred to as net property income). Revisions to GDP presented in this article would, all else equal, therefore change GNI. An article detailing indicative revisions to the sector and financial accounts, including net income received from abroad, is planned for publication at the end of August 2019 and will provide the overall indicative impact on UK GNI up to and including 2016 due to changes in Blue Book and Pink Book 2019.

**Figure 1: Average nominal annual GDP growth has been revised up 0.1 percentage points to 4.0% between 1998 and 2016**

Revisions to annual nominal gross domestic product (GDP) growth, UK, 1998 to 2016

Figure 1: Average nominal annual GDP growth has been revised up 0.1 percentage points to 4.0% between 1998 and 2016

Revisions to annual nominal gross domestic product (GDP) growth, UK, 1998 to 2016



Source: Office for National Statistics

Notes:

1. Pre-crisis trend refers to the average annual growth over the period 1998 to 2007 and post-crisis trend refers to the average annual growth over the period 2010 to 2016.

Figure 2 provides a decomposition of the change to the level of nominal GDP, comparing the profile of the latest available estimates with the indicative one for Blue Book 2019. It shows how much of these revisions are driven by the individual methodological changes listed here and "other", which captures the cumulative effects of all the other methodological improvements that have been incorporated, the incorporation of additional survey and administrative returns, those that are arising from the increased focus on data confrontation and reflections from the feedback in looking to reconcile current price and volume estimates.

In line with usual practice, these "other" revisions are most pronounced in the latest year here, as 2016 has been subject to balancing in a Supply and Use Tables (SUTs) framework only once so far. We have been able to incorporate for the first time for this year much more comprehensive data in the balancing process, including those from the Annual Business Survey and Her Majesty's Revenue and Customs which provide a more complete picture on production and income measures of GDP. In contrast, "other" changes to earlier years is much more likely to reflect the effects of improved confrontation of all the available estimates in a SUTs framework.



These level revisions are equivalent to 0.8% of nominal GDP in each year on average over this period. Figure 2 shows that the new estimates of capital stocks have been a key contributor for the total revisions to the level of nominal GDP. This has led to revised estimates of consumption of fixed capital (CFC), largely reflecting the effects of improved estimates of life lengths of capital assets, as non-market output is estimated using a sum-of-costs approach. Forthcoming analysis will provide more in-depth analysis on the nature of the improvements to capital stocks, including their impacts on the UK National Accounts and productivity analysis.

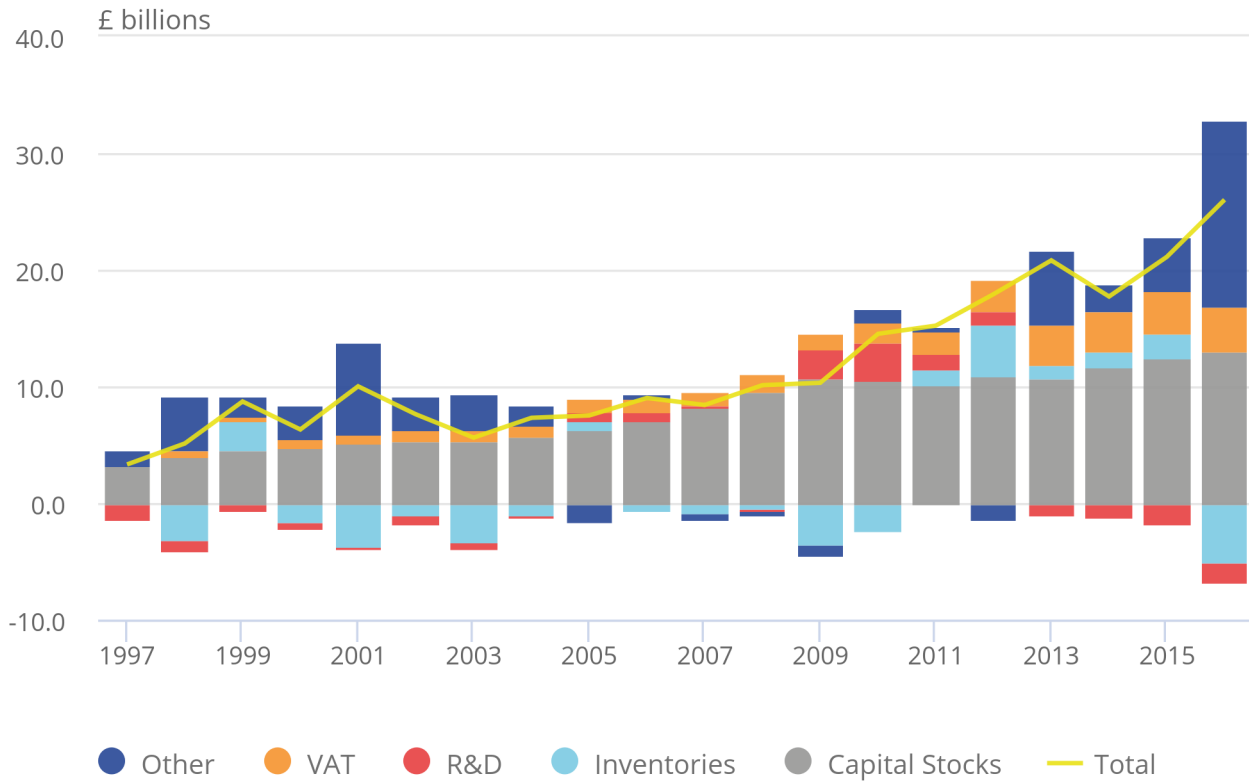
The improvements to how intragroup fees and cost recharges are recorded are not shown separately in Figure 2. These were already included in the production and income approaches to GDP, but were not included in Trade in Services data. In Blue Book 2019 we will incorporate existing source data for these transactions, reducing the need for balancing of this activity in the expenditure approach.

**Figure 2: A large proportion of the nominal GDP revision can be attributed to the capital stocks method change**

Decomposition of the change to the level of nominal gross domestic product (GDP), UK, 1997 to 2016

Figure 2: A large proportion of the nominal GDP revision can be attributed to the capital stocks method change

Decomposition of the change to the level of nominal gross domestic product (GDP), UK, 1997 to 2016



Source: Office for National Statistics

Notes:

- "Other" is treated as a residual, which captures the net effects of other methodological improvements in Blue Book 2019, the incorporation of latest survey and administrative information, enhanced data reconciliation and balancing.

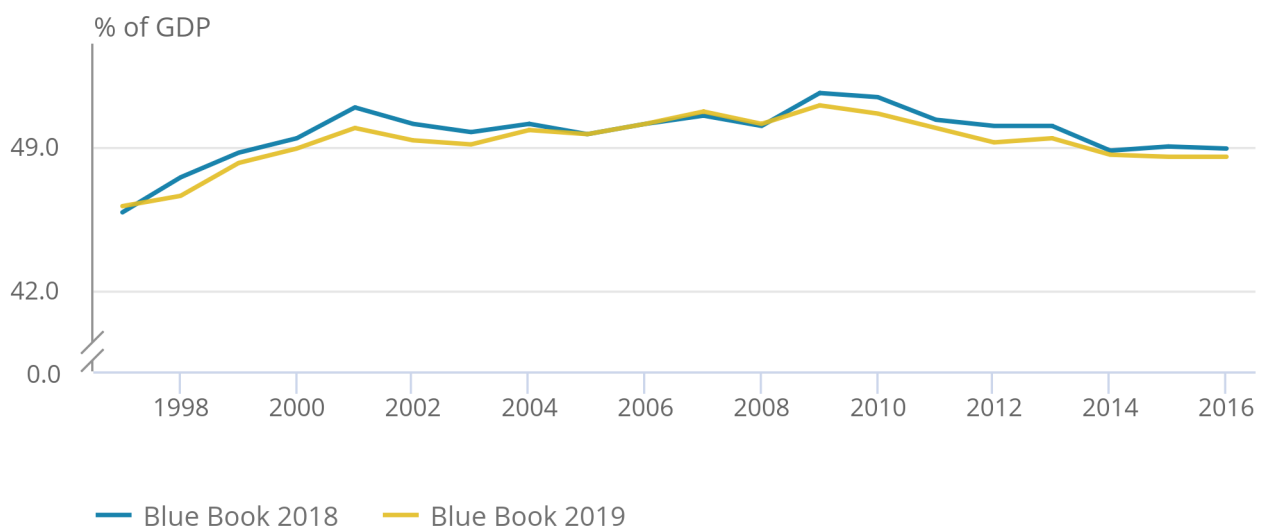
Figure 3 compares the latest and indicative estimates of unadjusted labour share of income – that is, the share of compensation of employees (CoE) in GDP. It shows that the profile is broadly similar to that published previously – this new share of employee compensation in total GDP is slightly lower through much of this 20-year period. The change in the level of this share is equivalent to 0.4% of GDP on average. This reflects that the upward revisions to GDP have largely been on the capital share, because of the improvements to how capital stock will now be recorded in the UK National Accounts. The incorporation of improved estimates of life lengths has led to estimates of the consumption of fixed capital (CFC) being revised up, feeding into how gross operating surplus (GOS) is recorded for general government and non-profit institutions serving households. There is no effect from this change on CoE or mixed income. The underlying trend of this concept of the labour share largely follows the one published in Blue Book 2018 – it continues to exhibit an increase in the trend in the decade leading up to and around the financial crisis, peaking in this period in 2009. There is then a fall in the years that follow, as CoE increases at a slower rate than national income.

**Figure 3: The labour share of income has been revised down in the majority of years**

Revisions to the unadjusted labour share of income, UK, 1997 to 2016

Figure 3: The labour share of income has been revised down in the majority of years

Revisions to the unadjusted labour share of income, UK, 1997 to 2016



Source: Office for National Statistics

Notes:

1. The labour share of income is taken as compensation of employees as a share of GDP.

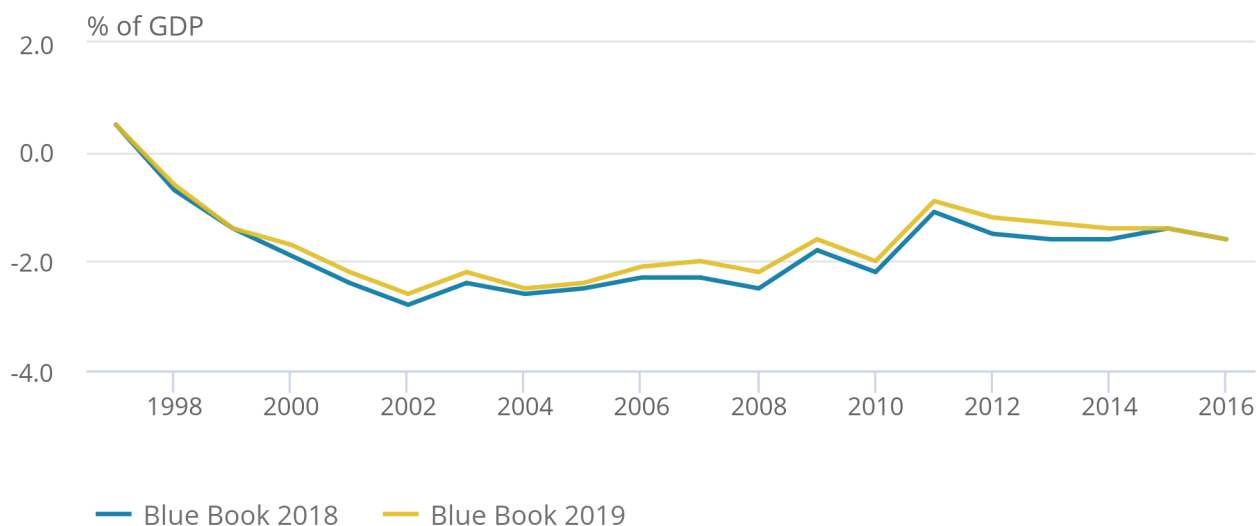
Figure 4 shows an indication of the extent to which the trade balance will be revised in Blue Book 2019, which shows that there has been an improvement which is equivalent to 0.2% of GDP on average over the period 1997 to 2016. These revisions primarily reflect the net effect of improved estimates of how intragroup fees and charges are recorded, how adjustments are applied so that trade in goods estimates are consistent with the change in economic ownership basis and the upward revisions to the level of nominal GDP. Forthcoming analysis will examine the revisions to the Balance of Payments.

**Figure 4: The trade balance has been revised up in the majority of years**

Revisions to the trade balance, UK, 1997 to 2016

Figure 4: The trade balance has been revised up in the majority of years

Revisions to the trade balance, UK, 1997 to 2016



Source: Office for National Statistics

The revisions to nominal estimates of GDP reflect the cumulative effects of latest survey and administrative returns, the range of methodological improvements that have been implemented and those from improved reconciliation of GDP estimates at a much lower level. However, it also reflects insights from producing volume estimates of GDP, which have helped inform the current price estimates. The way in which deflation is carried out in the UK has been improved, reflecting work undertaken in identifying the most appropriate and quality deflators available for each product for each type of transaction in the UK National Accounts. This has allowed us to reflect our best judgements in looking to produce informed and reconciled estimates of current price and volume GDP.

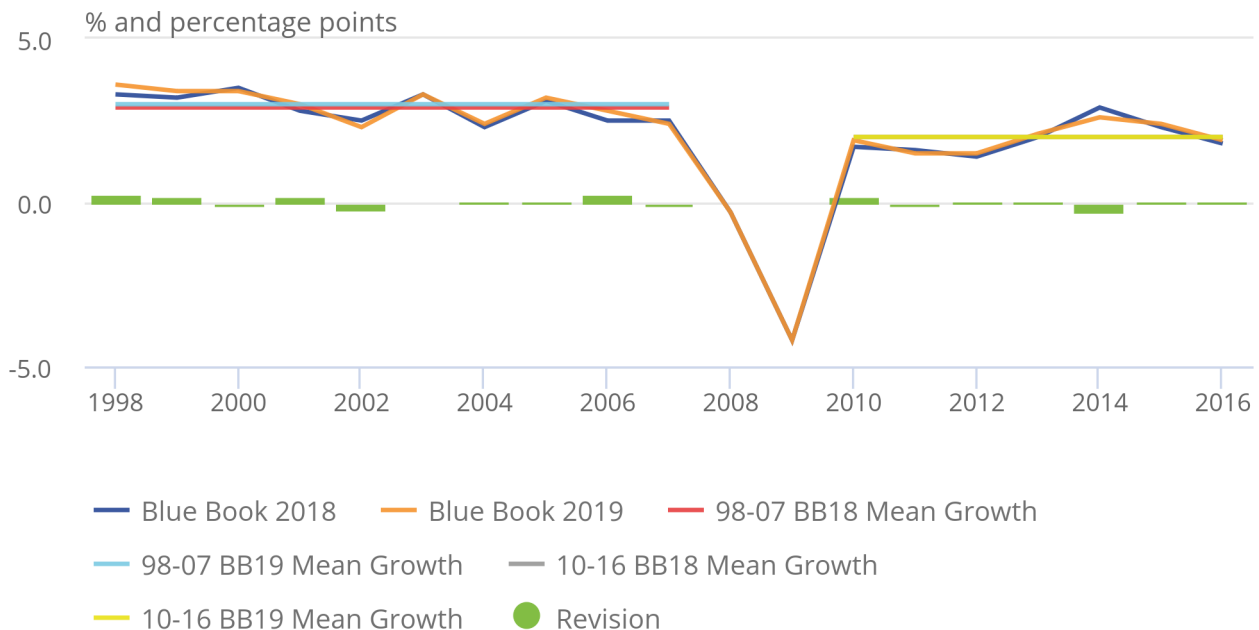
Figure 5 shows the revisions to the annual profile of real GDP growth. Like the profile of revisions to nominal GDP growth over this period, the underlying trends to the headline picture in the pre- and post-crisis periods is broadly unchanged. These indicative estimates show that annual real GDP growth over the period 1998 to 2007 is now 3.0%, slightly up from the 2.9% recorded in Blue Book 2018. It remains unchanged for the period from 2010 to 2016 at 2.0%. Over this period, the average real GDP growth is unchanged, with revisions ranging from negative 0.3 to 0.3 percentage points for specific years. The mean absolute revision is 0.1 percentage points.

**Figure 5: Mean annual real GDP growth has been revised up 0.1 percentage points to 2.1% between 1998 and 2016**

Revisions to annual real gross domestic product (GDP) growth, UK, 1998 to 2016

## Figure 5: Mean annual real GDP growth has been revised up 0.1 percentage points to 2.1% between 1998 and 2016

Revisions to annual real gross domestic product (GDP) growth, UK, 1998 to 2016



Source: Office for National Statistics

Notes:

1. Pre-crisis trend refers to the average annual growth over the period 1998 to 2007 and post-crisis trend refers to the average annual growth over the period 2010 to 2016.

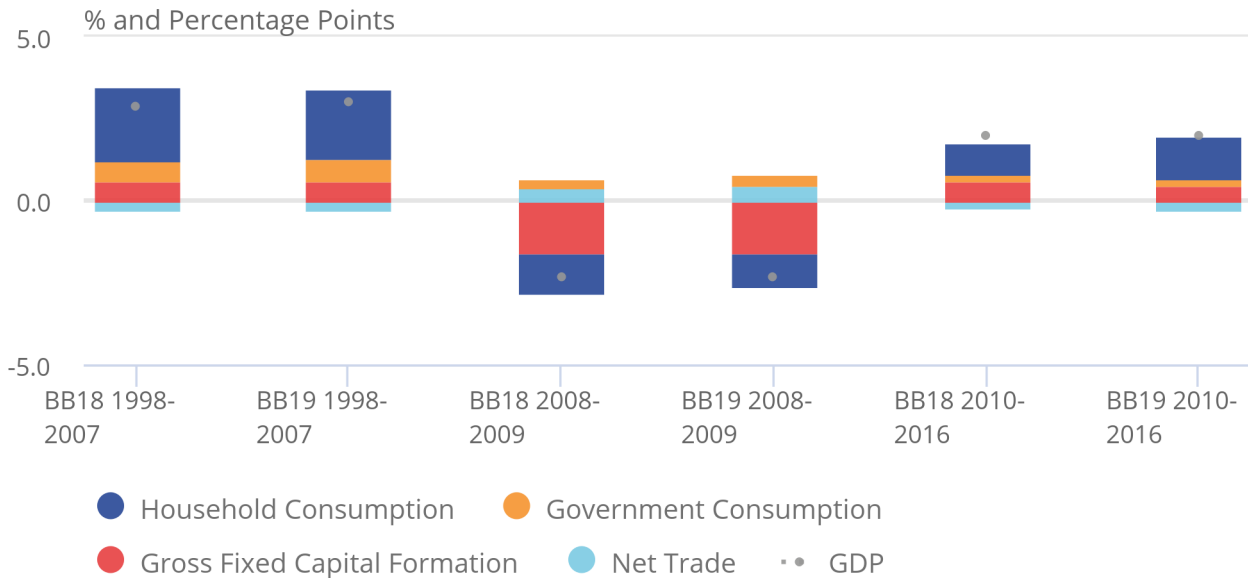
Whilst the headline volume picture is largely unchanged over this period, there have been more notable revisions at the lower level, reflecting changes to current price estimates and how deflation has been carried out. Figure 6 shows the expenditure composition of average real GDP growth in the pre- and post-crisis periods, as well as the 2008 to 2009 period. Real GDP growth in all periods is largely unchanged, except real GDP in the pre-crisis period, which is now estimated to have risen on average by 3.0% in 1998 to 2007 – a slight revision from a rise of 2.9%. Figure 6 shows that there has not been a marked shift in composition between domestic and external demand, as the contributions of net trade over these periods are largely unchanged. However, there have been slight revisions to the composition of domestic demand – most notably a marked increase in the contribution of household consumption in the post-crisis period. It is now estimated to have contributed 1.3 percentage points to annual real GDP growth over the period 2010 to 2016, compared to 1.0 percentage points in the previous estimates. This has been partly offset by a weaker gross fixed capital formation picture, which has been revised down over these years. In the pre-crisis period, the contribution of household consumption is weaker, but this has been offset by a stronger picture in government expenditure. Forthcoming analysis will provide a more detailed picture of the expenditure profile in Blue Book 2019, which will include further information in explaining the revisions that are shown here.

**Figure 6: The composition of GDP growth has been revised, most notably in household consumption for the post-crisis period**

Composition of average annual volume real gross domestic product (GDP) growth, UK, 1998 to 2016

Figure 6: The composition of GDP growth has been revised, most notably in household consumption for the post-crisis period

Composition of average annual volume real gross domestic product (GDP) growth, UK, 1998 to 2016



Source: Office for National Statistics

Notes:

1. Figures may not sum reflecting that there is non-additivity in chained volume estimates before the reference year and that change in inventories and acquisitions less disposals of valuables have been excluded from these calculations.
2. Volume GDP growth and its contributions are based on the arithmetic averages for these periods.
3. Household consumption includes NPISH consumption.

The implied GDP deflator represents the broadest measure of inflation in the economy, reflecting changes in the price of all goods and services that comprise GDP, capturing price movements in private and government consumption, investment and the relative price of exports and imports. As such, the revisions to the current price and volume estimates that have been shown so far are reflected in changes to the implied GDP deflator.

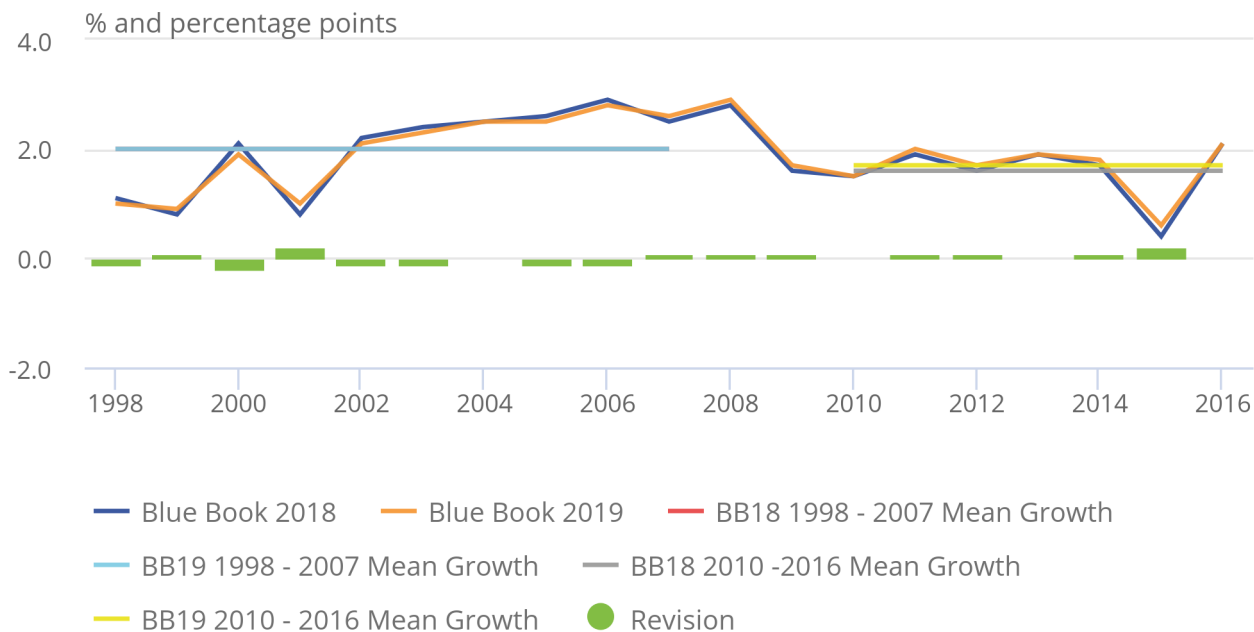
Figure 7 shows the indicative profile of annual growth to the implied GDP deflator in Blue Book 2019, compared with the latest published estimates. In laying the foundations of a new framework for producing fully balanced estimates of GDP, we have taken a new approach to carrying out deflation, namely increasing confrontation between different deflators as well as identifying the most appropriate ones available for each product and type of transaction in the UK National Accounts. This has also allowed for deflation to be carried out in a more consistent manner across its supply and use of the same product, which helps explain why the expenditure component implied deflators have been revised. Given the profile of revisions to current price and volume estimates at the headline level, it follows that the implied GDP deflator follows a picture similar to that previously published. The average implied GDP deflator across years 1998 to 2016 is unrevised, however, there has been a 0.1 percentage points upward revision to the implied GDP deflator for the post-crisis period, increasing to 1.7%.

**Figure 7: There has been a mean upwards revision to the GDP implied deflator for the post-crisis period of 0.1 percentage points**

Revisions to the implied gross domestic product (GDP) deflator, UK, 1998 to 2016

Figure 7: There has been a mean upwards revision to the GDP implied deflator for the post-crisis period of 0.1 percentage points

Revisions to the implied gross domestic product (GDP) deflator, UK, 1998 to 2016



Source: Office for National Statistics

Notes:

1. Pre-crisis trend refers to the average annual growth over the period 1998 to 2007 and post-crisis trend refers to the average annual growth over the period 2010 to 2016.

However, there are revisions to the implied deflators for the components of expenditure. Table 1 provides an overview of the revisions to the average annual growth in current price, volume estimates and implied deflators for the period 1998 to 2016. Detailed analysis will be provided in forthcoming publications, but it shows that the most notable effects here are for investment and trade. On average, the implied deflator for gross fixed capital formation is now 0.3 percentage points higher per year, while the indicative estimates point to there being more price growth in both exports and imports.

Table 1: Investment and trade have been revised most notably, with GDP to a lesser extent. Revisions to average annual current price and volume GDP growth and implied deflators, UK, 1998 to 2016

	Blue Book 2018			Blue Book 2019		
	Current Price (%)	Volume (%)	Implied Deflator (%)	Current Price (%)	Volume (%)	Implied Deflator (%)
GDP	3.9	2.0	1.9	4.0	2.1	1.9
Household Consumption	3.9	2.2	1.7	3.9	2.3	1.6
Gross Fixed Capital Formation	3.8	2.1	1.7	4.1	2.1	2.0
Government Consumption	4.9	2.2	2.6	4.9	2.4	2.5
Exports	4.7	3.3	1.3	4.7	3.1	1.5
Imports	5.0	4.1	0.9	5.1	4.0	1.1

Source: Office for National Statistics

#### Notes

1. Household consumption includes NPISH consumption. [Back to table](#)
2. Change in inventories and acquisitions less disposals of valuables are excluded. [Back to table](#)

## 5 . Conclusions

Blue Book 2019 marks a further step in our transformation of the UK National Accounts towards best practice. As we move towards its full implementation, which will lead to the production of double-deflated estimates of gross value added (GVA) for the first time in the UK, we have used the foundations of this new framework to inform the estimates for headline gross domestic product (GDP) in this year's Blue Book. This includes much more emphasis on data confrontation in the balancing of current price and volume estimates, as well as incorporating and confronting a wider set of our available deflators that reflect our best judgement of the most appropriate ones to apply for each product. There has also been an improvement in our gross value added (GVA) estimates of current price GDP, reflecting unprecedented information on the diversification of the services economy and the costs incurred by businesses, and improved estimates of capital stocks.

We will continue this journey in Blue Book 2020, with plans for the full implementation of double deflated estimates of industry GVA in the UK National Accounts. We will use our new framework to drive our future development plans, including investment in new deflators, to improve the coherence and consistency of our estimates as we take our next steps on transforming how GDP is compiled in the UK.

## 6 . Annex A: The “H-Approach”

The [United Nations Handbook on Supply, Use and Input-Output Tables with Extensions and Applications \(PDF, 9.47MB\)](#) lays out the full framework of the “H-Approach”, which is the recommended way to compile estimates of gross domestic product (GDP). It brings together the compilation of supply and use tables (SUTs) in current prices and in volume terms, the valuation at basic prices, producers' prices and purchasers' prices, as well as the links with the compilation of input output tables (IOTs). Its full application also allows for volume gross value added (GVA) to be estimated using double deflation as well as greater coherence linking SUTs to various other parts of the [System of National Accounts 2008 \(PDF, 9.08MB\)](#).



One of the main features of the “H-Approach” is to allow consistent deflation across different types of transactions in the UK National Accounts where they are related to the same product, following the principle that the buyer and seller pay the same price in a transaction at basic prices. The implication of this is that the core elements of both the SUTs need to be on the same price basis. As the supply and use tables are measured in basic prices and purchasers' prices respectively, adjustments need to be applied – and on the same price basis, these can be deflated to previous years' prices (PYPs) using a common set of deflators for each product. Further information on the new framework can be found in the [National Accounts articles: Transformation of GDP in Blue Book 2019](#) which was published on 11 October 2018.

## 7 . Annex B: Provisional publication schedule for Blue Book and Pink Book 2019

Table 2: Provisional publication schedule for Blue Book and Pink Book 2019

<b>Content of article</b>	<b>Provisional date of publication</b>
Impact of Blue Book 2019 changes on GDP current price and chained volume measure annual and quarterly estimates: 1997 to 2016 and associated methods articles	Aug-19
Detailed assessment of changes to Sector and Financial Accounts, 1997 to 2016	Aug-19
Detailed assessment of changes to Balance of Payments annual estimates, 1997 to 2016	Aug-19
Publication of Blue Book and Pink Book 2019 consistent Quarterly National Accounts, Quarterly Sector Accounts and Balance of Payments	30-Sep-19
Alignment between public sector finances and national accounts article	Sep-19
Publication of Blue Book 2019 and Pink Book 2019	31-Oct-19