

Article

Impact of Blue Book 2020 changes on current price and volume estimates of gross domestic product

Methodological and data improvements that impact on current price and chain volume measure of GDP for the period 1997 to 2018.

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1 . Main points

- In the provisional estimates of the total impact of improvements to current price and volume estimates of gross domestic product (GDP) to be implemented in Blue Book 2020, average annual current price GDP growth for the periods 1998 to 2007 and 2010 to 2017 remain unchanged at 5.0% and 3.7% respectively.
- The average annual volume GDP growth over the period 1998 to 2007 is now 2.9%, slightly down from the 3.0% recorded in Blue Book 2019; it remains unchanged for the period from 2010 to 2017 at 2.0%.
- The package of current price level revisions is equivalent to negative 0.1% of current price GDP in each year on average over the period 1997 to 2016.

2 . Introduction

This article provides provisional estimates of the total impact of all the improvements to current price and volume estimates of gross domestic product (GDP) which will be implemented in Blue Book 2020. This covers the period 1997 to 2018 and will be consistent with the Quarterly National Accounts (QNA) which will be published on 30 September 2020.

In the UK National Accounts, fully balanced estimates of current price gross domestic product (GDP) are produced in a Supply and Use Tables (SUTs) framework. These are produced once a year as part of the Annual National Accounts in which we also take the opportunity to implement methodological improvements. The focus of Blue Book 2020 is to improve the international comparability of the UK GDP estimates, with the package of improvements made in line with international best practice. This article provides a summary of these indicative estimates in this year's Blue Book, including current price and volume estimates of GDP as well as the implied GDP deflator. These are included for the period 1997 to 2018, showing early estimates of the improvements that reflect the incorporation of new data and methods, the former impacting more recent years.

Further analysis will be published in August 2020, which will provide additional lower-level estimates of these indicative impacts ahead of the publication of Blue Book 2020. These will include the revisions to the three approaches to measuring GDP – production, income and expenditure – as well as the expected impacts on the quarterly profile of headline estimates of GDP.

The remainder of this article is structured as follows:

- Section 3 explains the methodological improvements that have been reflected in this year's Blue Book
- Section 4 provides the indicative impact of these changes on current price and volume estimates of GDP, as well as those for the implied GDP deflator
- Section 5 covers the conclusions and next steps

Double deflation has been the focus of important recommendations from the [National Statistics Quality Review](#) and the [Independent Review of UK Economic Statistics](#), reflecting how it is considered as the internationally accepted best approach to producing volume estimates of industry-level gross value added (GVA). [Previous analysis](#) explains the progress that we have made so far in implementing double deflation in the UK National Accounts, as well as some of the practical challenges we have faced. We have published an [update](#) that explains the further progress that has been made as part of this transformation journey. Alongside, but separate to, Blue Book 2020, we intend to publish experimental estimates of double-deflated gross value added GVA.

3 . Scope of Blue Book 2020

There are a number of important methodological improvements that will be incorporated into Blue Book 2020, impacting upon current price and volume estimates of gross domestic product (GDP). The main improvements are in the areas of professional fees, financial intermediation services indirectly measured (FISIM), and the chain-linking of business prices.

Gross national income reservations

Gross national income (GNI) is defined as GDP plus net property income received from abroad. So, revisions to current price GDP presented in this article would, all else equal, feed directly into GNI. Articles detailing revisions to the Institutional Sector Accounts, including net property income, and revisions to Balance of Payments will be published in August 2020 and will provide the overall impact on UK GNI up to 2018 due to changes in Blue Book and Pink Book 2020.

Estimates of GNI form the basis for calculating part of the contributions to the European Union (EU) Budget by member states and the UK. There is a verification cycle in place in which member states provide Eurostat with an up-to-date inventory of the sources and methods used to calculate GNI and its components according to European System of Accounts (ESA) 2010. Reservations refer to those points in which a member state has been notified that changes to the methodology underlying their estimates of GNI figures are needed to improve comparability, reliability and exhaustiveness in GNI figures. While the UK is no longer a member of the EU, the terms of the withdrawal agreement set out a need for GNI statistics to remain in line with EU guidance until budget payments for years in which the UK was a member of the EU and payments covering the transition period are settled.

Revisions due to addressing GNI reservations are shown in [Annexes](#) under the headings of "professional fees", "FISIM" (financial intermediation services indirectly measured) and "GNI other".

Professional fees

Gross fixed capital formation (GFCF) refers to the acquisition less disposals of fixed assets. This expenditure also includes the costs of ownership transfer of those assets, as these comprise an element of the cost that purchasers take into consideration as to whether to invest or not. For example, these transfer costs include legal fees. In Blue Book 2020, we have reviewed how we estimate the professional fees element of transfer costs, particularly those that relate to the purchase and sale of residential and non-residential buildings.

Residential buildings

We currently estimate these professional fees using a fixed proportion of the total expenditure on residential buildings. We take the average property price in a given year and the number of transactions to estimate the total expenditure, of which we take a fixed proportion as referring to professional fees.

In Blue Book 2020, we will be incorporating direct estimates of these professional fees to help create a proportion that changes over time. This will reflect information that is available from other government sources, price comparison websites, and industry surveys to capture the expenditure on each component of residential professional fees. These include those fees for estate agents, conveyancing, home surveys, local authority searches and energy performance certificates. This proportion will then be applied to the total expenditure on residential properties to estimate the total amount spent on professional fees.

Non-residential property

There are numerous estimation challenges for professional fees on non-residential property as there is no complete information available on these property transactions or average property prices. We only currently have an estimate for "Land Fees".

As part of this year's Blue Book, we will take on improved estimates of these professional fees, with which we are able to calculate a proportion for non-residential properties. This will cover a similar scope of transfer costs for non-residential properties – for example, estate agents and conveyancing. However, these are only available for 2018, so we will be producing backcasts that are based on information for residential buildings. The proportion is then applied to the total expenditure on non-residential properties, which is calculated as the number of transactions multiplied by the average commercial price, to estimate the total amount spent on professional fees. We will use HM Revenue and Custom's (HMRC) property transactions back to 2005 and then residential transactions as a proxy to backcast historical estimates to 1997. For average commercial property prices, we will use CoStar's "Annual Commercial Property Investment Review", which are available back to 2010. A house price index will then be used as a proxy to backcast these commercial prices beyond 2010.

Financial intermediation services indirectly measured

The measurement of output of a market producer is based on a price or fee for which its good or service is sold. Financial intermediaries, such as banks, explicitly charge commissions and fees to their customers. However, there is also an implicit charge on these financial services which reflects the interest margin. Financial intermediaries generally pay lower rates of interest to those that lend them money and charge higher rates of interest to those who borrow from them. Financial intermediation services indirectly measured (FISIM) is then calculated as the difference between these effective rates of interest payable and receivable, and a "reference" rate of interest, which is a proxy of the pure cost of borrowing funds¹.

As part of Blue Book 2020, we will improve our estimates of FISIM in relation to other financial intermediaries (OFIs); a subsector of the financial sector. This will incorporate updated estimates of loans to consumers collected by the Financial Services Survey (FSS) and loans secured on dwellings collected by the Bank of England survey to specialist mortgage institutions. We will also replace the inter-bank reference rate that is used as a proxy for the cost of borrowing by OFIs. A new OFI-specific reference rate will be used, leading to improved estimates of margins. This will lead to revised FISIM estimates produced by OFIs, including mortgage lenders and other credit grantors that charge an implicit margin on loans. It will also lead to revised estimates of the consumption of FISIM by households.

Chain-linking

We will be implementing chain-linked business prices in line with international best practice and to improve consistency with other price indices such as the Consumer Price Index (CPI). This was previously announced as part of a [consultation](#) and is a significant improvement to the weighting and linking of business inflation statistics, which include Producer Price Index (PPI), Export Producer Price Index (EPI), Import Producer Price Index (IPI) and Services Producer Price Index (SPPI). The implementation of chain-linking is recommended by [Eurostat \(PDF, 2.21MB\)](#), to ensure international comparability, as the weighting structures are updated more frequently. As such, these will be more representative of the structure of the UK economy and any changes that take place over time. We will also reflect some [additional changes](#) to our methods to support the implementation of chain-linking.

GDP is initially measured in current prices, with estimates valued in the prices of the period when the activity occurred. It is then deflated to remove the effects of price changes to give volume GDP, specifically using the expenditure approach to set the annual level of volume GDP. The implementation of chain-linked business prices will therefore have an impact on how we produce volume estimates of GDP, given how these improvements will impact upon our range of expenditure deflators. There will also be an impact upon our current price estimates of GDP, as there are instances in which we use price estimates to reflate our volume estimates to produce our current price estimates. For example, within our inventories' estimates, current price acquisitions and disposals of stock are calculated using volume estimates and deflators.

Notes for Scope of Blue Book 2020

1. The pure cost of borrowing funds is the rate from which the risk premium has been eliminated to the greatest extent possible.

4 . Indicative impacts of Blue Book 2020

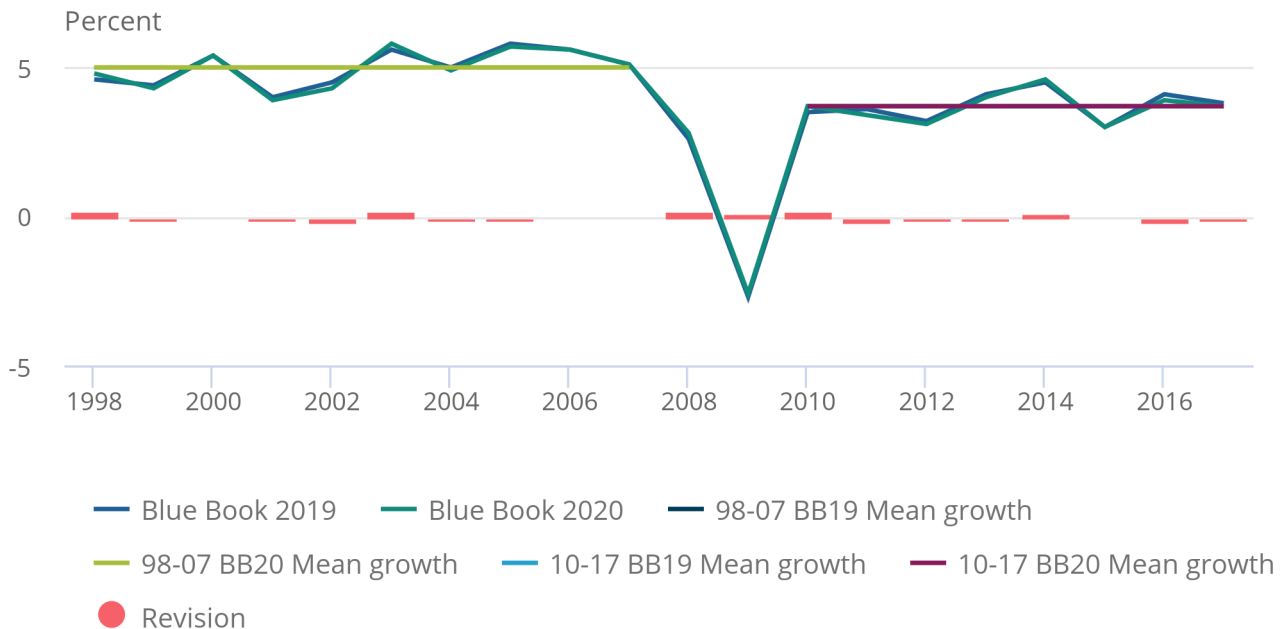
This section shows the impact of all the improvements being introduced on current price and volume gross domestic product (GDP) growth. It focuses on revisions to the Blue Book 2019 Supply and Use balanced years (1997 to 2017), however the data annexes also show revisions to 2018 as they include comparisons with the Quarterly National Accounts published on the 31 March 2020. Figure 1 shows the indicative revisions to the annual profile of current price GDP growth from 1998 to 2017, highlighting how the underlying trends in the pre- and post-recession periods are expected to be unchanged. Average current price GDP growth for the periods 1998 to 2007 and 2010 to 2017 remain unchanged at 5.0% and 3.7% respectively. While there has not been a marked change to the underlying picture around the recession, there have been revisions to specific years. These revisions range from negative 0.2 to 0.2 percentage points, while the mean revision over this entire period is 0.0 percentage points. There have been minor downward revisions in the most recent years, in which the indicative Blue Book 2020 estimates show a slightly weaker picture in 2016 and 2017.

Figure 1: Average current price GDP growth has largely been unrevised between 1998 and 2017

Revisions to annual current price gross domestic product (GDP) growth, UK, 1998 to 2017

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Revisions to annual current price gross domestic product (GDP) growth, UK, 1998 to 2017



Source: Office for National Statistics

Notes:

1. In Blue Book 2019, we explained that we were exceptionally not going to fully reconcile 2017 annual GDP estimates, to allow further time for final quality assurance of the estimates. Therefore 2017 data is taken from [GDP quarterly national accounts, UK: April to June 2019](#) published on 30 September 2019.
2. Pre-recession trend refers to the average annual growth over the period 1998 to 2007 and post-recession trend refers to the average annual growth over the period 2010 to 2017.

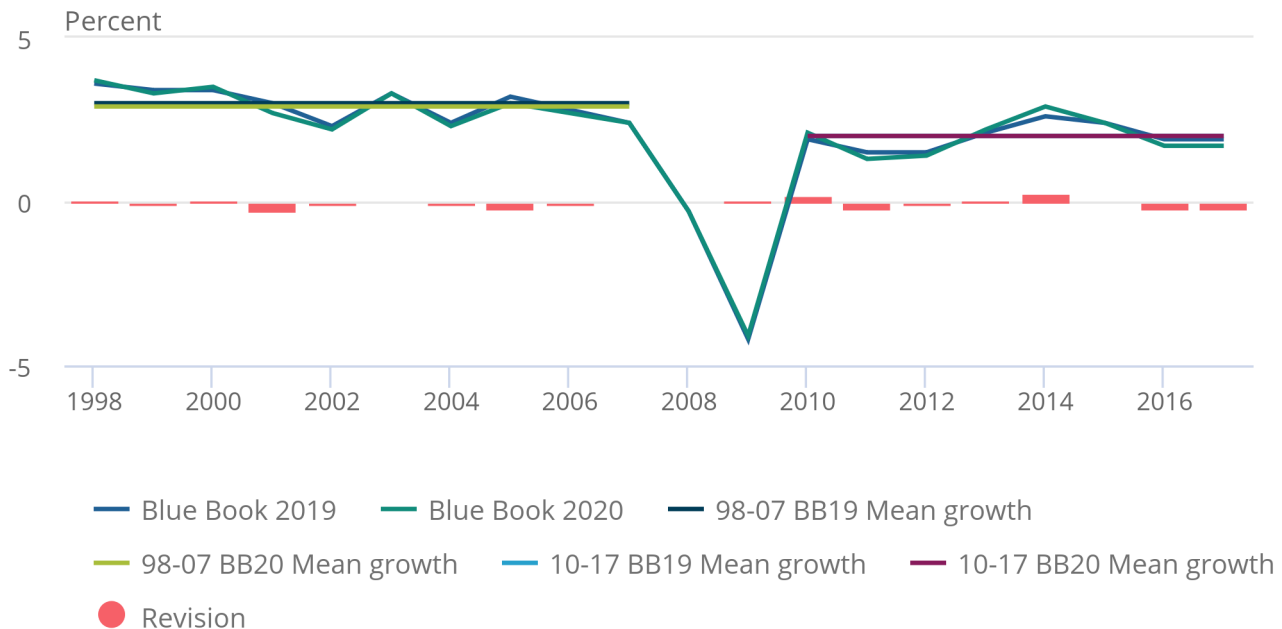
Figure 2 shows the revisions to the annual profile of volume GDP growth. Like the profile of revisions to current price GDP growth over this period, the underlying trends to the headline picture in the pre- and post-recession periods is broadly unchanged. These indicative estimates show that annual volume GDP growth over the period 1998 to 2007 is now 2.9%, slightly down from the 3.0% recorded in Blue Book 2019. It remains unchanged for the period from 2010 to 2017 at 2.0%. Over this entire period, the average real GDP growth is unchanged, with revisions ranging from negative 0.3 to 0.3 percentage points for specific years. The range of revisions to volume estimates are larger, reflecting the effects of introducing the chain-linking of business prices. Volume GDP has been revised down in the most recent two years. These indicative Blue Book 2020 estimates point to the real economy having increased by 1.7% in 2016 and 2017, lower than the 1.9% that was published in Blue Book 2019. The path of a slowing economy over this period of time is still maintained.

Figure 2: Average volume GDP growth has largely been unrevised between 1998 and 2017

Revisions to annual volume gross domestic product (GDP) growth, UK, 1998 to 2017

Figure 2: Average volume GDP growth has largely been unrevised between 1998 and 2017

Revisions to annual volume gross domestic product (GDP) growth, UK, 1998 to 2017



Source: Office for National Statistics

Notes:

1. In Blue Book 2019, we explained that we were exceptionally not going to fully reconcile 2017 annual GDP estimates, to allow further time for final quality assurance of the estimates. Therefore 2017 data is taken from [GDP quarterly national accounts, UK: April to June 2019](#) published on 30 September 2019.
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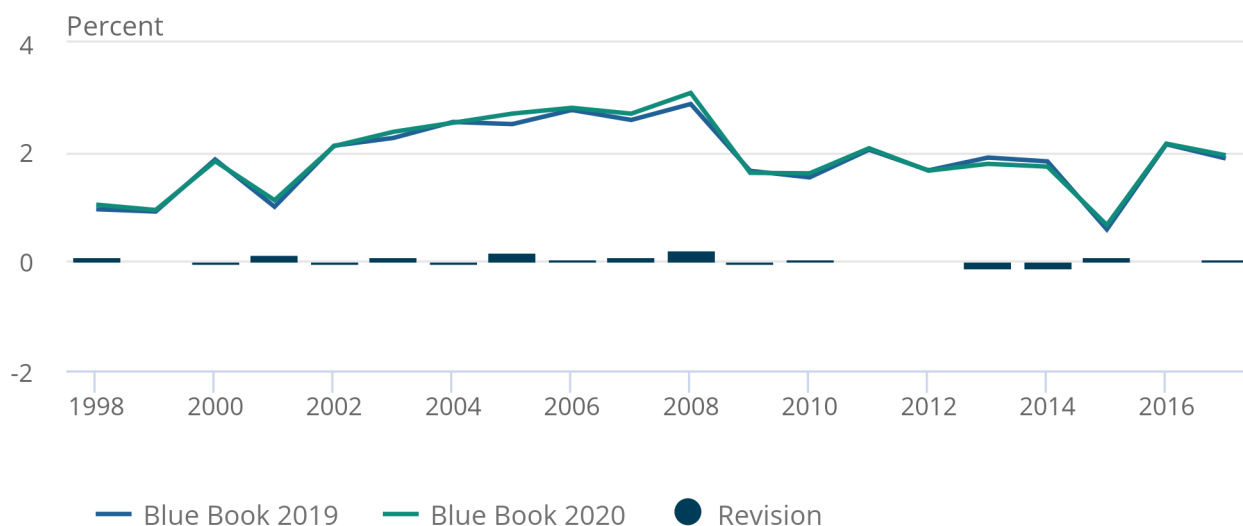
Figure 3 shows the indicative profile of annual growth to the GDP deflator in Blue Book 2020, which are implied by these revised current price and volume estimates. The implied GDP deflator represents the broadest measure of inflation in the economy, reflecting changes in the price of all goods and services that comprise GDP. That is, it captures price movements in private and government consumption, investment and the relative price of exports and imports. The mean revision over the twenty-year period here is 0.0 percentage points. The implied change in the price of GDP is a little higher in the years leading up to and including the crisis, whilst it is a little lower in 2013 and 2014.

Figure 3: There have been minor revisions to the implied GDP deflator

Revisions to annual implied gross domestic product (GDP) deflator growth, UK, 1998 to 2017

Figure 3: There have been minor revisions to the implied GDP deflator

Revisions to annual implied gross domestic product (GDP) deflator growth, UK, 1998 to 2017



Source: Office for National Statistics

Figure 4 provides a breakdown of the change to the level of current price GDP, comparing the profile of the latest available estimates with the indicative one for Blue Book 2020. It shows how much of these indicative revisions are driven by the individual methodological changes listed here, relative to the size of the economy. We have also included “other” changes, which captures the cumulative effects of all the other methodological improvements that have been incorporated. These “other” revisions are larger in 2016, primarily due to the incorporation of additional survey and administrative returns, as is standard for more recent years.

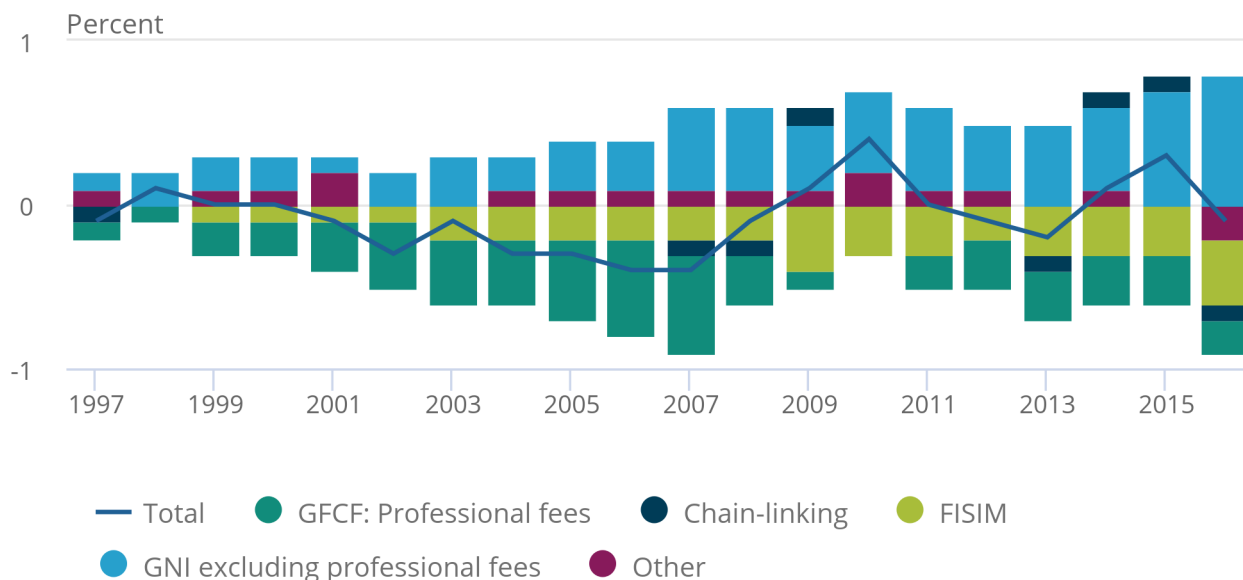
These level revisions are equivalent to negative 0.1% of current price GDP in each year on average over this period. Figure 4 shows that the cumulative effects from gross national income (GNI) reservations and the new estimates of professional fees within gross fixed capital formation (GFCF) have been the main contributors for the total revisions to the level of current price GDP. This has reduced the level of current price of GDP in every year here, reflecting the move away from the fixed proportion rule for estimating professional fees on residential and non-residential buildings. These estimates have largely been offset by other mandated GNI changes. The improved estimates of financial intermediation services indirectly measured (FISIM) tend to reduce the level of current price GDP, reflecting how the improvements typically lead to a lower level of stock of loans and a lower margin in all periods.

Figure 4: GNI reservations explain most of the current price GDP revisions, including those relating to professional fees

Breakdown of the change to the level of current price gross domestic product (GDP), UK, 1997 to 2016

Figure 4: GNI reservations explain most of the current price GDP revisions, including those relating to professional fees

Breakdown of the change to the level of current price gross domestic product (GDP), UK, 1997 to 2016



Source: Office for National Statistics

Notes:

1. In Blue Book 2019, we explained that we were exceptionally not going to fully reconcile 2017 annual GDP estimates, to allow further time for final quality assurance of the estimates. Therefore, there is no 2017 data included in this figure for comparability reasons.
2. "Other" is treated as a residual, which captures the net effects of other methodological improvements in Blue Book 2020, including the incorporation of latest survey and administrative information, enhanced data reconciliation and balancing.
3. Revisions are shown as a percent of current price GDP in Blue Book 2019.

5 . Conclusions

In this year's Blue Book, we are implementing the chain-linking of business prices in line with international best practice, leading to revisions to current price and volume estimates of gross domestic product (GDP). We are also introducing changes in response to outstanding gross national income (GNI) reservations, including those that relate to the improved estimation of professional fees as part of transfer costs in the recording of gross fixed capital formation. There are also improved estimates of financial intermediation services indirectly measured (FISIM), which lead to a higher quality estimate of the supply and use of financial services. By historical standards, the impact of these revisions is modest. The underlying trends to current price and volume estimates of GDP in the pre- and post-recession periods is broadly unchanged, although these indicative estimates point to a slightly weaker picture in the most recent years.

We will publish further indicative impacts of Blue Book 2020 in August. This will provide a more in-depth insight into how we expect the production, income and expenditure measures of GDP to be revised, while including a preliminary view of the new quarterly profile of current price and volume estimates of GDP. We will also provide an update on the impacts of estimates of GNI.

Alongside Blue Book 2020, we also intend to publish industry-level experimental estimates of double-deflated gross value added (GVA). We published [an update on progress](#) in July 2020 and we will publish further information in due course.

6 . Summary of gross national income (GNI) changes in Blue Book 2020

Below is a summary table of the GDP impacting verification changes¹ implemented in Blue Book 2020, with a brief description of each update implemented.

Table 1: Summary of GNI changes in Blue Book 2020

Change	Detail
Professional fees	See Section 3
FISIM related to OFIs	See Section 3
Agricultural inventories	Update of the methods and DEFRA source data used to calculate inventories within the agricultural industries
Inventories holding gains	Update to the calculation of price indices within inventories holding gains
GFCF of cultivated trees	Addition to GFCF of the measurement of trees which are cultivated year on year (such as fruit trees)
GFCF within the education industry	Update to GFCF to include benchmarking to Annual Business Survey education data
Household final consumption expenditure on removals and storage	Update of HHFCE methodology in relation to the measurement of removal and storage costs including the costs associated with storage services
Disbursements and freight services within trade in services	Updates to the trade in services measurements of the costs of freight services and disbursements
Research and development updates	Follow-on update of data from last year's implementation of research and development changes.
Own account construction estimates of intermediate consumption	Update to the methodology for calculating the mark-up on own account construction.
Production within industry division 'N' administrative and support service activities	Reviewing and updating of the balancing and the transactions within industry division N (Administrative and support service activities).

Source: Office for National Statistics

Notes for GDP impacting verification changes implemented in Blue Book 2020

1. The Eurostat verification cycle is detailed in [Section 3](#).

7 . Authors

Rachel Meyrick, Isabel Rogers and Sumit Dey-Chowdhury.