

Article

National Accounts articles: Impact of changes in the national accounts and economic commentary for Quarter 1 (Jan to Mar) 2016

Contact:
Matthew Hughes
gdp@ons.gsi.gov.uk

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1. Executive summary

A series of articles have been published over the last few months describing the improvements being made to national accounts and the impacts on gross domestic product (GDP) from 1997 to 2014, both annually and quarterly. This article summarises the effects of methodological, classification and other changes implemented in the Quarterly National Accounts for the period 1997 to the first quarter of 2016. Additionally, information regarding the impact on historical data (pre-1997) is included in this article. This dataset is consistent with the UK national accounts Blue Book 2016 edition, to be published on 29 July 2016.

2. Main points

Current price GDP levels revised up in all years 1997 to 2015. This is driven by the methodological improvements to the collection of imputed rental estimates.

Modest impact on the growth rates of real GDP with annual growth remaining unrevised at 2.0% between 1997 to 2015 and the average quarterly growth unrevised at 0.5% between Quarter 2 (Apr to June) 1997 and Quarter 1 (Jan to Mar) 2016.

GDP decreased 6.3% from the peak in Quarter 1 (Jan to Mar) 2008 to the trough in Quarter 2 (Apr to June) 2009, a little deeper than previously estimated. Having regained its pre-downturn peak in Quarter 3 (July to Sep) 2013 (one quarter later than previously published), GDP in Quarter 1 (Jan to Mar) 2016 is currently 7.0% above its pre-downturn peak.

Over the period 1997 to 2015, the average revision to the annual household and non-profit institutions serving households saving ratio is -0.3% with an average absolute annual revision of 0.7%

3. Changes introduced in Blue Book 2016

This article is part of a series describing [changes to national accounts](#), detailing the improvements that will be made in June 2016 to ensure that the UK national accounts continue to provide the best possible framework for analysing the UK economy, and for comparing it with those of other countries. This article sets out the impact of methodological improvements and new data to be introduced in Blue Book 2016 on a range of national accounts aggregates. These changes are designed to ensure that official statistics reflect the changing nature of the UK and global economies, to enable fair and meaningful international comparisons and to permit analysis of current economic trends on the best available data.

The article of 24 February 2016, [Impact of Blue Book 2016 Changes on Current Price Gross Domestic Product, 1997 to 2011](#), described improvements being made to the UK national accounts in current price terms. That article included methodological changes, such as improvements to imputed rental estimates being made as part of the regular annual update of the UK national accounts (Blue Book).

The annual national accounts 2016 include a range of important changes, including:

- methodological improvements which impact on gross domestic product (GDP); these include improvements to the data sources and methods used to estimate imputed rental and improved estimates of non-complicit value added tax fraud
- improvements and corrections which do not impact on GDP; these include changes to the treatment of non-market output and social transfers in kind, incorporating the latest foreign direct investment (FDI) benchmark, a correction to the measurement related to second homes and a correction or improvement to the measurement of shares and bonds. As these do not impact on GDP they are not described further within this article
- corrections which do impact on GDP; these include corrections to gross fixed capital formation (GFCF) for improvements made to dwellings and to GFCF for agricultural data
- other regular improvements and methodological changes

Details of these improvements – including the specific data involved and methodologies used – have been published by ONS in a range of articles over recent months. The most substantial change involves improvements to the data sources and methods used to estimate imputed rental, which includes the use of new data sources (Valuation Office Agency data and similar data from the devolved nations) replacing existing Living Costs and Food Survey data. The impact of this change, and details of further improvements are presented in the article [Impact of Blue Book 2016 changes on current price gross domestic product estimates, 1997 to 2011](#).

Addressing GFCF to correct for improvements made to dwellings and the correction to agricultural data will be included in Blue Book 2016 and further details can be also be found in the article [Impact of Blue Book 2016 changes on chained volume measure gross domestic product estimates, 1997 to 2011](#).

The annual Blue Book is also an opportunity for us to introduce a range of methodological and data changes which improve on existing measures of the UK economy. These include regular improvements, such as updating the national accounts last base and reference years by a year, on this occasion from 2012 to 2013, but also a set of more substantive changes. This category includes the impact of carrying out the full input-output supply and use balancing process for 2014 for the first time.

Finally, revisions also arise from the introduction of newly available survey data. Reflecting the long time-lags associated with some datasets, these data will have an impact on estimates from 2012 onwards. Included are new data from the Annual Business Survey, the International Trade in Services Survey and on wages and salaries from Her Majesty's Revenue and Customs (HMRC).

4. Estimated impact of Blue Book 2016 on GDP: Quarter 1 (Jan to Mar) 1997 to Quarter 1 (Jan to Mar) 2016

Estimates of the impact of these methodological and data improvements to the national accounts have been the subject of several recent articles. As near-final data have become available, articles have been published on the [impact of Blue Book 2016 changes on current price and chained volume measure gross domestic product estimates, 1997 to 2014](#).

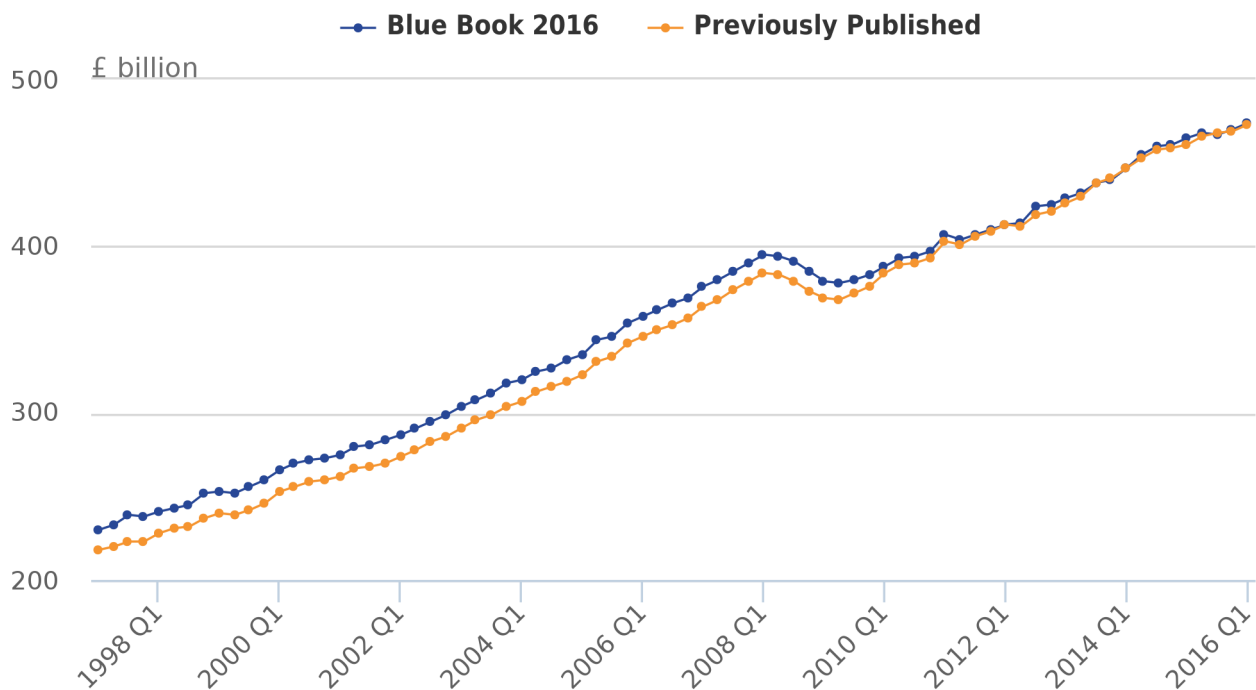
5. Current price GDP

The total impacts on gross domestic product (GDP) of the current price changes are included in [Annex A \(detailed\)](#) and [Annex B \(summary\)](#). The impact of these changes on current price estimates of GDP is considerably larger than that resulting from Blue Book 2015. Figure 1 presents the previously published quarterly level of nominal GDP (consistent with the second estimate of GDP published on 26 May 2016), compared with estimates consistent with Blue Book 2016. It shows that changes to the national accounts had a relatively steady impact between 1997 and 2009, increasing the estimate of GDP by £49.6 billion each year on average over this period, or around 4.3%. The revisions are smaller in later periods: GDP has been revised up by £9.1 billion each year on average between 2010 and 2014, equivalent to 0.6%, and £4.9 billion (0.3%) in 2015.

Average annual current price GDP growth has been revised downwards by 0.4 percentage points between 1997 and 2011 (from 4.5% per year to 4.1%), the period where the new methodology for measuring imputed rental has been incorporated. The impact on current price annual growth is smaller in later years, and averages to zero between 2012 and 2015 inclusive. It may seem counter-intuitive to have an increasing level but decreasing growth rates; this occurs because the revisions to levels are largest in the earlier years, and as we move towards the more recent periods the increase in levels is smaller, which leads to downward revisions to growth.

Figure 1: Current price GDP levels: previously published compared with Blue Book 2016

Current price, seasonally adjusted, Jan to Mar 1997 to Jan to Mar 2016



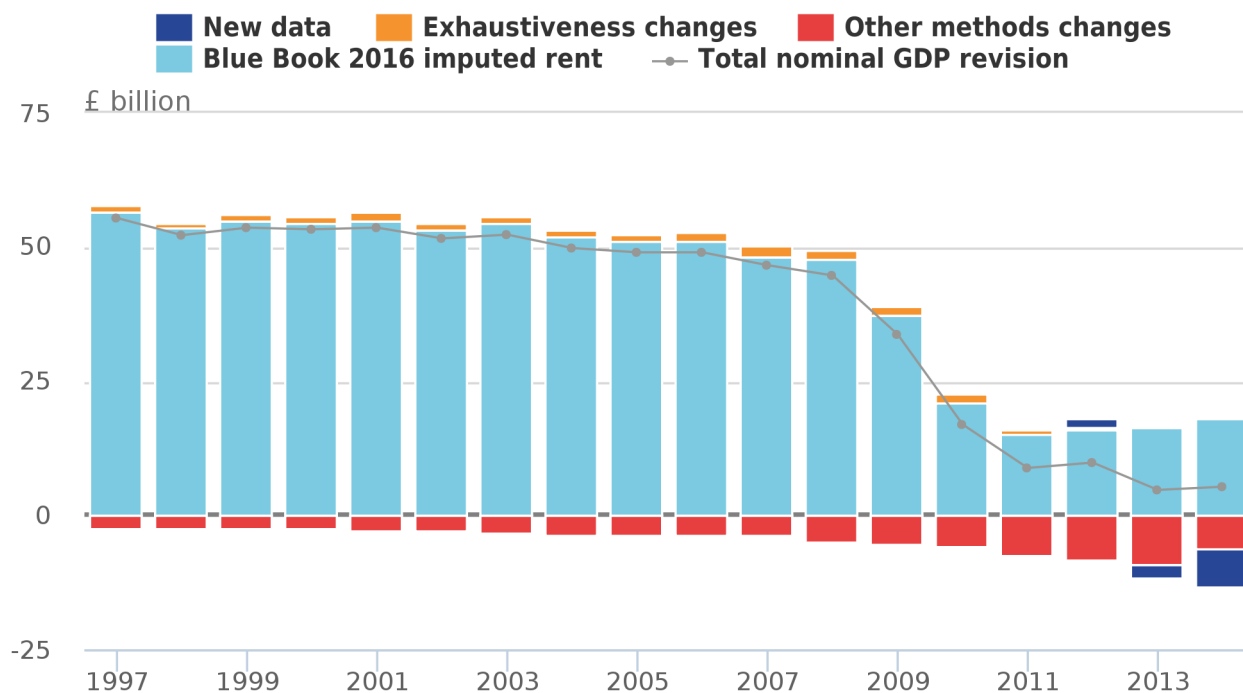
Source: Office for National Statistics

The impact on the level of current price GDP from the imputed rental changes ranges from an increase of £15.0 billion in 2011 to an increase of £56.7 billion in 1997. The upward revisions to levels reduce towards the more recent periods but this remains the single biggest contributor to the revisions in annual current price GDP growth rates.

As well as the imputed rental changes, there are further methodological improvements being introduced in Blue Book 2016 in current price terms as shown in Figure 2. Details of all methodological improvements were published in the article of 24 February 2016, [Impact of Blue Book 2016 changes on current price gross domestic product 1997 to 2011](#).

Figure 2: Contributions to the revision to current price GDP, previously published compared with Blue Book 2016

Current price, £ billion, 1997 to 2014



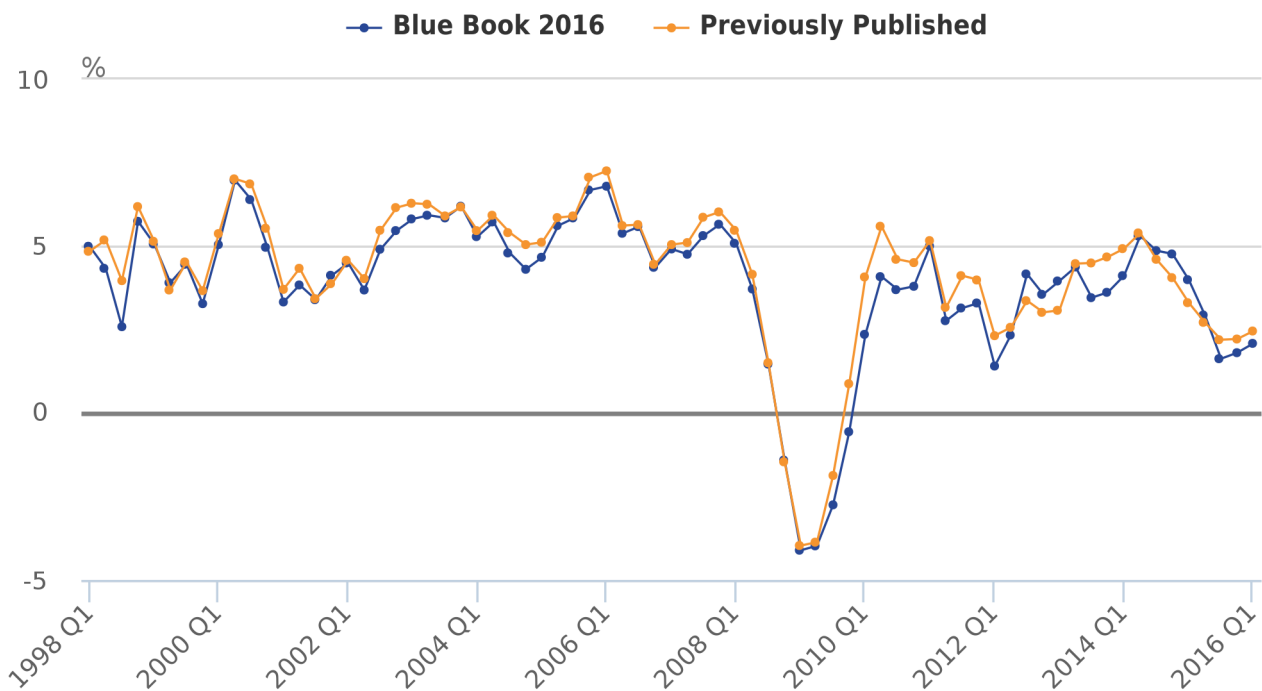
Source: Office for National Statistics

A gradually declining upward revision to nominal GDP has resulted in small downward revisions to nominal GDP growth over this period. Figure 3 shows the growth rate for each quarter compared to the same quarter a year ago for the previously published and Blue Book 2016 series (presented in Figure 1). Taking the Quarter 1 (Jan to Mar) 1998 to Quarter 4 (Oct to Dec) 2014 period as a whole, the average revision to quarter on same quarter a year ago growth is negative 0.4 percentage points. Although the largest revisions to the level of current price GDP occurred between 1997 and 2009, the average revision to the annual growth rate between 1998 and 2009 (negative 0.3 percentage points) was smaller than that between 2010 and 2014 (negative 0.4 percentage points). Quarterly current price GDP growth rates (see [Annex D](#)) have been extended to include 2015 and this will enable you to see the impacts that the annual revisions have had on the quarterly path of GDP.

Nominal GDP growth for the 2015 calendar year remains unchanged at 2.6%, however quarter on previous year growth in the second half of 2015 and the first quarter of 2016 were all revised down. There was an especially large downward revision to nominal GDP growth in Quarter 3 (July to Sept) 2015. This is because there was a downward revision to the nominal GDP level in Quarter 3 (July to Sept) 2015 (following an upward revision to the Quarter 2 (Apr to June) 2015 level), mainly attributed to downward revisions to the level of gross fixed capital formation (GFCF). Later data has reduced the level and growth estimates. These nominal revisions do not directly impact on the equivalent chained volume measure (CVM) figures due to the profile of revisions to the GFCF quarterly deflators.

Figure 3: Current price GDP growth rates for quarters compared to the same quarter a year ago, previously published compared with Blue Book 2016

%, Current price, seasonally adjusted, Q1 1998 to Q1 2016



Source: Office for National Statistics

6. Real GDP (chained volume measure)

The second impact article [Impact of Blue Book 2016 changes on chained volume measure gross domestic product estimates, 1997 to 2011](#), published on 23 March 2016, provided a summary of the changes being implemented in Blue Book 2016 that affect real gross domestic product (GDP) between 1997 and 2011.

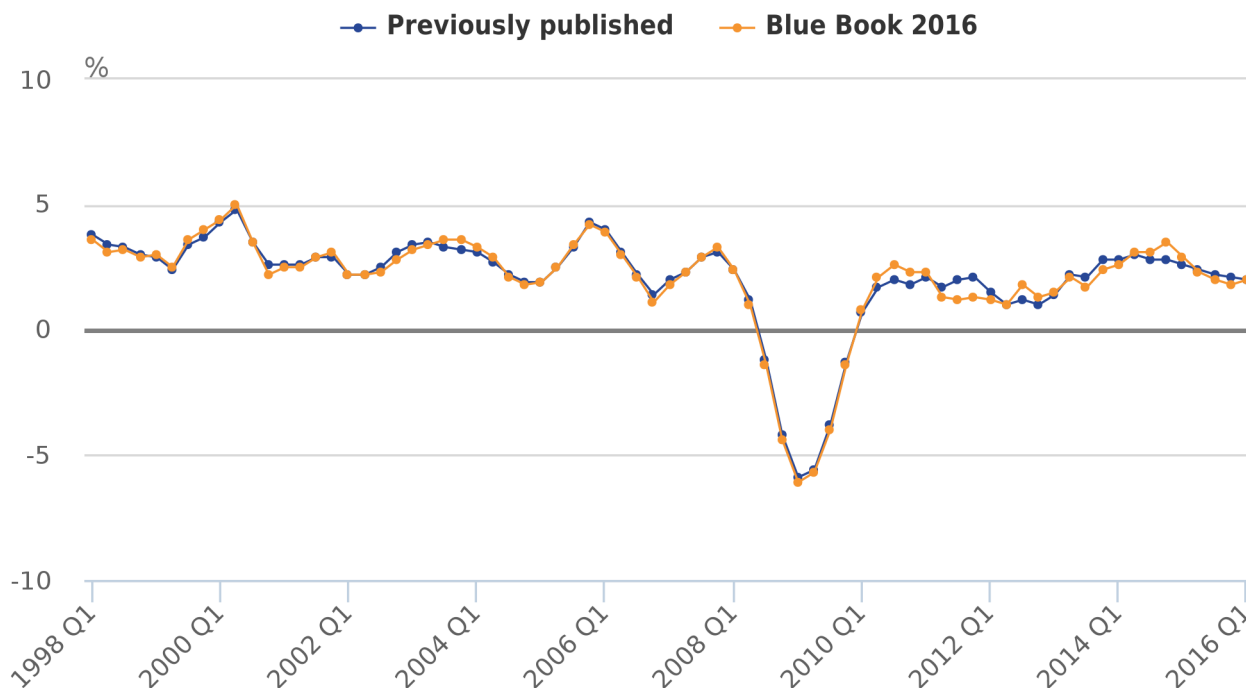
The changes introduced in Blue Book 2016 have a relatively modest impact on the growth of the chained volume measure (CVM) of GDP from 1998 onwards. Current price revisions will, in most cases, feed through to affect real GDP as well, although there are a few exceptions. The improvement to imputed rental is one such change where, because the main impact is on the prices being used, the current price revisions are larger than the real GDP revisions. This is because the revisions to the prices used in the calculation of the current price estimates are largely offset by the revisions to the deflator used in the construction of the CVM figures. Full details of the annual contributions to real GDP by each CVM expenditure component (shown to the nearest 0.1 percentage point) are in Annex C. Quarterly real GDP growth rates (see Annex E) have been extended to include 2015 and this will enable you to see the impacts that the annual revisions have had on the quarterly path on GDP.

Figure 4 shows the quarter on same quarter a year ago growth rates for real GDP on both a previously published and Blue Book 2016 basis. Looking at individual quarters, growth has been revised most notably upward in Quarter 4 (Oct to Dec) 2014 (by 0.7 percentage points), and most notably downward in Quarter 3 (July to Sept) and Quarter 4 (Oct to Dec) 2011 (by negative 0.8 percentage points in both quarters). Revisions to other quarters are smaller; growth has not been revised up or down by more than 0.3 percentage points in any quarter of 2015 and the first quarter of 2016.

The average compound quarterly growth rate of the UK economy is unchanged to one decimal place between Quarter 2 (Apr to June) 1997 and Quarter 1 (Jan to Mar) 2016 (0.5% per quarter).

Figure 4: Real GDP quarter on same quarter a year ago growth rates, previously published compared with Blue Book 2016

%, Chained volume measure, seasonally adjusted, UK, Q1 1998 to Q1 2016



Source: Office for National Statistics

Examining the compound average calendar year growth rate for the period from 1998 to 2015 inclusive shows unrevised growth at 2.0%. However within this there are revisions to individual calendar years. For example, the revisions to growth in 2010 and 2011 were positive 0.4 and negative 0.5 percentage points respectively. This reflects the fact that the imputed rental deflator was already aligned to the owner occupiers' price index from CPIH from 2011 onwards – and applying the new method from 1997 to 2010 removed a discontinuity in method. Real GDP growth in 2010, 2012 and 2014 are all revised upwards on an annual basis, by positive 0.4, positive 0.1 and positive 0.2 percentage points respectively, but 2011, 2013 and 2015 are revised down by negative 0.5, negative 0.3 and negative 0.1 percentage points respectively.

Table 1: Revision to annual real GDP growth previously published compared with Blue Book 2016

	Previously published	% percentage points	
		Blue Book 2016	Difference
1998	3.4	3.2	-0.2
1999	3.1	3.3	0.2
2000	3.8	3.7	-0.1
2001	2.8	2.7	0.0
2002	2.5	2.4	-0.1
2003	3.3	3.5	0.1
2004	2.5	2.5	0.0
2005	3.0	3.0	0.0
2006	2.7	2.5	-0.2
2007	2.6	2.6	0.0
2008	-0.5	-0.6	-0.2
2009	-4.2	-4.3	-0.1
2010	1.5	1.9	0.4
2011	2.0	1.5	-0.5
2012	1.2	1.3	0.1
2013	2.2	1.9	-0.3
2014	2.9	3.1	0.2
2015	2.3	2.2	-0.1

Source: Office for National Statistics

Note:

1. Figures may not sum due to rounding.

7. GDP implied deflator

The publication of both real and current price gross domestic product (GDP) allows for the calculation of the GDP implied deflator. The [annual implied deflator is shown in Annex F](#) and the [quarterly implied deflator in Annex G](#) for completeness.

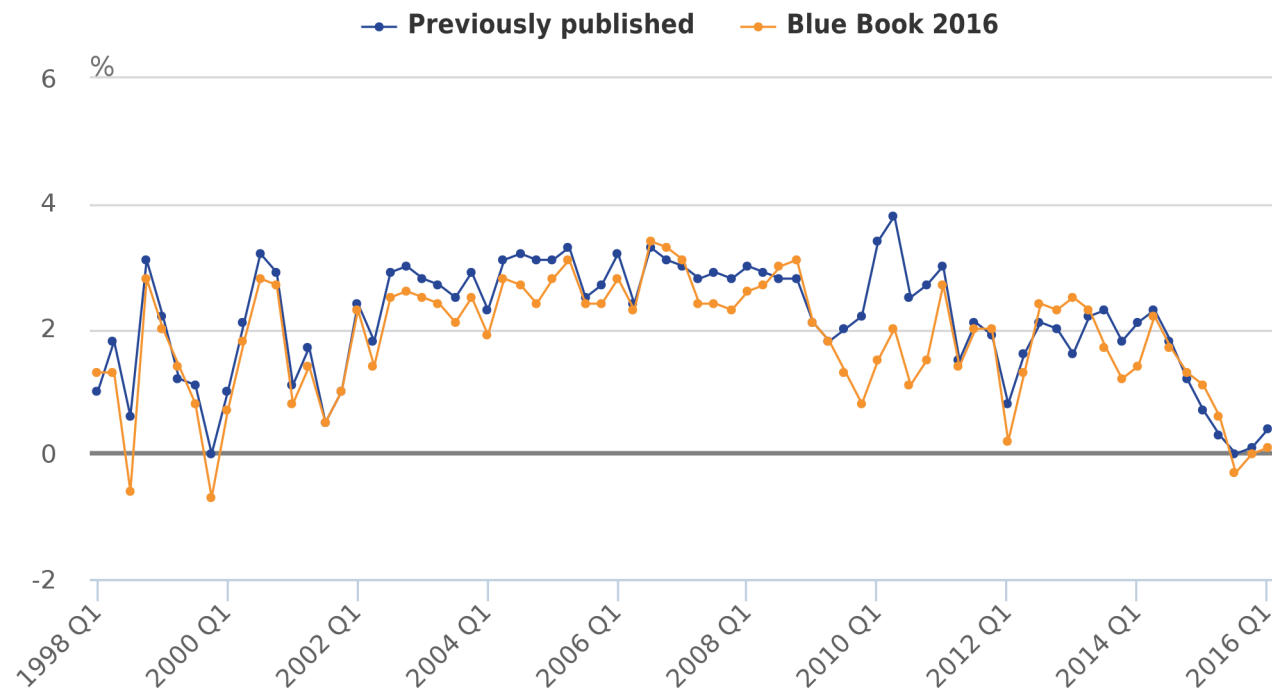
Substantial downward revisions to current price GDP growth during the period up to 2009, set against a broadly unchanged picture for real GDP growth, imply an equivalent set of downward revisions to growth in the implied GDP deflator. Figure 5 compares quarter on previous year growth in the implied GDP deflator, in the latest published series and estimates for Blue Book 2016. This shows a corresponding consistent downward revision to growth in the implied GDP deflator, which equates to approximately 0.3 percentage points each year on a calendar year basis.

The revisions prior to 2010 can be almost entirely attributed to the imputed rental methods change, as the corresponding implied deflator is revised to align with owner occupiers' housing costs (this shows lower growth than the implied deflator calculated under the previous method). There is a more substantial revision to the deflator in 2010, where calendar year growth was revised down 1.6 percentage points to 1.5%. This reflects the fact that the imputed rental deflator was already aligned to the owner occupiers' price index from CPIH from 2011 onwards – and applying the new method from 1997 to 2010 removed a discontinuity in method.

In the most recent period GDP deflator growth has been revised down slightly, to the extent that it turned negative in Quarter 3 (July to Sept) 2015.

Figure 5: Comparison of the implied GDP deflator: Quarter on previous year growth, per cent, previously published compared with Blue Book 2016

Seasonally adjusted, Quarter 1 1998 to Quarter 1 2016



Source: Office for National Statistics

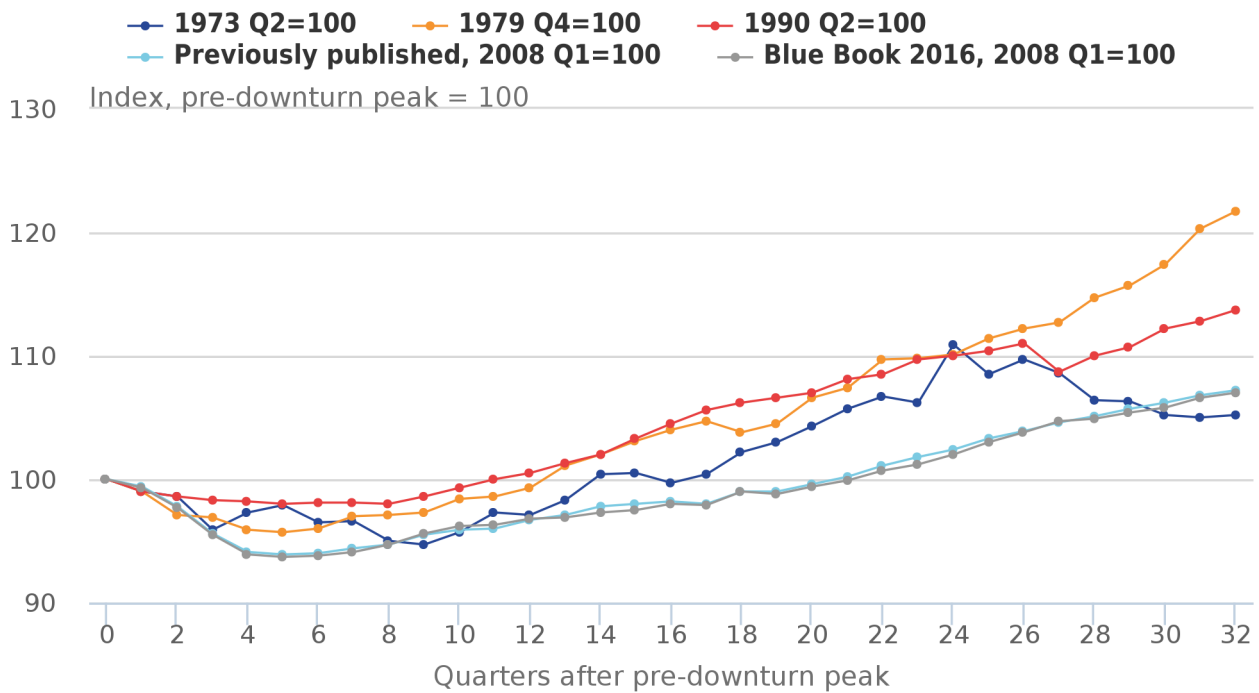
8. The economic downturn and recovery: GDP and GDP per capita

As a consequence of these revisions, the profile of real gross domestic product (GDP) following the most recent economic downturn has changed slightly. However, the broad timing and depth of the downturn in 2008 to 2009 stays the same, and the overall magnitude of the recovery immediately following the downturn remains the weakest of the past half century (Figure 6).

The 2008 to 2009 recession is a little deeper than previously estimated. The cumulative fall in output between the peak and trough (Quarter 1 (Jan to Mar) 2008 to Quarter 2 (Apr to June) 2009), which was previously estimated to have been 6.1%, has increased slightly to 6.3%. The overall strength of the recovery is largely unrevised, but the timing has shifted slightly. This resulted in UK output regaining its pre-downturn peak in Quarter 3 (July to Sept) 2013, one quarter later than previously estimated. With growth revised slightly downward in the 2015 calendar year, the UK economy is estimated to have surpassed its pre-downturn peak by 7.0% by Quarter 1 (Jan to Mar) 2016, compared with the 7.2% as previously published. Notably, as shown in Figure 6, the recovery immediately following the 2008 to 2009 economic downturn remains weak by historical standards.

Figure 6: Comparison of GDP growth following pre-downturn peaks, previously published compared with Blue Book 2016

Chained volume measure, seasonally adjusted

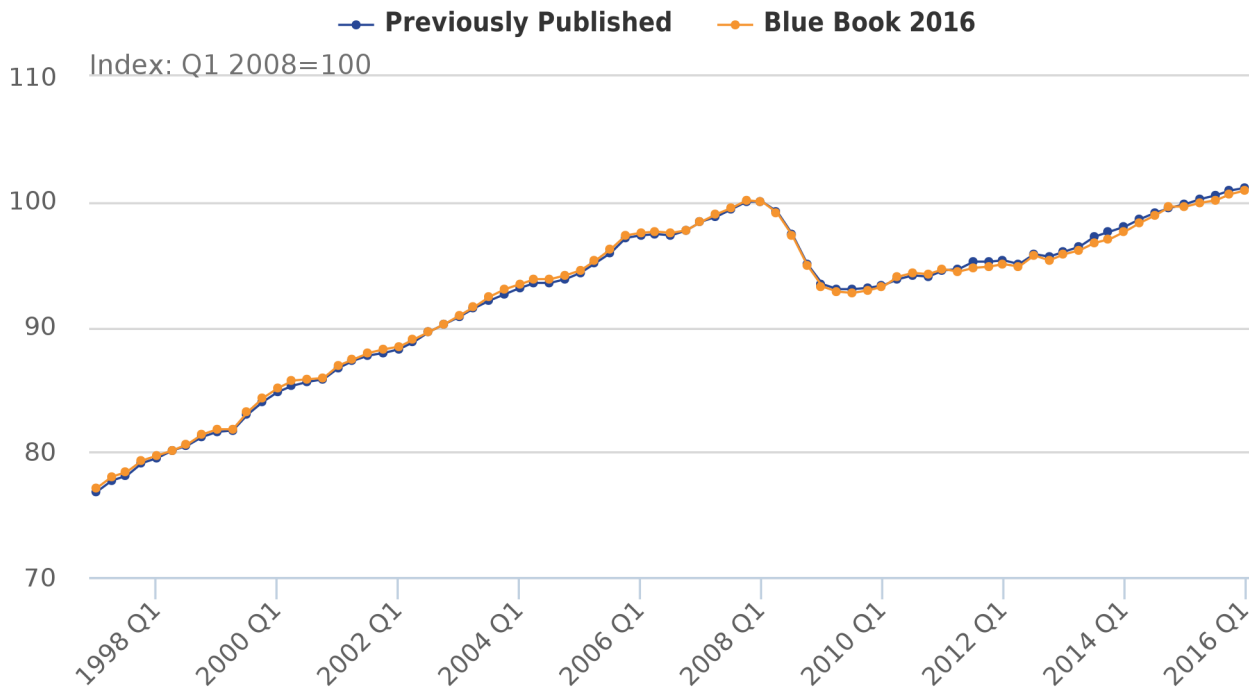


Source: Office for National Statistics

These changes to the strength of the recovery also have a bearing on the level of real GDP per capita. On a Blue Book 2016 basis, output per capita in Quarter 1 (Jan to Mar) 2016 was 0.9% above the economy's pre-downturn peak – it was 1.1% above peak levels on the previously published basis (Figure 7).

Figure 7: GDP per capita: previously published compared with Blue Book 2016, Quarter 1 2008=100

Chained volume measure, seasonally adjusted, UK, Quarter 1 1997 to Quarter 1 2016



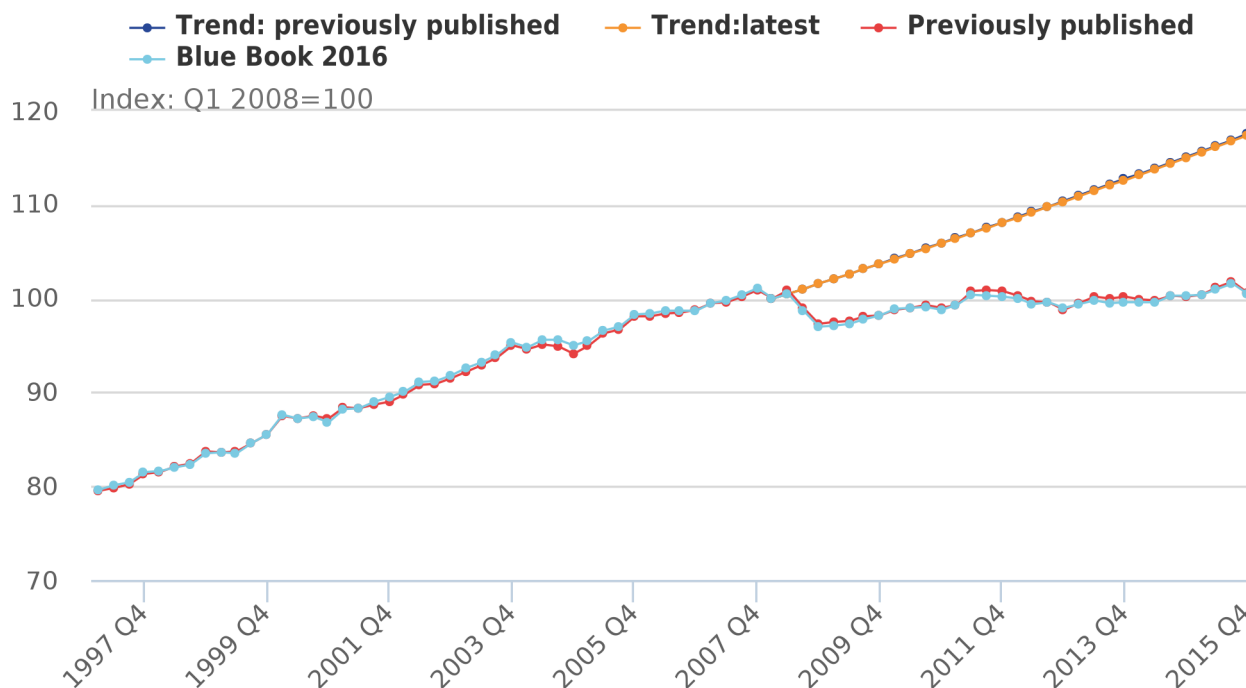
Source: Office for National Statistics

9. Productivity implications [1]

The revisions to GDP, in particular during the recent economic recovery, do not affect the scale of the “productivity puzzle”. On the basis of the revised GDP figures, for much of the recovery, the profile of productivity growth is broadly unchanged (Figure 8). On a Blue Book 2016 basis, output per hour fell by 2.9% from Quarter 1 (Jan to Mar) 2008 to Quarter 1 (Jan to Mar) 2009, compared with a previously published fall of 2.5%, however, it still recovered to its pre-downturn peak by Quarter 2 (Apr to June) 2011. In Quarter 4 (Oct to Dec) 2015, Blue Book 2016 data suggests output per hour was 0.5% higher than pre-downturn peak levels, compared to 0.6% higher on a previously published basis.

Figure 8: Output per hour relative to trend, previously published compared with Blue Book 2016, Quarter 1 2008=100

Chained volume measure, seasonally adjusted



Source: Office for National Statistics

Notes:

1. Note that these estimates of Blue Book 2016 consistent productivity are indicative: A complete set of Blue Book 2016 consistent labour productivity data will be published on 8 July.
2. The trend rate is calculated by taking a compound average growth rate of both series between Quarter 1 1997 and Quarter 4 2007. This is then applied to both series from Q1 2008 onwards.

Notes:

1. Blue Book 2016 Labour Productivity estimates are indicative only. Official estimates will be published on 8 July 2016.

10. Revisions to the expenditure components of GDP

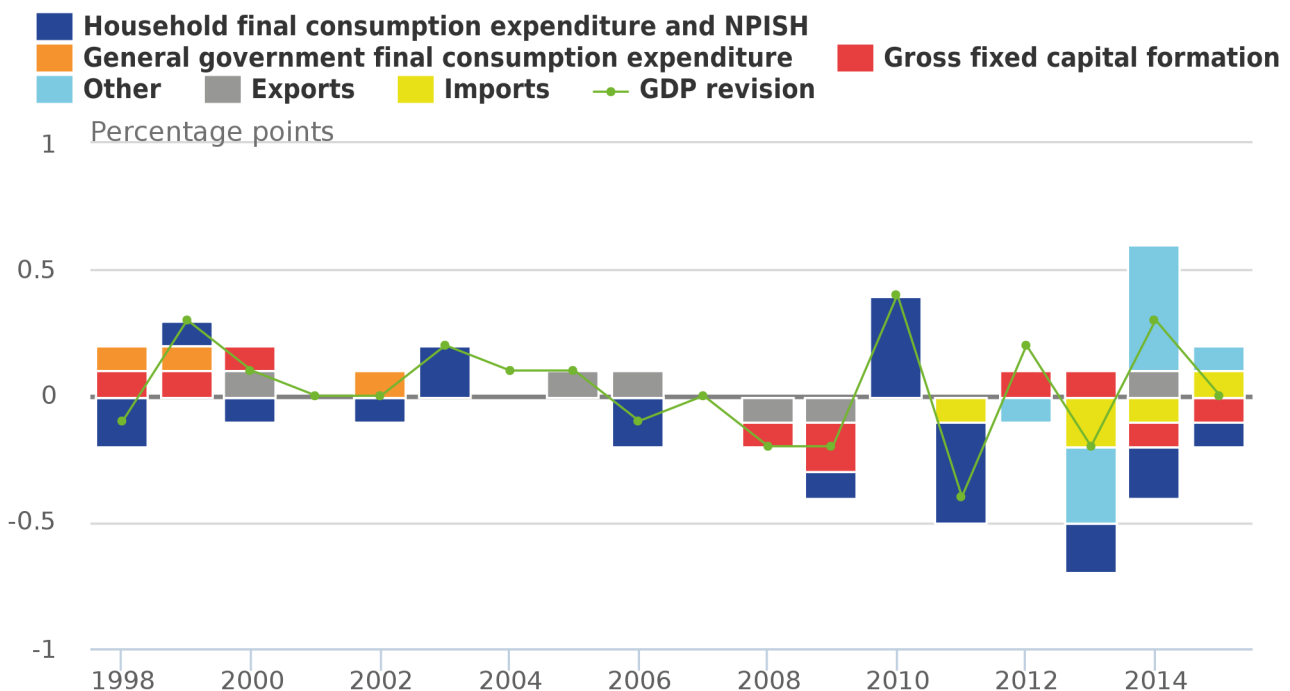
The changes introduced in Blue Book 2016 affect some of the expenditure components of gross domestic product (GDP) to a greater degree than others. Figure 9 plots the contribution from each headline expenditure component to the revision to calendar year real GDP growth, to show the drivers of the revisions. It highlights that household final consumption expenditure (HHFCE) – the largest component of the expenditure measure of GDP – makes the largest or joint largest contribution to the revision in 13 of the 18 years presented, and has a notable impact on 2010 and 2011. This is to be expected, given the scope of the imputed rental change previously stated.

However in the more recent years, especially in 2013 and 2014, the revision to annual GDP has occurred due to the “other” component. This reflects the fact that the revisions to the expenditure approach of GDP have not aligned to the other two approaches – output and income – and revisions to the alignment adjustment and the statistical discrepancy were needed in order to do so. Figure 10 presents the same contributions, but comparing the growth of each quarter to the same quarter in the previous year, which shows that the alignment adjustment has also been revised across the quarterly path from 2013 to 2015 inclusive.

While there have been some revisions to the expenditure breakdown of GDP, the latest data does not change the broad composition of the recent recovery. The majority of growth in the expenditure measure of GDP since the economic downturn (comparing Quarter 2 (Apr to June) 2009 with Quarter 1 (Jan to Mar) 2016) has still come from household consumption and fixed investment growth, with government consumption making a smaller positive contribution and net trade acting as a slight drag on GDP. However downward revisions to household consumption growth during the recent recovery mean that the component now accounts for 7.1 percentage points of the 14.2% growth in GDP experienced between Quarter 2 (Apr to June) 2009 and Quarter 1 (Jan to Mar) 2016, as opposed to 7.6 percentage points of the 14.2% GDP growth shown in the previously published data. This indicates that the recent recovery was slightly less reliant on household consumption expenditure than previously estimated.

Figure 9: Contributions of the components of the expenditure measure of GDP to aggregate GDP revisions, Blue Book 2016 compared with previously published

Chained volume measure, seasonally adjusted, 1998 to 2015



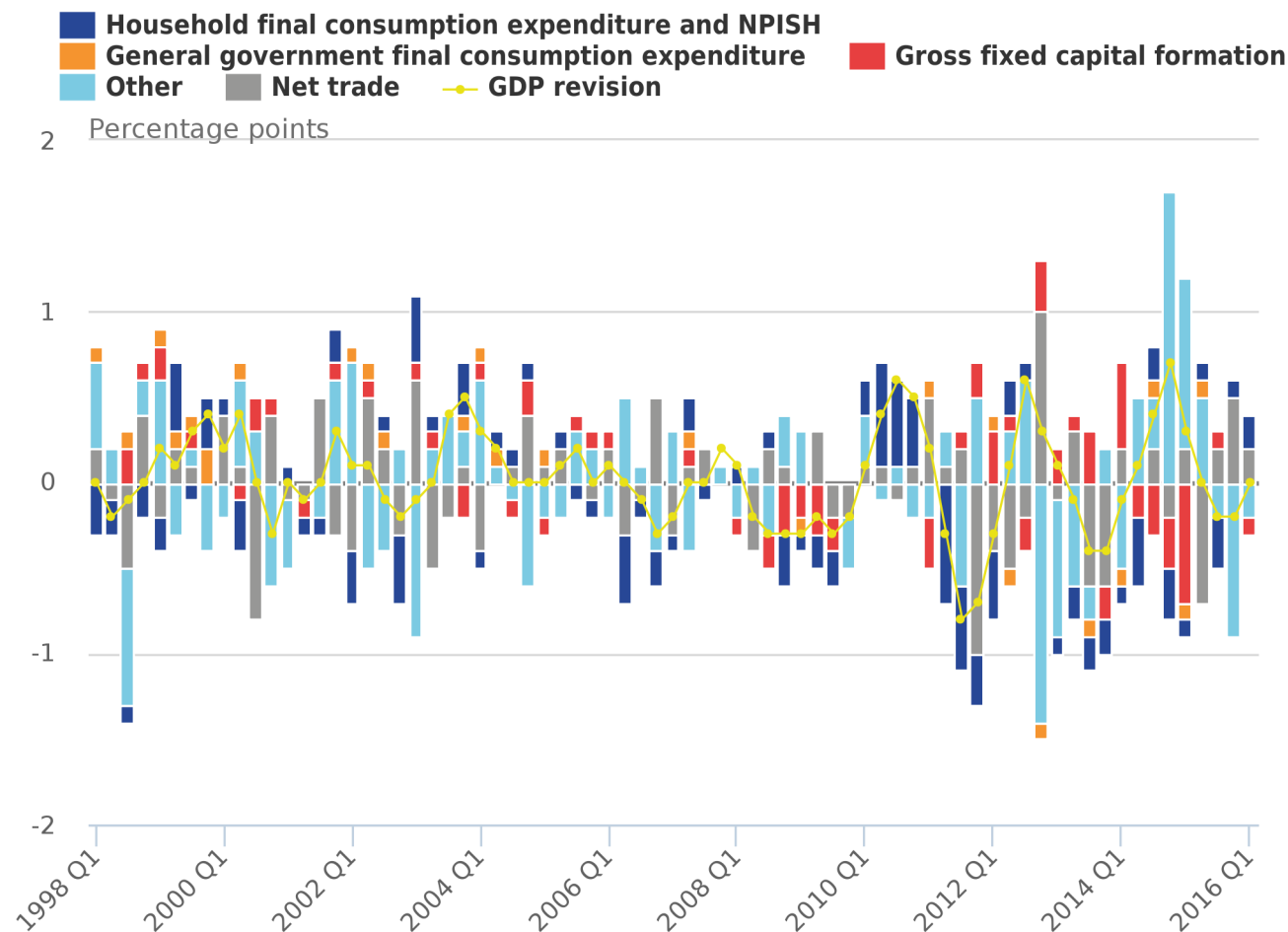
Source: Office for National Statistics

Notes:

1. Figures may not sum due to rounding.
2. 'Other' category includes change in inventories, acquisitions less disposals of valuables and the statistical discrepancy.

Figure 10: Contributions of the components of the expenditure measure of GDP to aggregate GDP revisions, Blue Book 2016 compared with previously published

Chained volume measure, seasonally adjusted, Quarter 1 1998 to Quarter 1 2016, Quarter on previous year growth, %



Source: Office for National Statistics

Notes:

1. Figures may not sum due to rounding.
2. 'Other' category includes change in inventories, acquisitions less disposals of valuables and the statistical discrepancy.

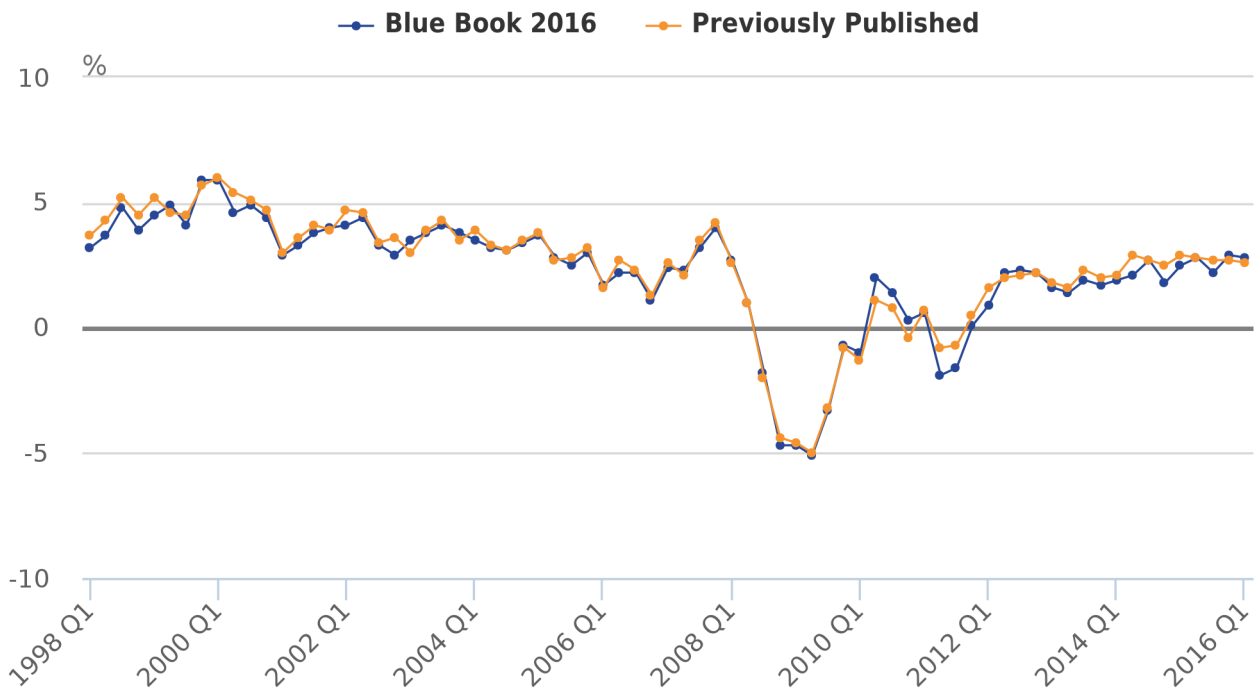
11. Household spending

The new method for imputed rental introduced in Blue Book 2016 had a substantial impact on calendar year household consumption growth; however this does not significantly alter the broad quarterly path of household final consumption expenditure (HHFCE). Figure 11 compares growth rates of each quarter compared to the same quarter a year ago for real HHFCE on both a previously published and Blue Book 2016 basis. Between Quarter 1 (Jan to Mar) 1998 and Quarter 4 (Oct to Dec) 2008 HHFCE growth was revised down by 0.2 percentage points on average, consistent with the calendar year revisions attributable to the imputed rental methods change – while there were slightly larger downward revisions within the 2011, 2013 and 2014 calendar years. Growth in the 2015 calendar year was revised down to 2.6% from 2.8%.

Taking the period as a whole, the compound average quarterly growth rate of real household consumption is unchanged to one decimal place at 0.6%, equal to the previously published data.

Figure 11: Real households' final consumption expenditure, quarter on same quarter a year ago growth rates, previously published compared with Blue Book 2016

Chained volume measure, seasonally adjusted, Quarter 1 1998 to Quarter 4 2015



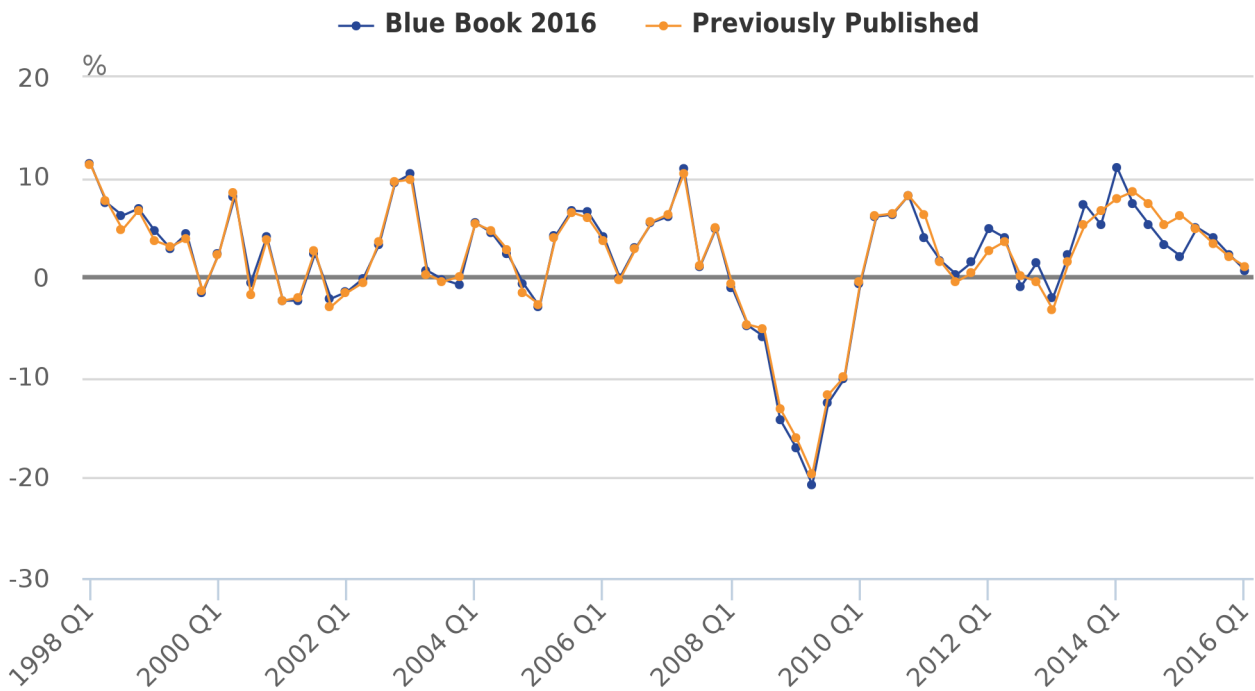
Source: Office for National Statistics

12. Gross Capital Formation

Blue Book 2016 contains only a small number of methodological changes to the components of gross fixed capital formation (GFCF). As a result the profile of fixed investment in early years remains broadly unchanged, as shown in Figure 12 which plots quarter on same quarter a year ago GFCF growth. However there are larger revisions to calendar year growth in some later years. Growth in 2008 and 2009 has been revised down by 0.6 and 0.8 percentage points respectively, which can be attributed to revised dwellings, agriculture and own account construction data. New Annual Business Survey data – which is based on audited accounts – also led to upward revisions to growth in 2012 and 2013 (by 0.8 and 0.6 percentage points respectively) and a 0.6 percentage point downward revision to growth in 2014. Calendar year growth in 2015 has also been revised down by 0.8 percentage points, mainly attributable to lower returns from the Quarterly Acquisitions and Disposals of Capital Assets Survey.

Figure 12: Quarter on same quarter a year ago growth rate of gross fixed capital formation, previously published compared with Blue Book 2016

Chained volume measure, seasonally adjusted, Q1 1998 to Q1 2016

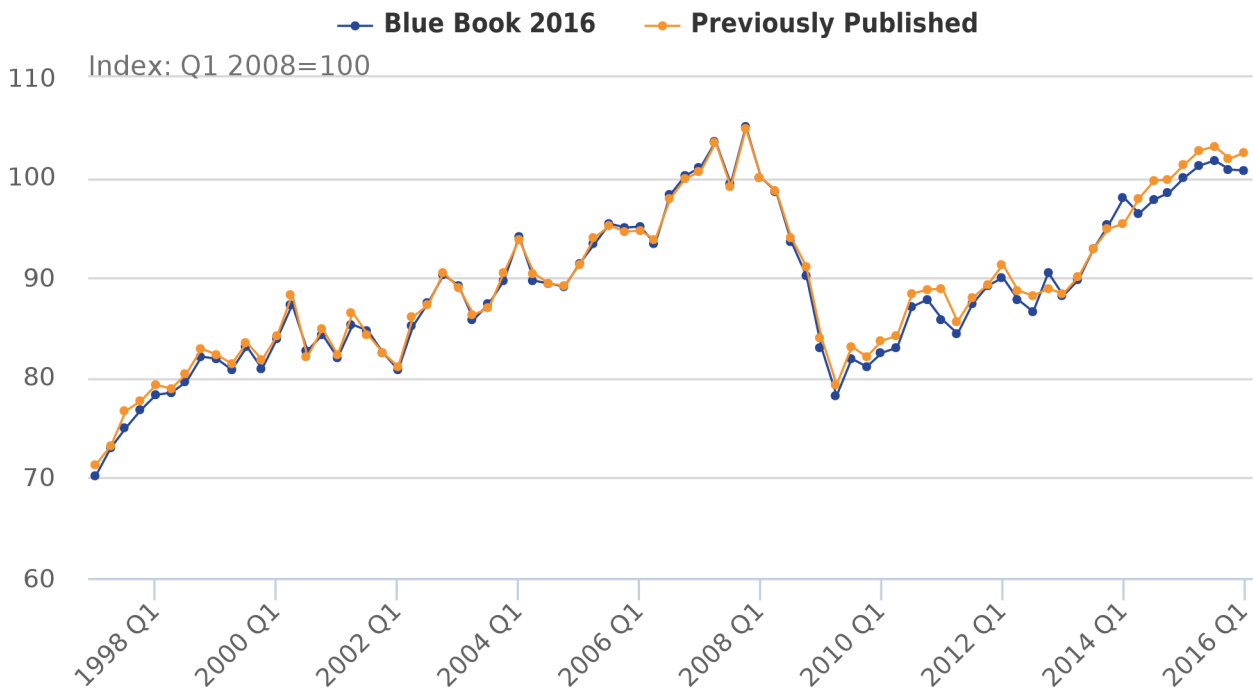


Source: Office for National Statistics

Taken together, however, these changes show a slightly weaker recovery of investment compared to pre-downturn levels (Figure 13). On a Blue Book 2016 basis, by Quarter 1 (Jan to Mar) 2016 GFCF was 0.7% above Quarter 1 (Jan to Mar) 2008 levels, compared with being 2.5% above Quarter 1 (Jan to Mar) 2008 levels on a previously published basis. This can be attributed to revised dwellings, agriculture and own account construction data.

Figure 13: Gross Fixed Capital Formation (GFCF), previously published compared with Blue Book 2016, Q1 2008=100

Chained volume measure, seasonally adjusted, Q1 1997 to Q1 2016

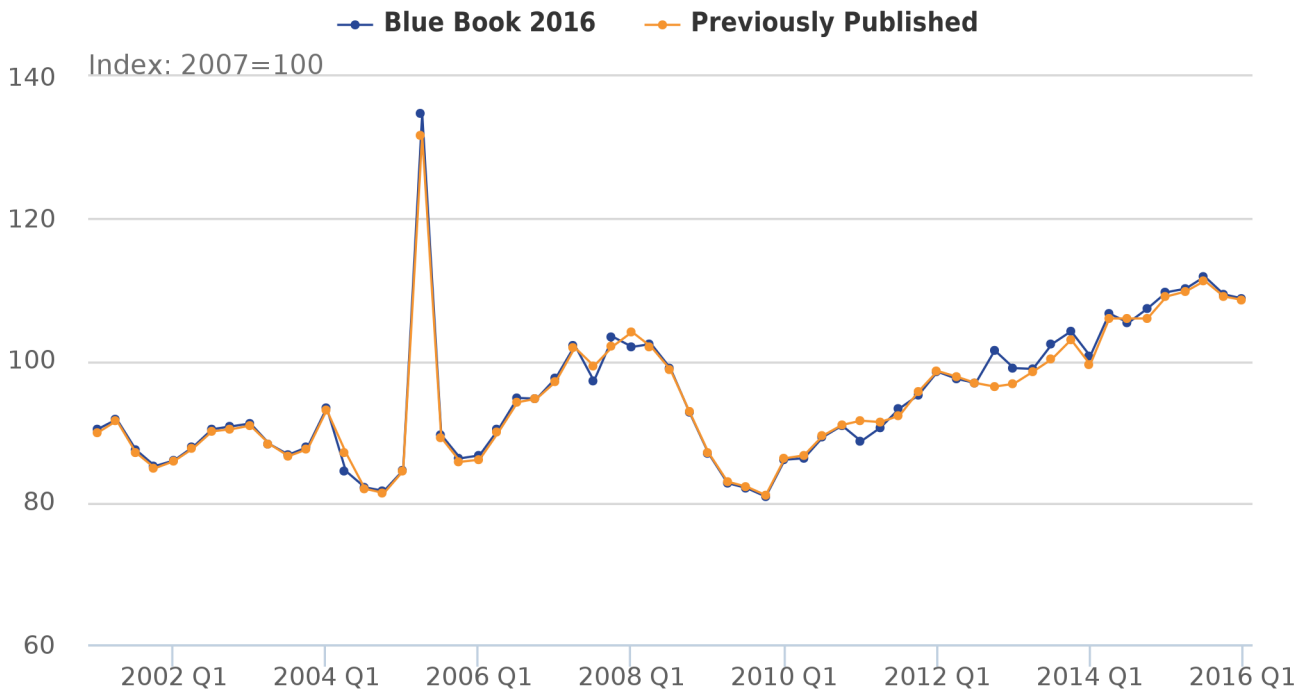


Source: Office for National Statistics

While the recovery in overall fixed investment has been revised down slightly, the broad profile of business investment – which accounts for a large proportion of fixed investment – remains broadly unchanged. Figure 14 shows that in Quarter 1 (Jan to Mar) 2016 business investment was 8.7% above average levels achieved in 2007, compared with 8.5% on the previously published estimate. In the most recent quarter, business investment fell by 0.6%, compared to a 0.5% fall in the previously published estimates.

Figure 14: Business investment, previously published compared with Blue Book 2016, 2007=100

Chained volume measure, seasonally adjusted, Q1 1997 to Q4 2015



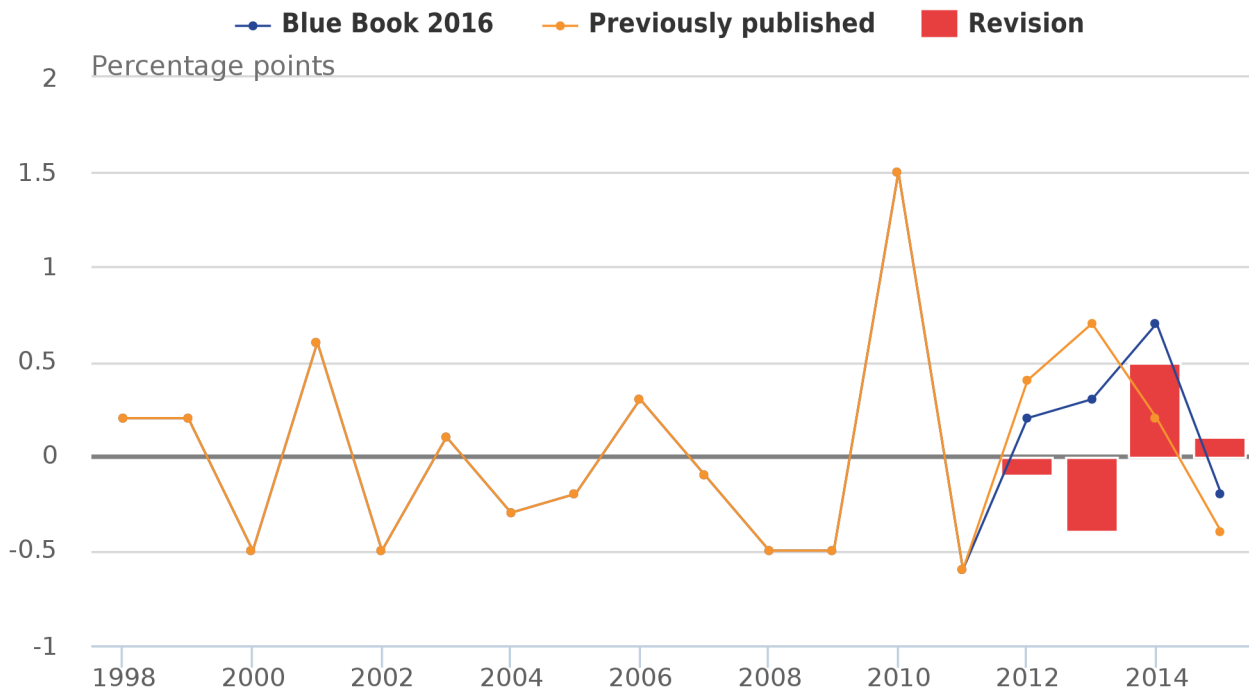
Source: Office for National Statistics

Figure 15 shows that the overall revision to gross capital formation (GCF) can instead be mainly attributed to inventories revisions. It plots the contribution from changes in inventories to gross domestic product (GDP) growth in the previously published data and the new Blue Book 2016 data. This series is one of the smallest expenditure components (typically accounting for less than 1% of GDP), but can be a significant driver of GDP growth, as large changes in inventories can occur from one period to the next (especially around turning points in the economy).

The impact of incorporating new data is shown to have minimal effect on GDP growth throughout the 1998 to 2011 period; however, it is then shown to have a larger impact from 2012 onwards (still in a sporadic direction and not exceeding positive or negative 0.5%). The inventory contribution to GDP in 2015 has been revised upwards by 0.1 percentage points.

Figure 15: Change in inventories contribution to GDP growth: Previously published compared with Blue Book 2016, percentage points

Chained volume measure, seasonally adjusted, 1998 to 2015

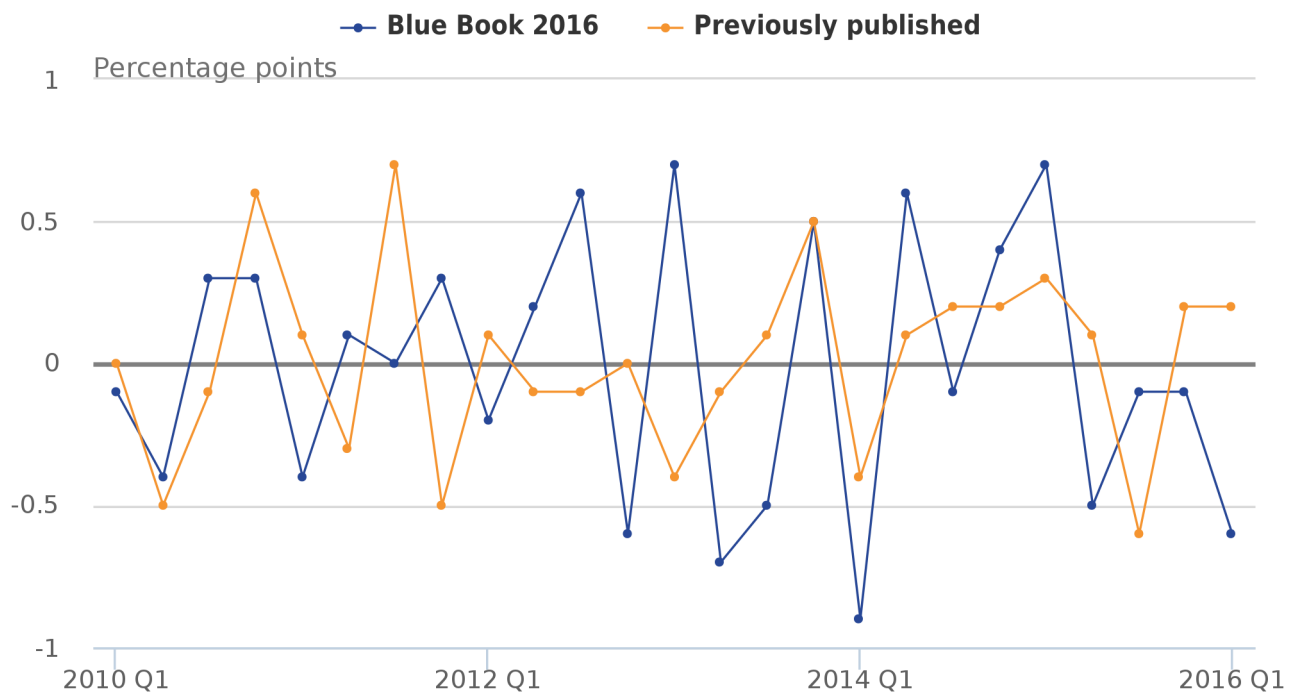


Source: Office for National Statistics

Figure 16 compares the contribution to GDP quarter on previous year growth from the alignment adjustment – a component of the change in inventories series which is used to align the expenditure, output and income approaches of GDP on a quarterly basis. It shows that the Blue Book 2016 consistent series makes a very different contribution to the quarterly path of GDP growth in the latest 7 years. It also shows that the series is making a slightly less volatile contribution to GDP compared to the previously published data.

Figure 16: Alignment adjustment contribution to GDP growth: previously published compared with Blue Book 2016, percentage points

Chained volume measure, seasonally adjusted, Quarter 1 2010 to Quarter 1 2016



Source: Office for National Statistics

13. Net trade

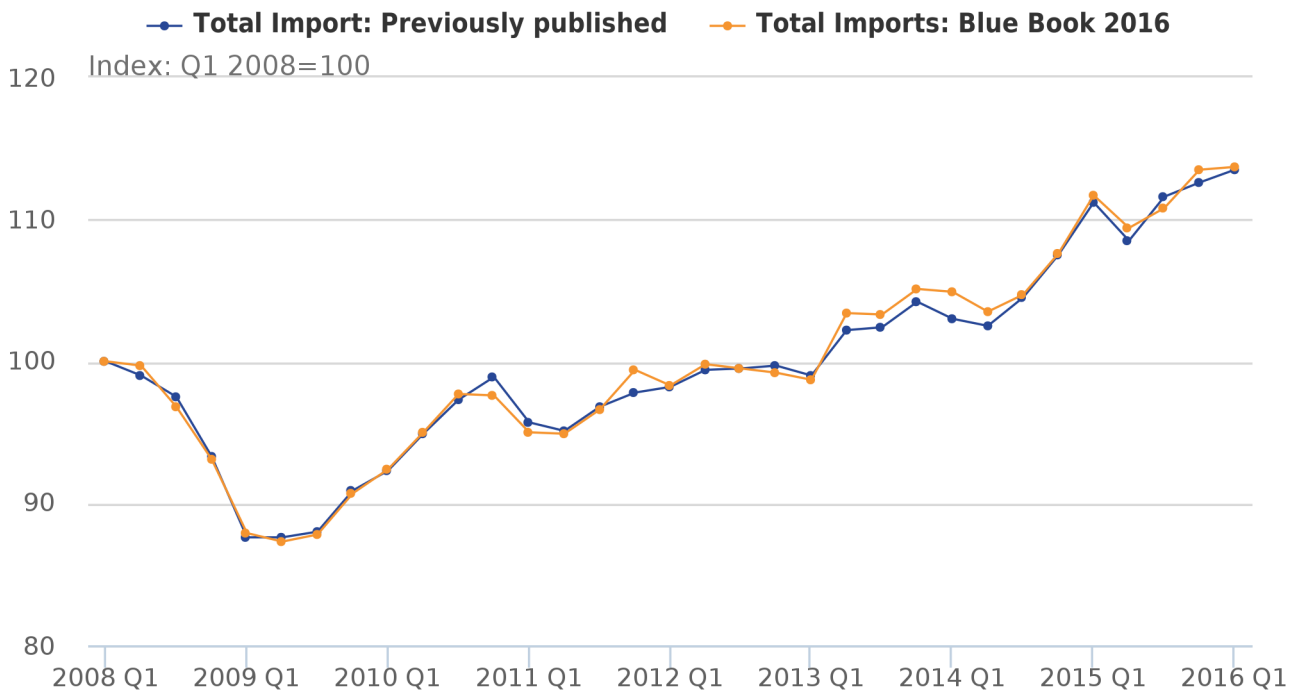
Alongside the revisions to household consumption, methods changes introduced in Blue Book 2016 have also affected estimates of exports, imports and net trade. This year there are a number of methods changes for trade components, which include:

- revised treatment of exhaustiveness and concealed income which affects exports of goods and services
- a change in the methodology for measuring non-EU gas imports
- improvements to the export and import of housing services relating to foreign-owned second homes in the UK and foreign second homes owned by UK residents
- revisions to the volume of trade in services, due to changes in deflator weights

The impact of these changes is shown in Figure 17, which presents the levels of exports and imports on a Blue Book 2016 and previously published basis, indexed to their respective values in Quarter 1 (Jan to Mar) 2008. It suggests that the growth of both exports and imports has been revised up slightly since the 2008 to 2009 economic downturn.

Figure 17a: Imports, previously published compared with Blue Book 2016, Quarter 1 (Jan to Mar) 2008=100

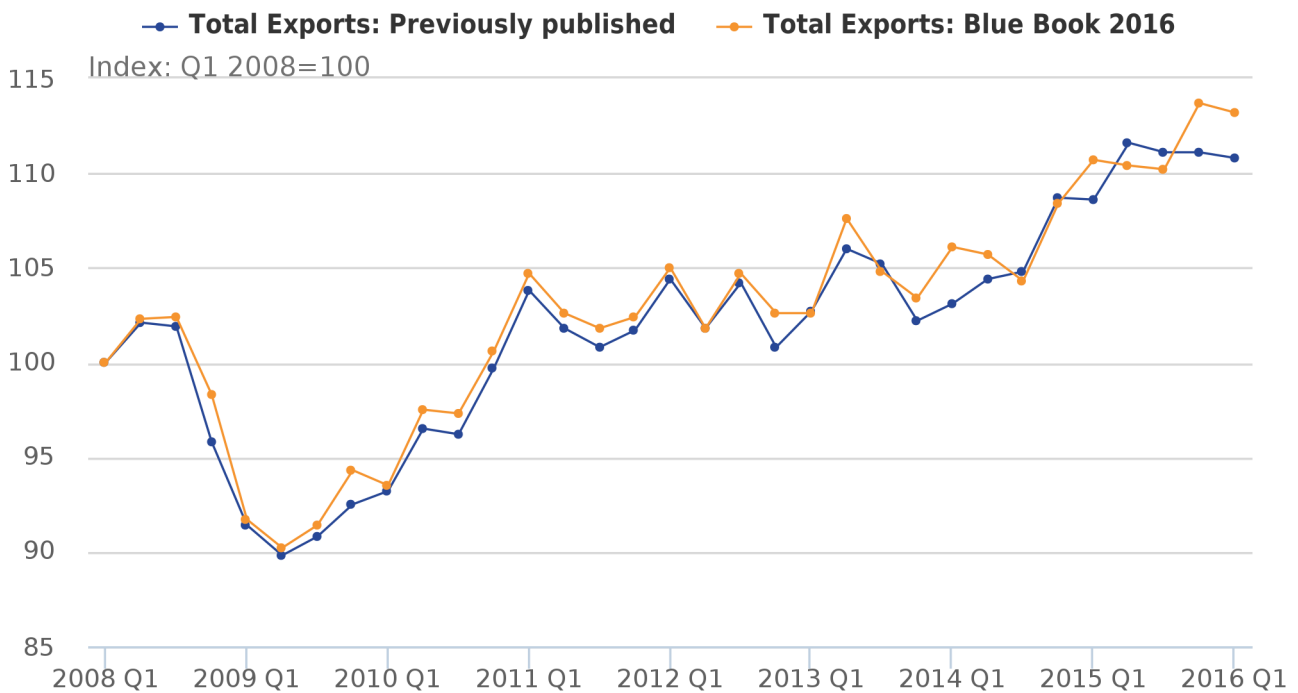
Chained volume measure, seasonally adjusted, Q1 2008 to Q1 2016



Source: Office for National Statistics

Figure 17b: Exports, previously published compared with Blue Book 2016, Quarter 1 (Jan to Mar) 2008=100

Chained volume measure, seasonally adjusted, Q1 2008 to Q1 2016

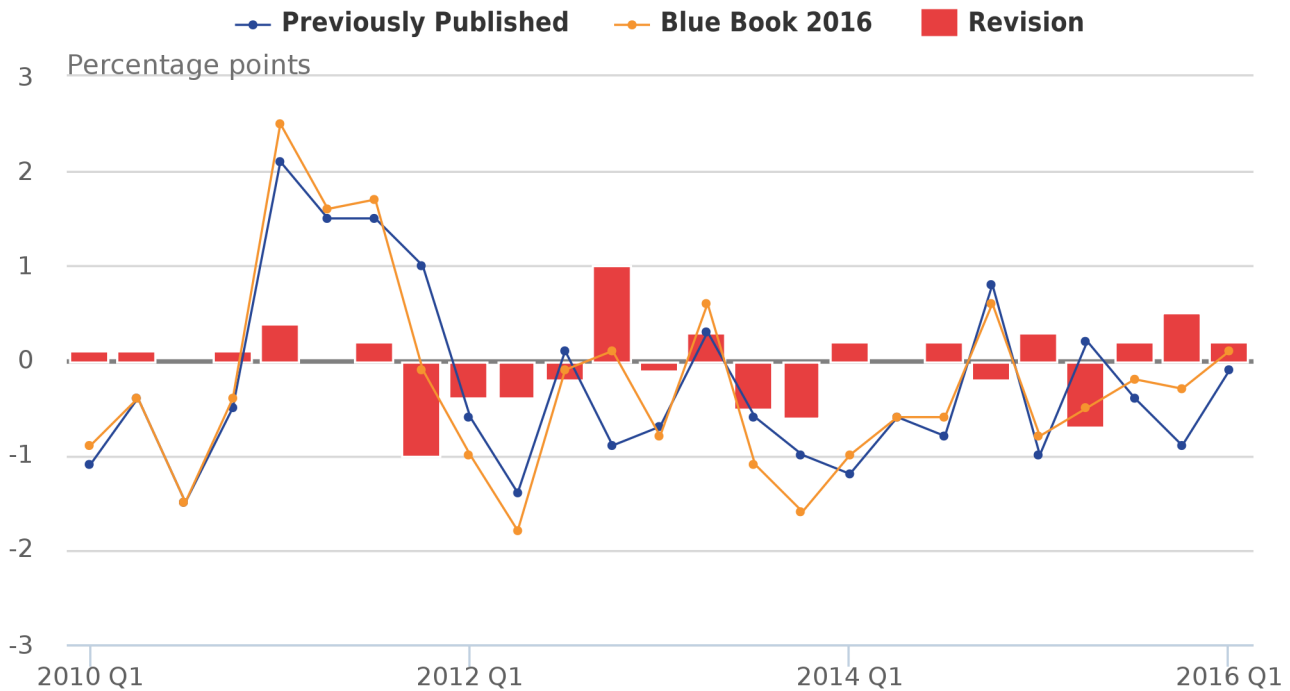


Source: Office for National Statistics

The Blue Book 2016 changes to imports and exports result in revisions to the contribution of net trade to gross domestic product (GDP) over this period. Figure 18 shows the contribution of net trade to the growth of a quarter compared to the same quarter last year, on a previously published and Blue Book 2016 basis, as well as the revision between the two. It reflects the modest changes to growth rates presented in Figure 17, and suggests that net trade continues to switch between periods of both supporting GDP growth and acting as a drag on GDP growth. Taken together, net trade has made broadly zero contribution to GDP between 2007 and 2015.

Figure 18: Net trade contribution to GDP growth, previously published compared with Blue Book 2016, percentage points

Chained volume measure, seasonally adjusted, Q1 2010 to Q1 2016



Source: Office for National Statistics

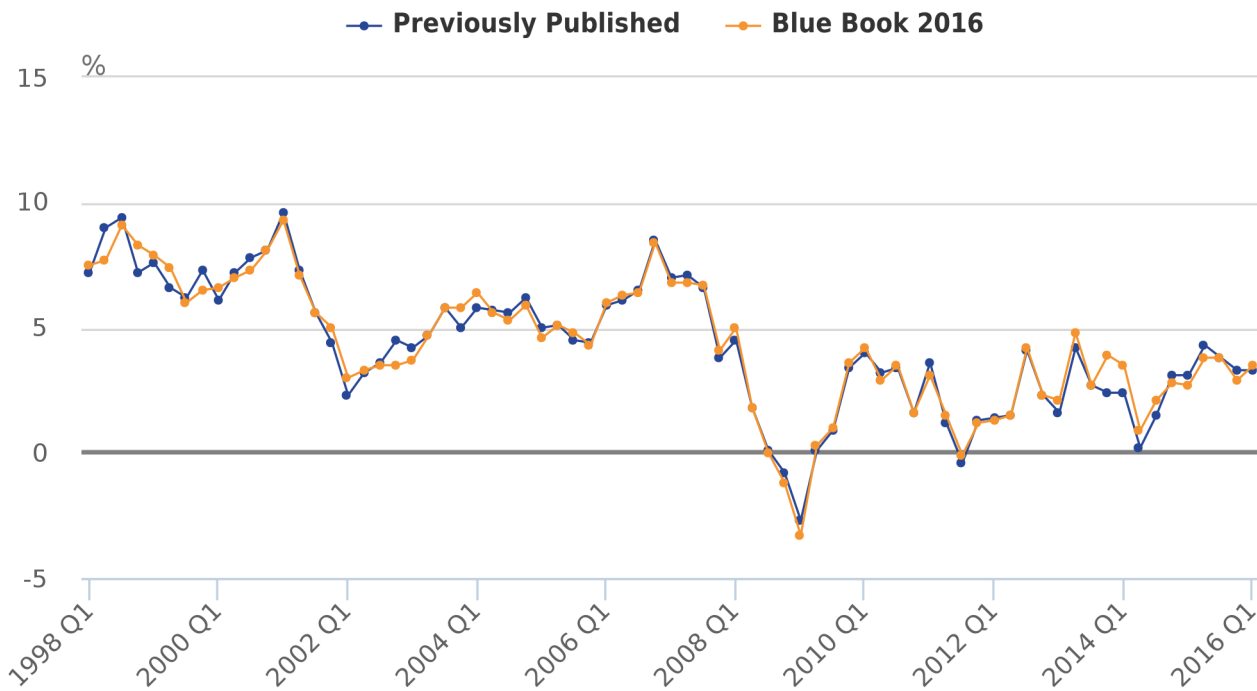
14. Revisions to the income components of GDP (in current prices)

Compensation of employees

The largest component of the income measure of GDP is compensation of employees (CoE) – which comprises wages and salaries and the social contributions that firms make on behalf of their employees (such as national insurance contributions and payments into occupational pension schemes). Figure 19 compares estimates of quarter on same quarter a year ago growth in CoE, both on a Blue Book 2016 consistent and previously published basis. The changes introduced in Blue Book 2016 have raised the overall level of CoE by approximately 0.2% on average each year; however this has done little to alter the relatively weak growth of CoE observed since the onset of the economic downturn in 2008. Calendar year growth in CoE in 2013 and 2014 was revised upwards (by 0.6 and 0.5 percentage points, respectively), while 2015 was revised down (by 0.3 percentage points). Average quarter on same quarter a year ago growth between Quarter 1 (Jan to Mar) 1998 and Quarter 4 (Oct to Dec) 2007 remains unchanged at 6.1%.

Figure 19: Compensation of employees, quarter on same quarter a year ago growth rates, previously published compared with Blue Book 2016

Current price, seasonally adjusted, Q1 1998 to Q1 2016

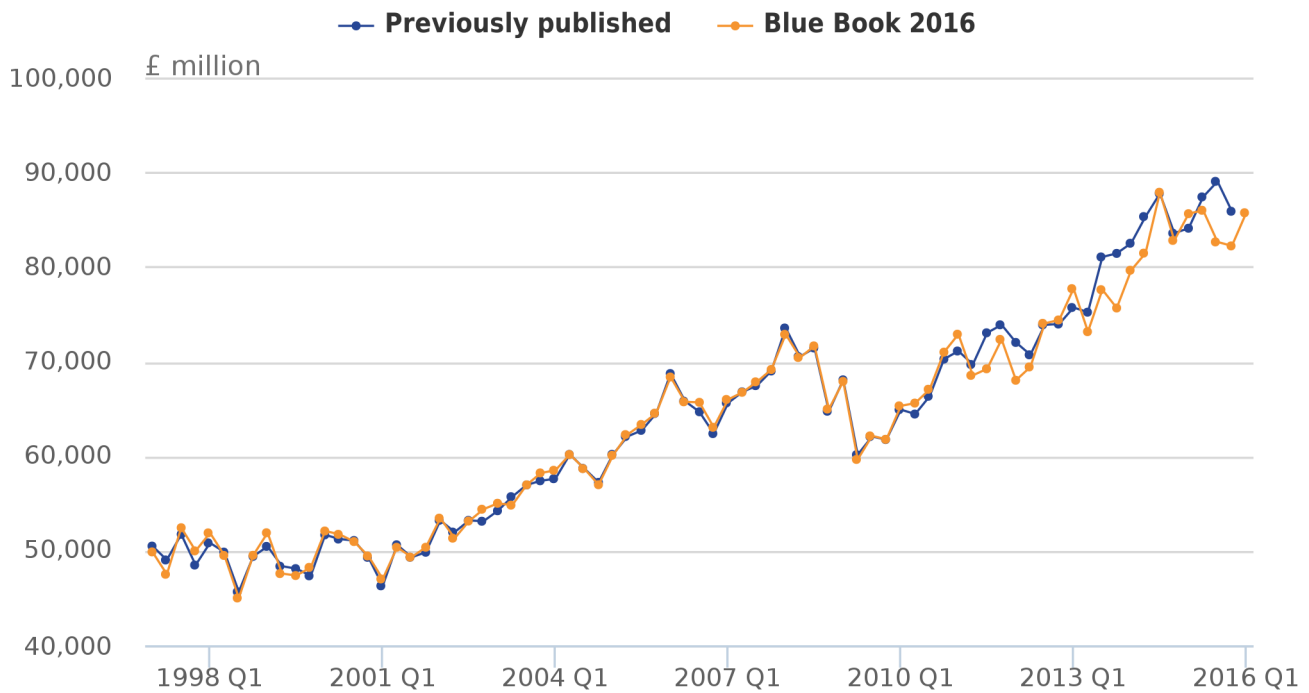


Source: Office for National Statistics

Figure 20 compares the level of the gross operating surplus (GOS) of private non-financial corporations (PNFCs) on both a Blue Book 2016 and a previously published basis. On average, between 1997 and 2009, the level of profits has been revised only marginally. However in 2010 the level of profits was revised up by £3.0 billion, while profits in subsequent years were revised down by £6.5 billion on average each year. This was the net impact of balancing the different approaches to estimating economic output against each other, as well as changes being made in Blue Book 2016. Particularly significant changes for PNFC GOS included a change in treatment of importing natural gas from Norway, data supplied on gross capital formation from Department for Environment, Food & Rural Affairs (DEFRA), and revised data on tax evasion from HM Revenue and Customs.

Figure 20: Gross operating surplus, private non-financial corporations, previously published compared with Blue Book 2016

Current price, seasonally adjusted, £ millions, Q1 1997 to Q1 2016

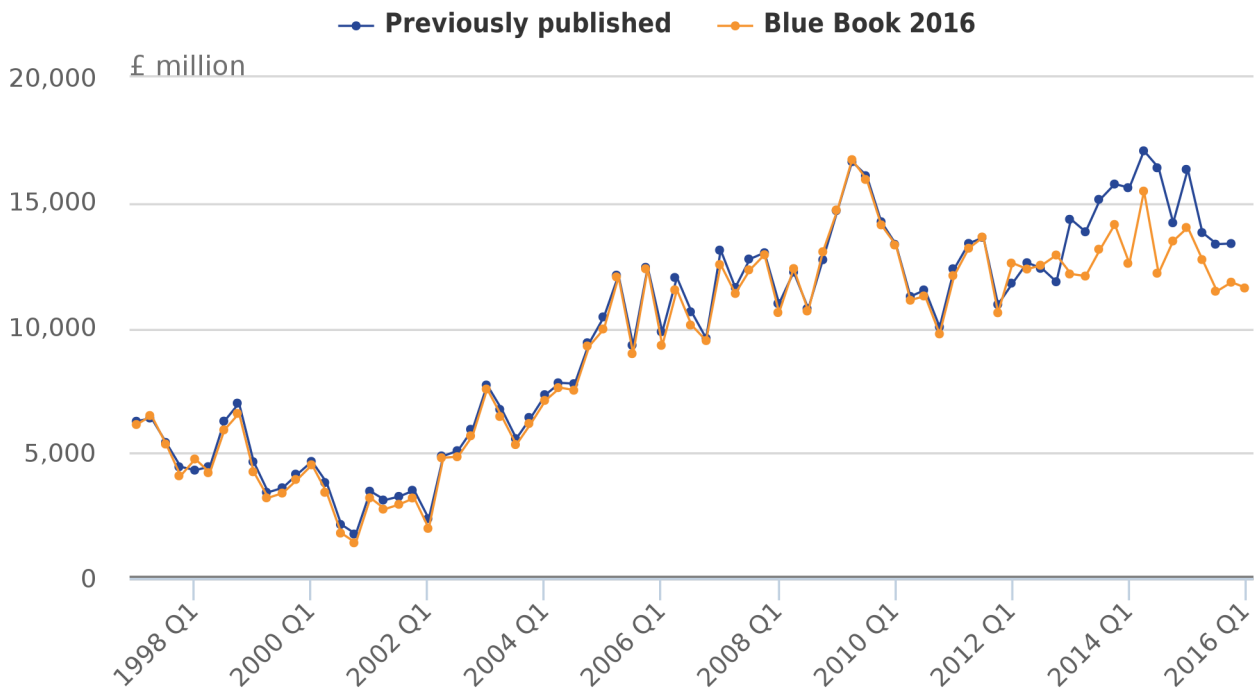


Source: Office for National Statistics

Estimates of financial corporations' incomes have also been revised downward throughout the series. Revisions were more pronounced in the most recent years, for example, profits were revised down by £7.6 billion in 2013, £9.6 billion in 2014 and £6.8 billion in 2015. These revisions are a result of the supply-use balancing process for the periods 2012 to 2014 inclusive. This involves reconciling existing data with revised administrative data for insurance corporations and pension funds for 2013, as well as the first set of administrative data for 2014.

Figure 21: Gross operating surplus, financial corporations, previously published compared with Blue Book 2016

Current price, seasonally adjusted, £ millions, Q1 1997 to Q1 2016

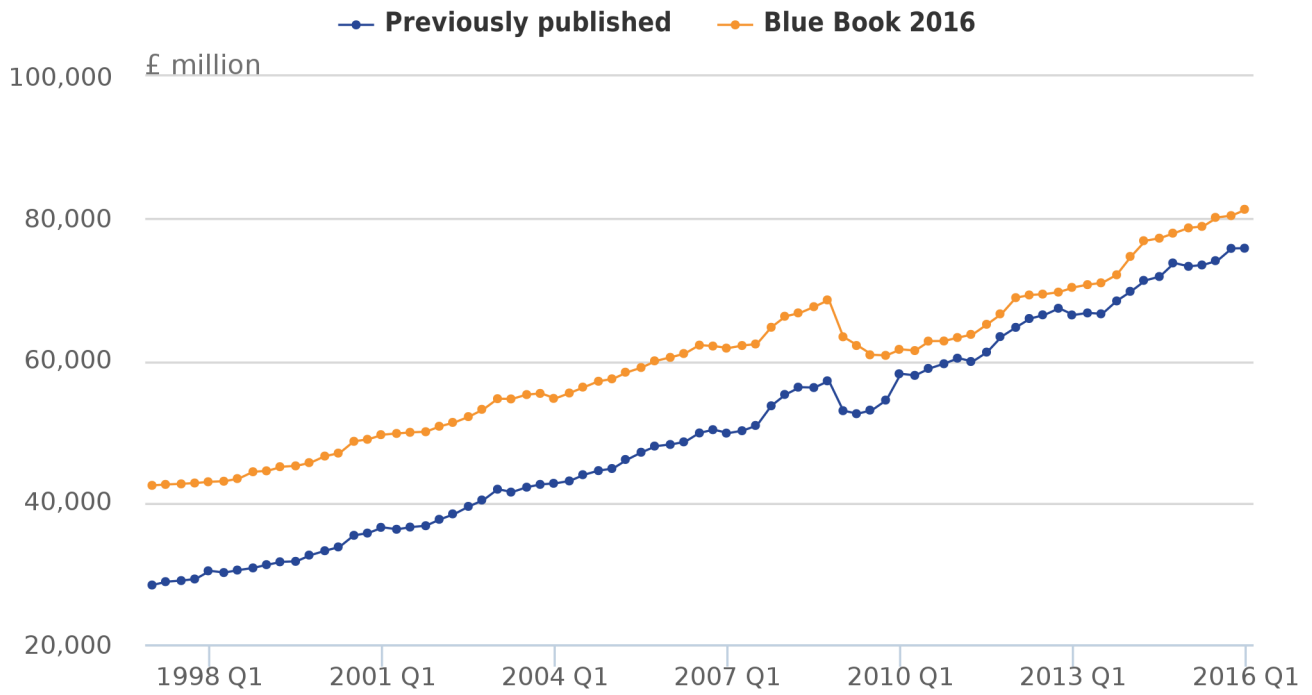


Source: Office for National Statistics

Figure 22 shows the level of other income (which also includes the operating surplus of the non-corporate sector) in current prices. The changes introduced in Blue Book 2016 had the greatest impact between 1997 and 2009; in 1997 the level of other income was revised upwards by £54.9bn (47.6%), then the scale of revisions dropped slightly each year, with an upward revision of £34.1bn (16.0%) in 2009. From 2010 onwards, annual revisions to other income have been far less pronounced, with an average of £16.4bn (6.1%). These revisions can be mainly attributed to the revised treatment of owner occupier's imputed rental, feeding through to household gross operating surplus.

Figure 22: Other income, previously published compared with Blue Book 2016

Current price, seasonally adjusted, £ millions, Q1 1997 to Q1 2016



Source: Office for National Statistics

Table 2: Impact of the planned changes on the expenditure and income components of GDP, 2015

GDP Components	Growth rates (% changes on previous year)		
	Previously published data	Blue Book 2016	Difference (percentage points)
Expenditure components (chained volume measures)			
Household final consumption expenditure	2.8	2.6	-0.2
Nonprofit institutions serving households	1.2	1.5	0.3
General Government final consumption expenditure	1.5	1.4	-0.1
Gross fixed capital formation	4.1	3.3	-0.8
Exports of goods and services	5.1	4.8	-0.3
Imports of goods and services	6.3	5.8	-0.5
Income components (current prices)			
Gross operating surplus : Corporations	0.2	0.2	0.0
Gross operating surplus : Government	3.3	3.3	0.0
Gross operating surplus : Household and NPISH	4.5	4.7	0.2
Gross operating surplus : Mixed income	2.4	2.6	0.2
Compensation of employees	3.6	3.3	-0.3
Taxes less subsidies	2.2	2.4	0.2
GDP (current prices)	2.6	2.6	0.0
GDP (chained volume measures)	2.3	2.2	-0.1

Source: Office for National Statistics

Note: Figures may not sum due to rounding.

Table 3: Impact of Blue Book 2016 changes on quarterly growth rates of real GDP

	GDP at market prices (chained volume measures, seasonally adjusted £ millions)		GDP at market prices (chained volume measures, seasonally adjusted % growth on previous period)			
	As published on 26 May 2016 (2012 prices)	Blue Book 2016 (2013 prices)	As published on 26 May 2016 (2012 prices)	Blue Book 2016 (2013 prices)	Revision (p.p)	
Quarter 1 2015	443,957	455,086	0.5	0.3	-0.2	
Quarter 2 2015	446,626	457,002	0.6	0.4	-0.2	
Quarter 3 2015	448,623	459,006	0.4	0.4	0.0	
Quarter 4 2015	451,260	462,139	0.6	0.7	0.1	
Quarter 1 2016	452,886	464,212	0.4	0.4	0.0	

Source: Office for National Statistics

Note:

1. Figures may not sum due to rounding.

15. Revisions to GDP: The 2015 picture

A summary of the changes from 1997 to 2014 for quarterly gross domestic product (GDP) were published in the article [Impact of Blue Book 2016 changes on current price and chained volume measure gross domestic product estimates, 1997 to 2014](#) published on 20 May 2016. This section details changes to the GDP quarterly path from Quarter 1 (Jan to Mar) 2015 to Quarter 1 (Jan to Mar) 2016. There have been no changes made to any data in previous articles for 1997 to 2014.

In 2015, annual current price GDP growth is unrevised and 2.6% higher than 2014. Although annually unrevised, there are revisions to the 2015 GDP quarterly growth rates which, in addition to the inclusion of the methods changes described in earlier GDP Blue Book 2016 articles, also includes the impact of later internal and external data sources.

Annual GDP in volume terms was estimated to have increased by 2.2% in 2015 compared with 2014, revised down 0.1 percentage points from the previously published estimate. As a result of the changes to the level of annual GDP, the GDP quarterly path has also been adjusted to achieve the new annual level. Both the quarterly path revisions and quarterly growth rates are discussed in more detail in the following sections.

16. Summary of later internal and external data sources

This release includes the processing and GDP balancing of the following data sources:

- Re-assessment of 2015 levels to account for the latest Annual Business Survey update for 2014
- Annual 2015 International Trade in Services Survey
- Housing revenue account data from Local Government
- Living Costs and Food Survey
- Department of Energy and Climate Change
- International Passenger Survey
- Monthly Business Survey
- Retail Sales Inquiry
- Financial Inquiries Survey
- Average Weekly Earnings
- Labour Force Survey
- Quarterly Acquisitions and Disposals of Capital Assets Survey
- Quarterly Stocks Inquiry

17. Revisions to headline GDP quarter-on-quarter growth, current prices chained volume measures (real)

Quarter 1 (Jan to Mar) 2015

Real GDP growth for Quarter 1 (Jan to Mar) 2015 has been revised down by 0.2 percentage points to 0.3%. This is due to downward revisions for the services industries within the output approach to measuring gross domestic product (GDP) from the government and other services industries – which was revised down 0.6 percentage points to negative 0.5%.

Within the expenditure components, the upward revisions to net trade were more than offset by a downward revisions contribution from gross capital formation.

Current prices GDP growth for Quarter 1 (Jan to Mar) 2015 has been revised up by 0.2 percentage points to 0.7%. Large upward revisions to household final consumption expenditure (HHFCE) – from both updates to internal and external data sources (noted above) and the imputed rental change, along with a positive contribution from net trade, were only partially offset by gross capital formation and a broad base of downward revisions across income components.

Quarter 2 (Apr to June) 2015

Real GDP growth for Quarter 2 (Apr to June) 2015 has been revised down by 0.2 percentage points to 0.4%. This is due to downward revisions for the services industries within the output approach to measuring GDP from the business services and finance industries, which was revised down 0.3 percentage points to 0.1%.

Within the expenditure components, the upward revisions to gross capital formation were more than offset by a downward revisions contribution from net trade.

Current prices GDP growth for Quarter 2 (Apr to June) 2015 has been revised down by 0.1 percentage points to 0.8%. Within the expenditure components, there were downward revisions to HHFCE, general government final consumption expenditure (GGFCE) and net trade which were offset by upward revisions to gross capital formation. Within the income components the upward revisions were broad based.

Quarter 3 (July to Sept) 2015

Real GDP growth for Quarter 3 (July to Sept) 2015 is unrevised.

Current prices GDP growth for Quarter 3 (July to Sept) 2015 has been revised down by 0.8 percentage points to negative 0.2%. Within the expenditure components, large downward revisions to gross fixed capital formation (GFCF) were only partially offset by small upward revision contributions from HHFCE and general government final consumption expenditure. Later survey data for GFCF has reduced the level and growth estimates. This becomes more pronounced in Quarter 3 (July to Sept) 2015 as the downward level revision, driven by information and communication technology equipment and other machinery and equipment, was larger than the previous quarter. These nominal revisions do not directly impact on the equivalent chained volume measure (CVM) figures due to the profile of revisions to the GFCF quarterly deflators.

Within the income components, large downward revisions to gross operating surplus (GOS) of corporations were partially offset by an upward revision to compensation of employees (CoE).

The revision to only the current price estimate of GDP in Quarter 3 (July to Sept) 2015 has led to a large revision to the GDP implied deflator in that quarter.

Quarter 4 (Oct to Dec) 2015

Real GDP growth for Quarter 4 (Oct to Dec) 2015 has been revised up by 0.1 percentage points to 0.7%. This is due to upward revisions for the services industries within the output approach to measuring GDP from the government and other services industries, which was revised up 0.2 percentage points to 0.6%.

Within the expenditure components, the downward revisions to gross capital formation and general government final consumption expenditure (GGFCE) were more than offset by an upward revision contribution from net trade.

Current prices GDP growth for Quarter 4 (Oct to Dec) 2015 have been revised up by 0.3 percentage points to 0.5%. Large downward revisions to household final consumption expenditure (HHFCE) and GGFCE were offset by large upward revisions to gross capital formation and net trade. Downward revisions to compensation of employees (CoE) were offset by upward revisions to gross operating surplus (GOS).

Quarter 1 (Jan to Mar) 2016

Real GDP growth for Quarter 1 (Jan to Mar) 2016 has been unrevised. In Quarter 1 (Jan to Mar) 2016, the data information content for the output approach is more complete than the expenditure. Income approaches and therefore the expenditure and income growth rates are aligned to the output measure, with the quarterly imbalance being absorbed in the alignment adjustments (the difference between output and expenditure, and output and income on a quarterly basis). The revisions to the output measure of GDP and its components are shown in Table 4.

Table 4: Revisions to output GDP

Period	GDP(O) ²	Services	Production	Construction	Agriculture
	% revision	% revision	% revision	% revision	% revision
Q1 2015	-0.2	-0.2	0.2	0.0	0.2
Q2 2015	-0.1	-0.2	0.0	0.5	0.0
Q3 2015	0.0	-0.1	-0.1	0.5	0.0
Q4 2015	0.1	0.1	0.1	0.4	0.2
Q1 2016	0.0	0.0	0.2	0.7	-0.1

Source: Office for National Statistics

Notes:

1. Percentage change to 1 demical place
2. Revisions to output gross value added and therefore may not sum to the percentage change in GDP.
3. Q1 is Quarter 1 (Jan to Mar)
4. Q2 is Quarter 2 (Apr to June)
5. Q3 is Quarter 3 (July to Sept)
6. Q4 is Quarter 4 (Oct to Dec)

Current prices GDP growth for Quarter 1 (Jan to Mar) 2016 have been revised up by 0.3 percentage points to 1.0%. Large upward revisions to household final consumption expenditure (HHFCE), general government final consumption expenditure (GGFCE) and net trade were partially offset by downward revisions to gross capital formation. Within the income components the upward revisions were broad based with upward revisions to compensation of employees (CoE), gross operating surplus (GOS) and other income.

Table 5 shows revisions to the quarter-on-same-quarter a year ago growth for GDP.

Table 5: Revisions to quarter-on-same-quarter a year ago percentage change growths for GDP for the UK

Period	Quarter on same quarter a year ago previously published	Quarter on same quarter a year ago latest estimate	Total quarter on same quarter a year ago revision
	% growth	% growth	% growth
Quarter 1 2015	2.6	2.9	0.3
Quarter 2 2015	2.4	2.3	-0.1
Quarter 3 2015	2.2	2.0	-0.2
Quarter 4 2015	2.1	1.8	-0.3
Quarter 1 2016	2.0	2.0	0.0

Source: Office for National Statistics

Note: Figures may not sum due to rounding.

The revisions for the quarter-on-same-quarter a year ago growths for GDP in 2016 are due to revisions in both 2016 and 2015 while the revisions for the quarter-on-same-quarter a year ago growths for GDP in 2015 are due to revisions in 2015 and 2014. The revisions to contributions to GDP growth are presented in Table 6.

Table 6: Revisions to contributions to GDP growth quarter on same quarter a year ago

Quarter-on-same-quarter -a-year-ago revisions to contributions to growth, expenditure components, current period	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016
revision %					
Household final consumption expenditure	-0.2	0.0	-0.3	0.1	0.1
Non-profit institutions serving households final consumption expenditure	0.1	0.0	0.0	-0.1	0.0
General government final consumption expenditure	-0.1	0.1	0.0	-0.1	0.0
Gross capital formation	0.1	0.4	0.0	-0.6	-0.3
Exports	-0.2	-0.7	-0.1	0.8	0.1
Imports (to be deducted)	-0.5	-0.1	-0.3	0.2	-0.1
Net trade	0.3	-0.7	0.2	0.5	0.2
GDP at market prices, chained volume measure	0.3	-0.1	-0.2	-0.3	0.0
Quarter-on-same-quarter -a-year-ago revisions to contributions to growth, income components, current period					
Compensation of employees	-0.2	-0.2	0.0	-0.2	0.1
Gross operating surplus of corporations	1.1	0.6	-0.9	-0.8	-0.4
Other income	0.1	0.0	0.2	0.1	0.0
Taxes less subsidies	0.0	0.0	0.0	0.1	-0.1
GDP at market prices, current prices	0.7	0.2	-0.6	-0.4	-0.4

Source: Office for National Statistics

Notes:

1. Q1 is Quarter 1 (Jan to Mar)
2. Q2 is Quarter 2 (Apr to June)
3. Q3 is Quarter 3 (July to Sept)
4. Q4 is Quarter 4 (Oct to Dec)
5. Revisions may not sum to total due to rounding

The quarter-on-same-quarter a year ago revisions, to the chained volume measure, are present in all quarters expect Quarter 1 (Jan to Mar) 2016. Revisions are largest in Quarter 1 (Jan to Mar) 2015 and Quarter 4 (Oct to Dec) 2015 – with Q1 (Jan to Mar) 2015 being up by 0.3 percentage points and Q4 (Oct to Dec) 2015 revised down 0.3 percentage points.

18. Updating weights of the output components

As part of the Blue Book process, the last base year and reference year for chained volume estimates are moved forward by 1 year so that the estimates better reflect the industrial structures and prices currently seen within the economy. For comparison, the detailed gross value added weights for 2012 and 2013 are supplied in Table 7. From Quarter 1 (Jan to Mar) 2016 quarterly national accounts release, the last base and reference years move forward from 2012 to 2013. Re-referencing on its own does not cause revisions to real growth rates, but the rebasing process, taking on new gross value added weights and product weights from the supply and use balancing process, is likely to cause revisions to the growth rates of chained volume components.

The updated gross value added weights reflect the continued dominance of the services industries in the UK. Services as a whole increased in weight from 786 parts per thousand (ppt) to 788ppt.

The weights for Production and Manufacturing both increased in 2013 (to 147ppt and 103ppt respectively) compared with the updated weights for 2012 for these industries. However, the weights for both industries in 2013 are lower than the previously published weights for 2012.

Table 7: Detailed gross value added weights for 2012 and 2013

Industry Description	Industry	Current 2012 GVA Weights (Parts Per Thousand)	Updated 2012 GVA Weights (Parts Per Thousand) as at Blue Book 2016	Updated 2013 GVA Weights (Parts Per Thousand) as at Blue Book 2016
TOTAL TOTAL		1000	1000	1000
AGRICULTURE, FORESTRY AND FISHING	A	6.8	6.7	7.1
PRODUCTION	B-E	148.9	143.7	146.5
MINING AND QUARRYING	B	20.0	19.0	17.6
MANUFACTURING	C	102.9	99.3	102.6
ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	D	13.9	13.6	15.3
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	E	12.1	11.8	10.9
CONSTRUCTION	F	58.7	57.8	58.5
SERVICES	G-U	785.6	791.9	787.8
WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	G	108.1	106.9	107.3
TRANSPORTATION AND STORAGE	H	42.9	42.0	43.4
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	I	27.4	27.4	28.9
INFORMATION AND COMMUNICATION	J	62.7	62.2	62.5
FINANCIAL AND INSURANCE ACTIVITIES	K	76.1	75.5	76.1
REAL ESTATE ACTIVITIES	L	116.7	126.5	122.1
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	M	72.2	70.6	72.7
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	N	45.9	45.5	46.3
PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	O	53.7	53.7	52.0
EDUCATION	P	65.0	64.7	63.2
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	Q	72.9	76.9	73.5
ARTS, ENTERTAINMENT AND RECREATION	R	15.5	15.0	14.3
OTHER SERVICE ACTIVITIES	S	22.4	21.1	21.3
ACTIVITIES OF HH AS EMPLOYEES; UNDIFFERENTIATED GOODS- AND SERVICES- ACTIVITIES OF HH FOR OWN USE	T	4.1	4.0	4.1

Source: Office for National Statistics

19. Sector accounts

Improvements to methods and data used in the estimation of gross domestic product (GDP) have a number of impacts on other key macroeconomic aggregates published in the sector and financial accounts. These include estimates of real household disposable income, the household saving ratio and the financial balances of different sectors of the economy. Revised sector and financial accounts have been published on an annual basis for the period 1997 to 2014, and have now been extended to include up to Quarter 1 (Jan to Mar) 2016. An article released on 26 April 2016 explained the resultant changes to be contained in Blue Book 2016 in more detail. This section considers the impact on important indicators, updated to include 2015 onwards. Its main findings include:

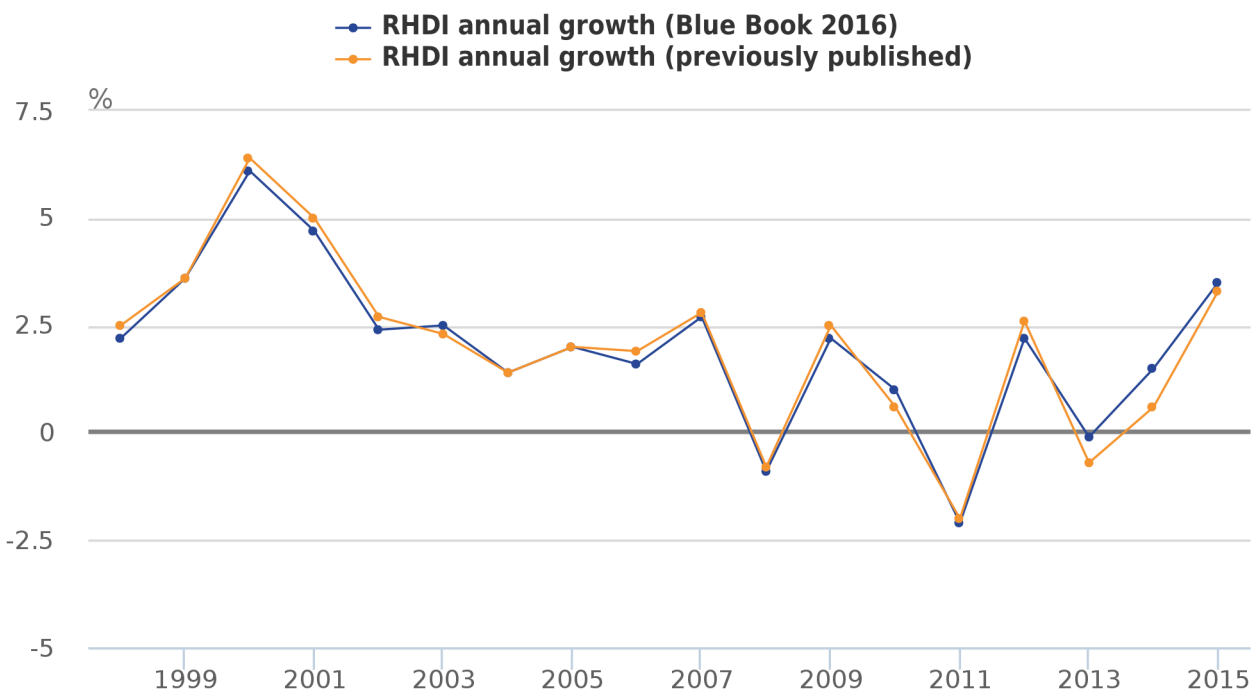
- the downward step change of real household disposable income growth between the pre-downturn and post-downturn periods remains in place in the latest data
- the household and non-profit institutions deriving households (NPISH) saving ratio now shows a less steep decline in the latest two years
- sector net lending balances are broadly unchanged over the period from 1997 to 2014

Real household disposable income (RHDI) captures the real value of households' income after taxes, and is a main indicator for the financial well-being of the sector: stronger (weaker) growth in real household disposable income is associated with greater (lower) potential growth in household spending power.

Blue Book 2016 has resulted in minimal RHDI growth revisions over the period 1997 to 2015 (Figure 23). Growth was weaker than previously estimated in 2012, but was stronger in 2013, 2014 and 2015. These changes reflect revised household gross operating surplus (GOS) estimates, and revised wages and salaries information following the incorporation of new HM Revenue and Customs data.

Figure 23: Real household disposable income growth: Previously published compared with Blue Book 2016

Percentage points, chained volume measure, seasonally adjusted, 1998 to 2015

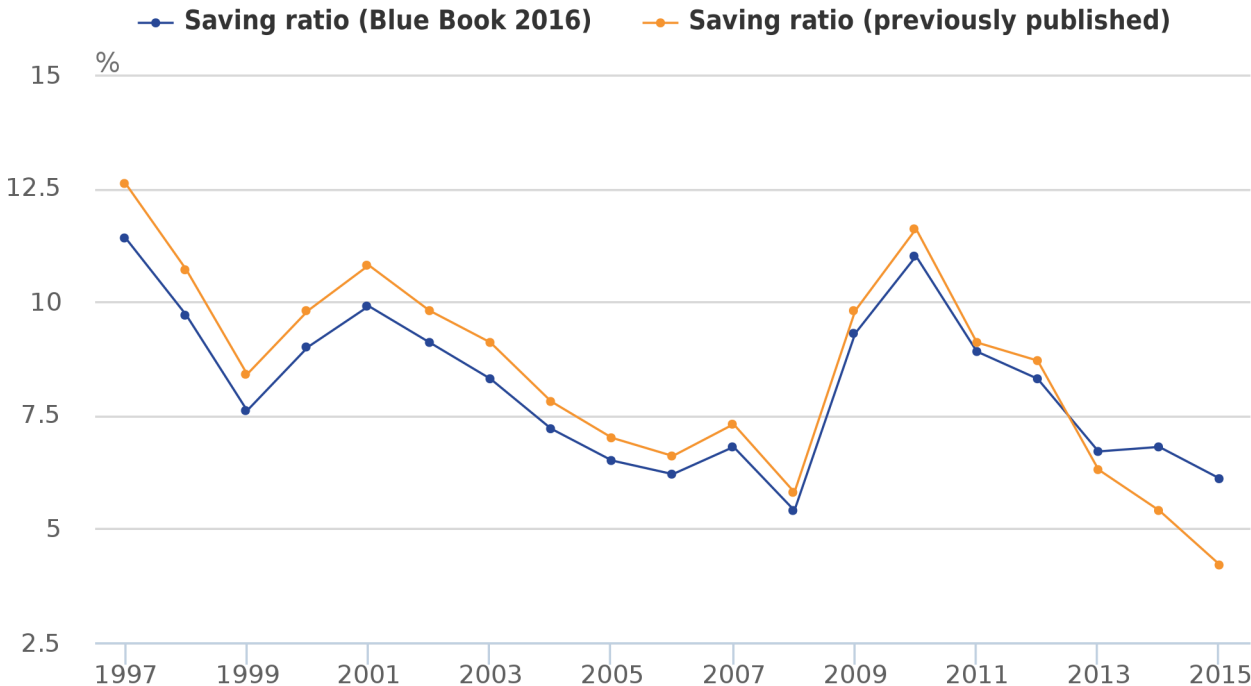


Source: Office for National Statistics

As a result of the slightly stronger income growth and weaker household consumption growth in 2014 and 2015, the saving ratio has been revised up by 1.4 percentage points and 1.9 percentage points respectively (shown in Figure 24). There were also consistent, but smaller, downward revisions to the ratio from 1997 to 2012.

Figure 24: Saving ratio: Previously published compared with Blue Book 2016

Percentage points, 1997 to 2015

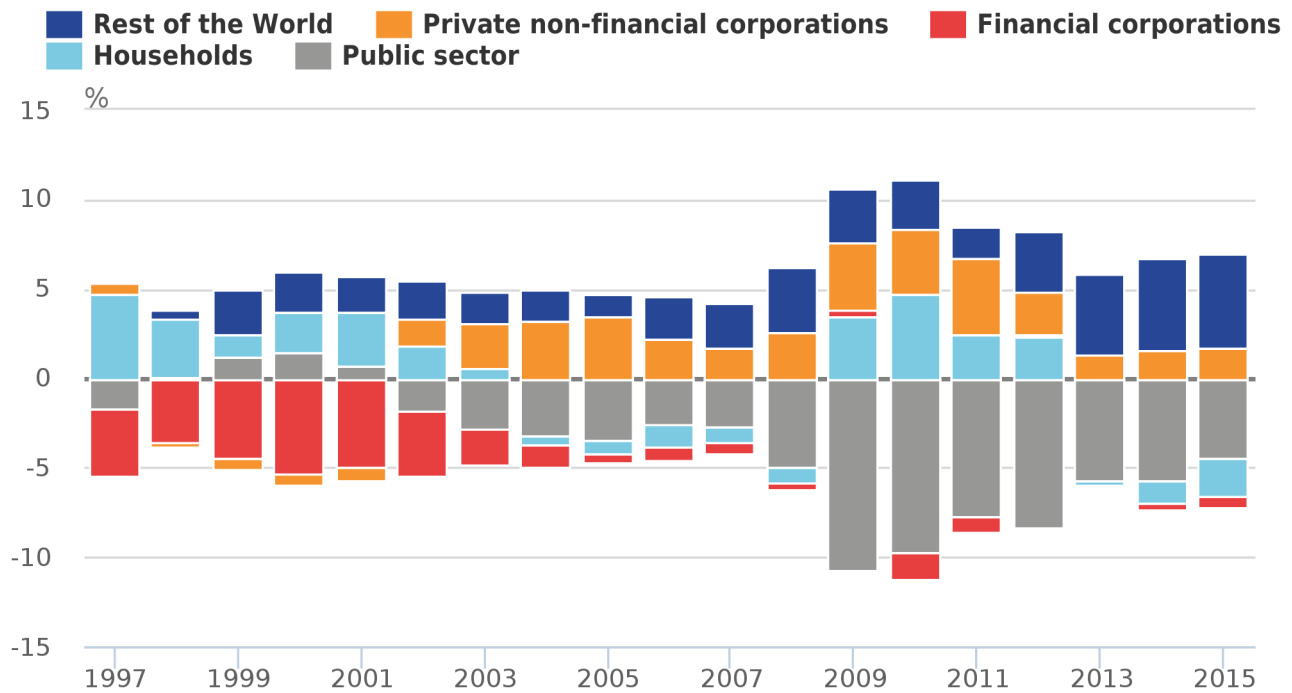


Source: Office for National Statistics

The measurement changes referred to above have contributed to small revisions to the financial balances of different sectors in the UK economy. Figure 25 shows the headline net lending and borrowing positions of the various sectors, expressed as proportions of nominal gross domestic product (GDP), on a previously published (Figure 25a) and Blue Book 2016 consistent basis (Figure 25b). Points below the axis indicate that the sector is a net borrower (that is, running a deficit on their current and capital transactions); while points above the axis indicate that the sector is a net lender (that is, running a surplus).

Figure 25a: Sectoral net lending/ borrowing, previously published

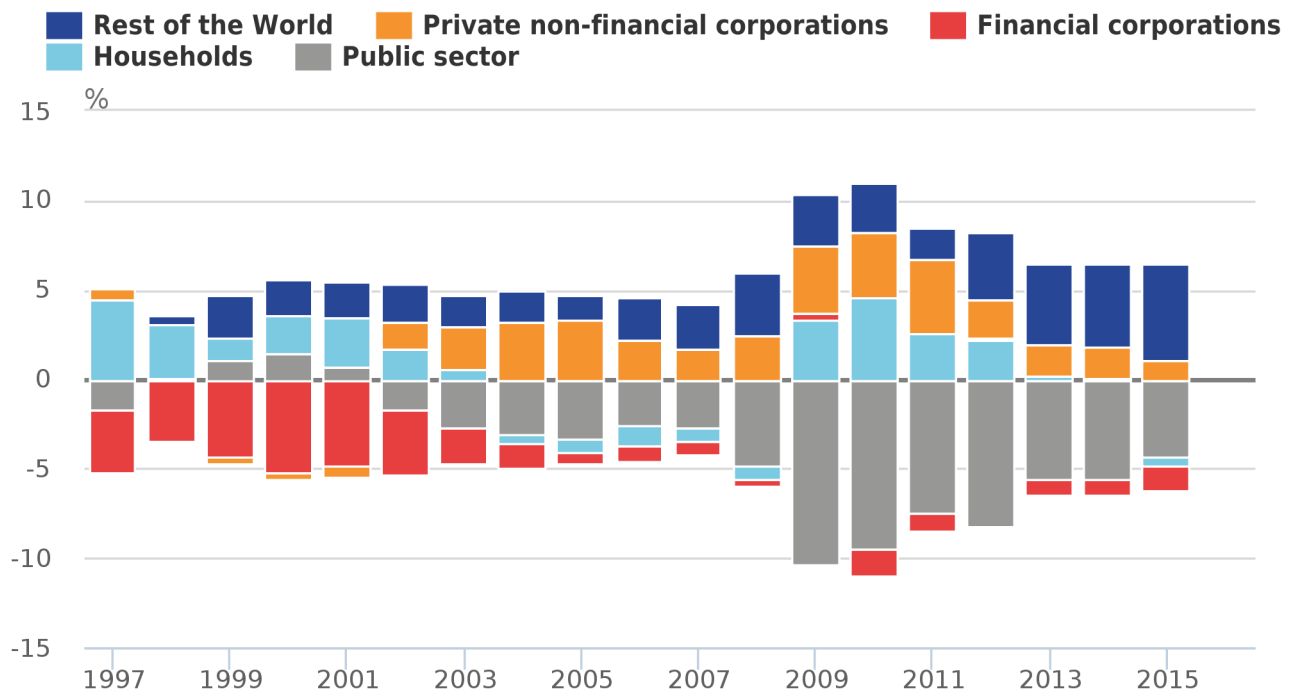
% nominal GDP, 1997 to 2015



Source: Office for National Statistics

Figure 25b: Sectoral net lending/ borrowing, Blue Book 2016 consistent

% nominal GDP, 1997 to 2015



Source: Office for National Statistics

Figure 25b shows that, on average, the headline lending and borrowing positions of the sectors have remained broadly unchanged. Alongside higher income, lower consumption and a lower saving ratio, the level of households' net borrowing has fallen in 2014 and 2015. An equal and opposite impact can be observed for the corporate sector. However the extent of the revision is small and do not change the headline sector balances picture.

20. Historical GDP – revisions to pre-1997 historical estimates; analysis by change and component

The significant methods changes made for the publication of Blue Book 2016 with regard to the historic datasets (that is, data for the period prior to 1997) are outlined below along with the impact these have on each of the gross domestic product (GDP components).

Revisions to historic GDP data by change

Imputed rental

Improvements have been made to data sources and methods in the calculation of owner-occupied imputed rental. The article on 23 March 2016, [Changes to National Accounts: Imputed Rental](#) explains these improvements. The imputed rental revision has a large impact on current price GDP, with a much smaller impact on the chained volume measure of GDP.

This revision has been taken back to the start of the time series (1948 annually and 1955 quarterly) and affects; household final consumption expenditure (HHFCE), imports of services, exports of services, compensation of employees and gross operating surplus.

The table below covers the methods used for the different time periods, using the best source of data available.

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.tg {border-collapse:collapse;border-spacing:0;} .tg td{font-family:Arial, sans-serif;font-size:14px;
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{font-family:Arial, sans-serif;font-size:14px;font-weight:bold;padding:10px 5px;border-style:solid;
border-width:1px;overflow:hidden;word-break:normal;text-align:left;} .tg .tg-yw4l{vertical-align:top}
```


Time period	Method used
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1948 to 1984	Current price data has been revised back to the start of the time series (1948), modelling the revision to minimise the change to the growth rates. Chained volume measures have also been revised back to 1948 by maintaining the Blue Book 2015 growth rates.
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1985 to 1996	Current price created using prices from the owner- occupier component of CPIH instead of Living Costs and Food Survey. Chained volume measures produced using existing owner-occupier imputed rental path and linked onto new data at 1997.
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1997	Current price data created using Valuation Office Agency data on actual rental values onwards and similar data from the devolve administrations, instead of the Living Costs and Food Survey. The owner-occupiers component of CPIH is then used to deflate the current price estimate to produce a chained volume measure of imputed rental. The full detail on this method can be found in the article on 23 March 2016, Changes to National Accounts: Imputed Rental
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Estimates of value added tax fraud

Scrutiny of estimates of non-complicit value added tax (VAT) fraud has led to improvements which are now being implemented. This revision has been taken back to 1985 and affects HHFCE and mixed income.

Illegal activities

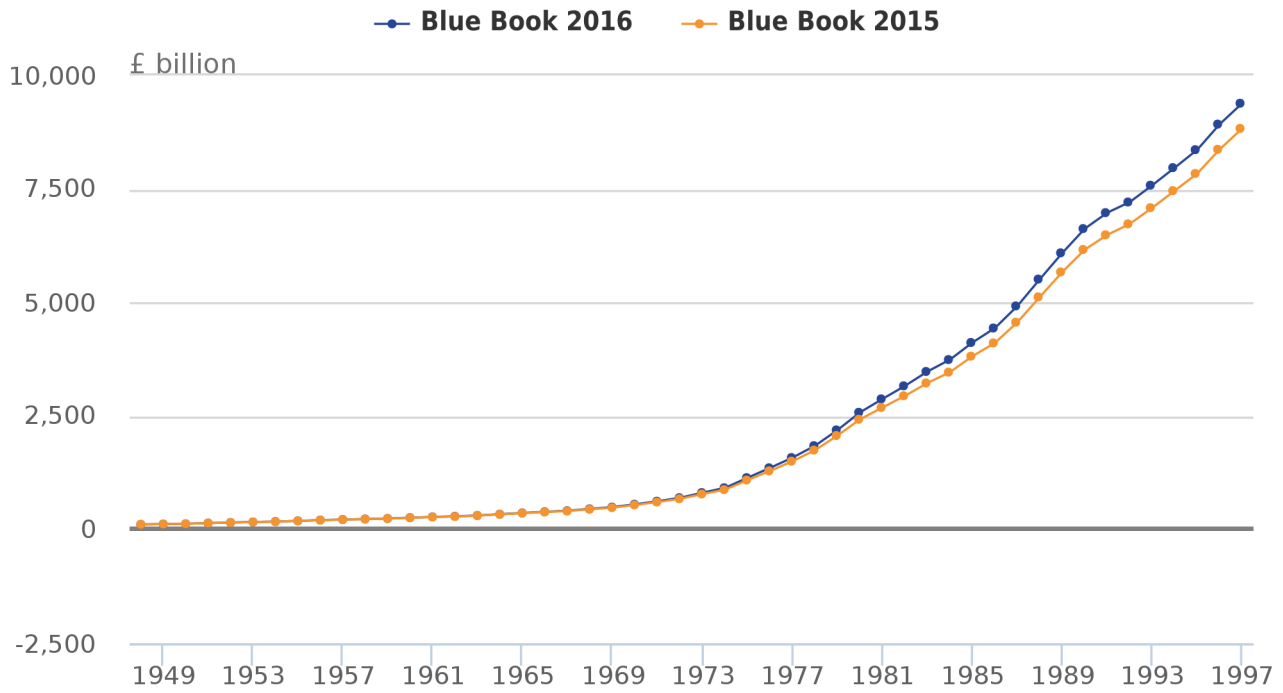
Following the implementation of the measurement of illegal activities in Blue Book 2014, a further refinement has been made to reduce the estimates made for prostitution in HHFCE to reflect the holiday taken by prostitutes. This revision has been taken back to 1985 and affects HHFCE and mixed income.

Revisions to historic GDP data by component

GDP

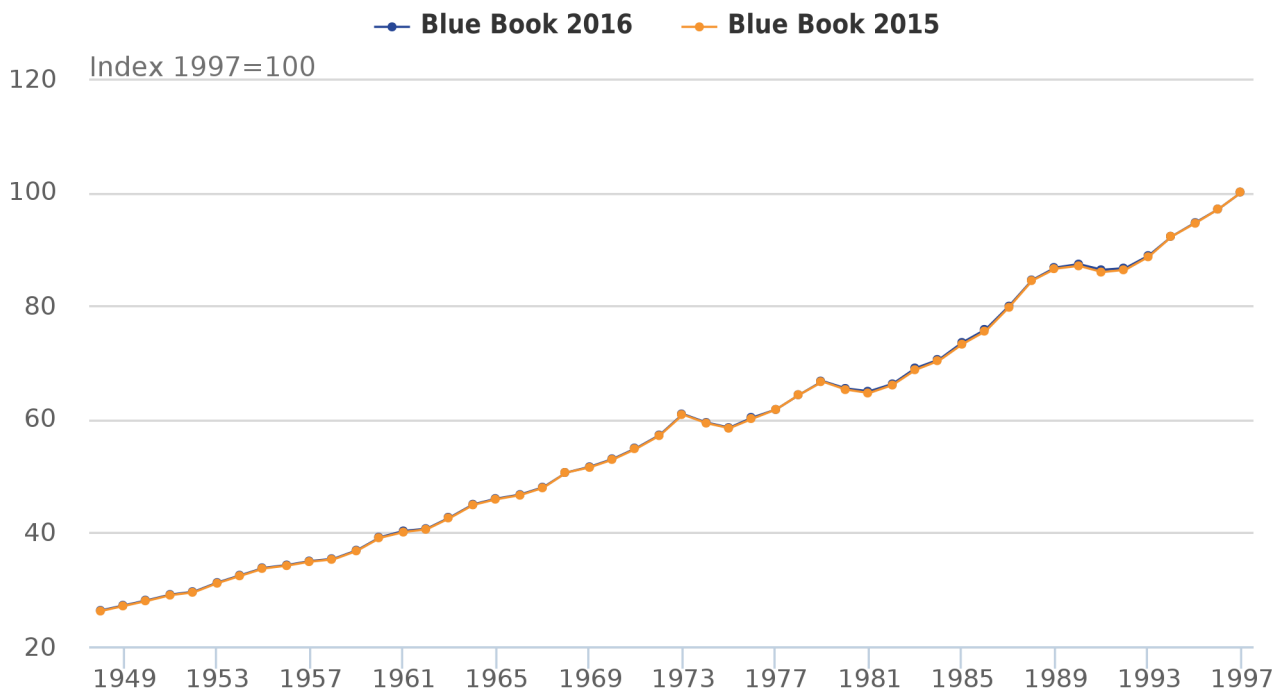
As a result of the revisions to imputed rental, estimates of VAT fraud and illegal activities, GDP has been revised historically, as shown by Figures 26 and 27. The imputed rental revision has a large impact on current price GDP, with a much smaller impact on the chained volume measure of GDP.

Figure 26: GDP at market prices, Blue Book 2016 compared with Blue Book 2015, 1948 to 1997, current price, seasonally adjusted



Source: Office for National Statistics

Figure 27: GDP at market prices, Blue Book 2016 compared with Blue Book 2015, 1997=100, chained volume measure, seasonally adjusted

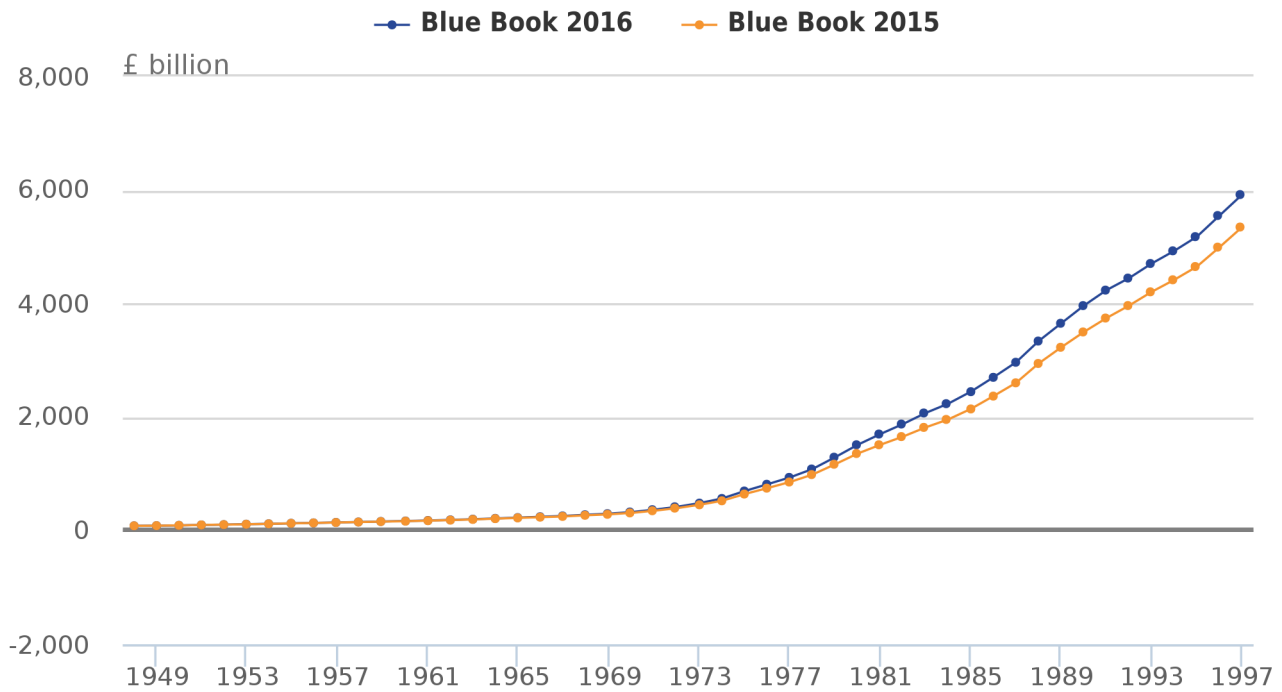


Source: Office for National Statistics

Household final consumption expenditure

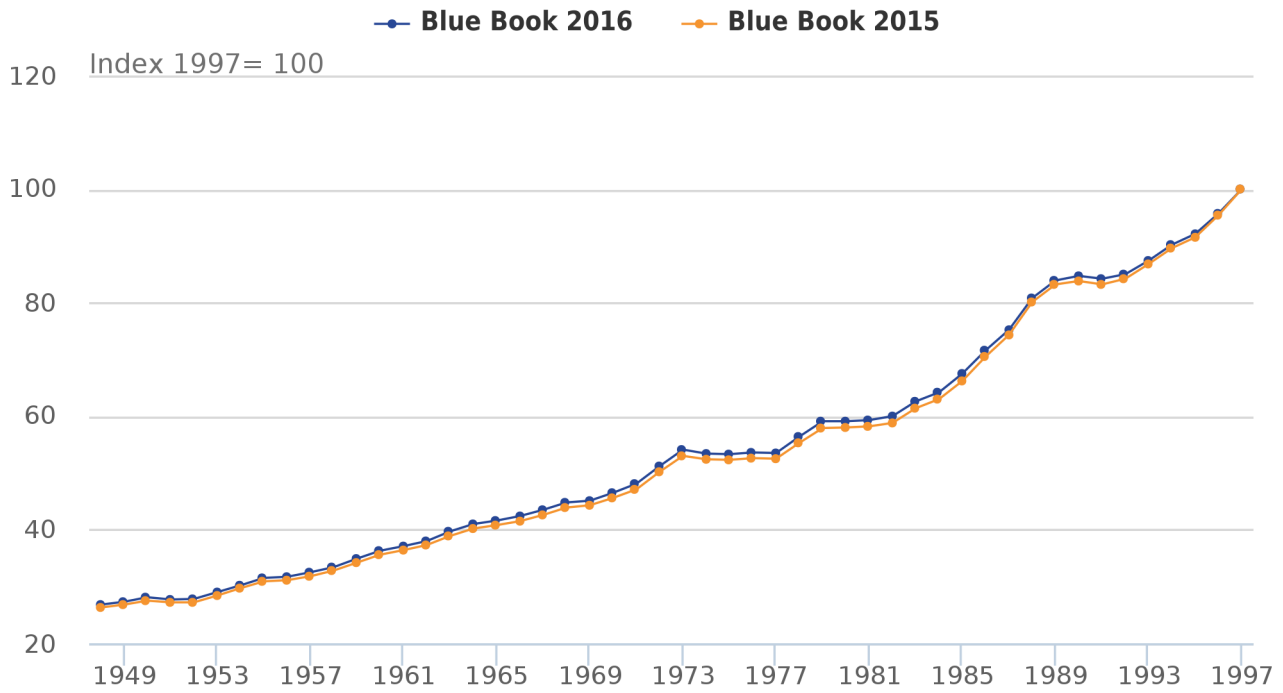
The 3 changes mentioned above (imputed rental, estimates of VAT fraud and illegal activities) affect household final consumption expenditure (HHFCE), with imputed rental the biggest contributor to the revision. Figures 28 and 29 show the impact of these changes to the historic HHFCE estimates

Figure 28: Total household final consumption expenditure, Blue Book 2016 compared with Blue Book 2015, 1948 to 1997, current price, seasonally adjusted



Source: Office for National Statistics

Figure 29: Total household final consumption expenditure, Blue Book 2016 compared with Blue Book 2015, 1997=100, chained volume measure, seasonally adjusted

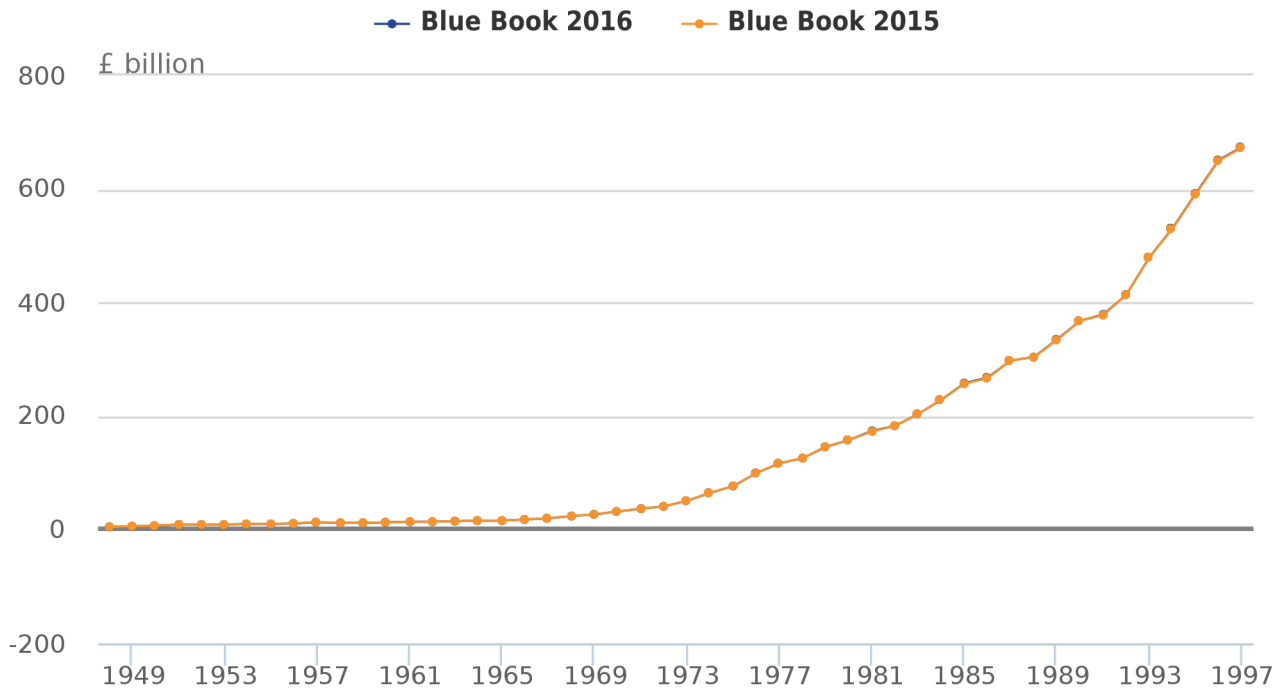


Source: Office for National Statistics

Exports of services

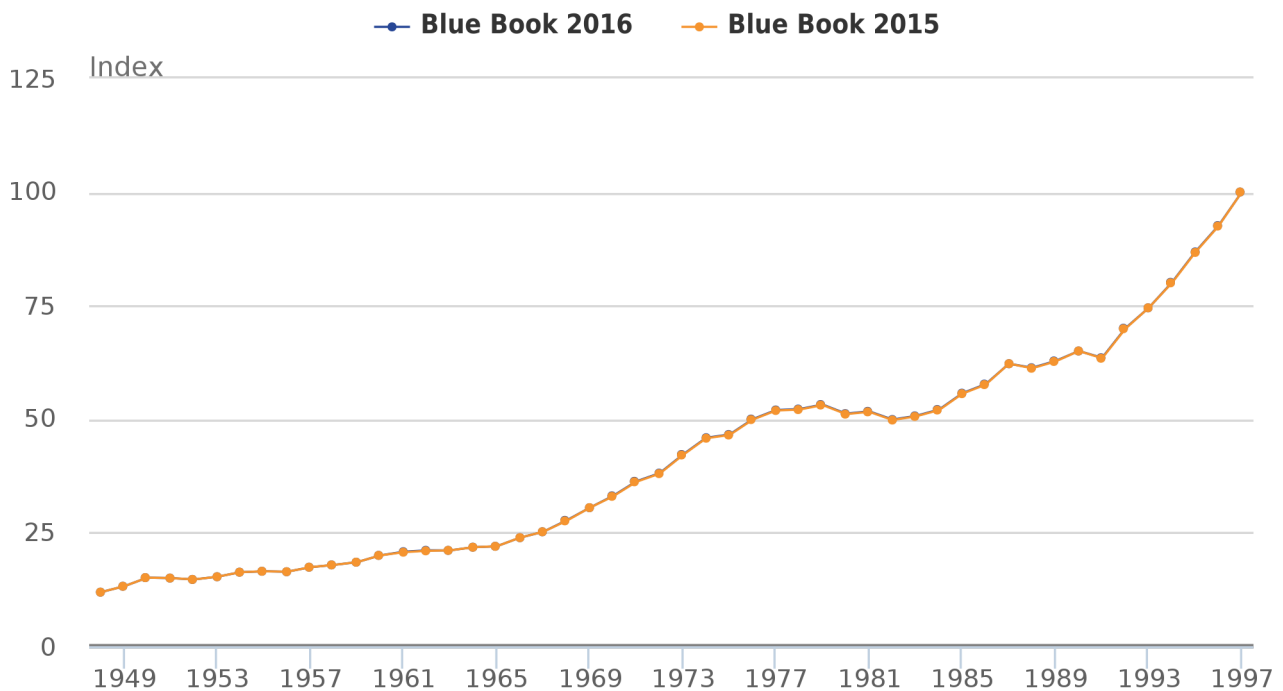
The only change affecting exports of services is imputed rental, which revises the current price data by less than 0.2%. Figures 30 and 31 show the impact of this change to the historic estimates.

Figure 30: Exports of services, Blue Book 2016 compared with Blue Book 2015, 1948 to 1997, current price, seasonally adjusted



Source: Office for National Statistics

Figure 31: Exports of services, Blue Book 2016 compared with Blue Book 2015, 1997=100, chained volume measure, seasonally adjusted

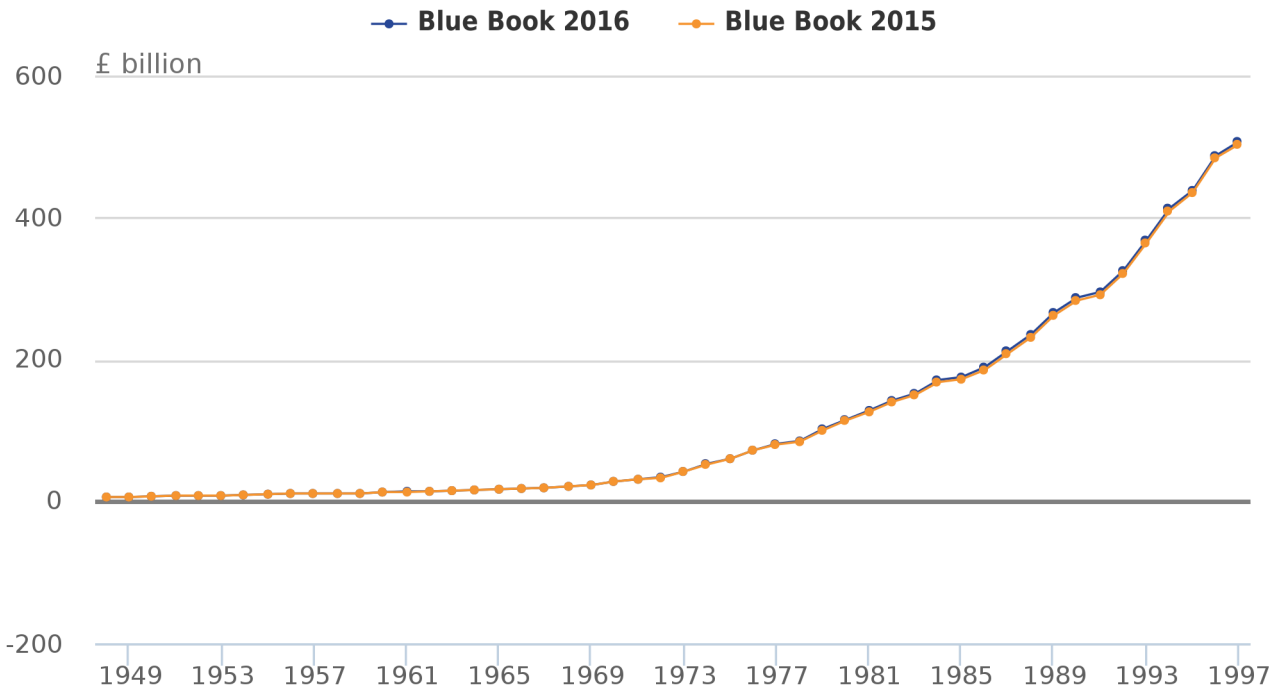


Source: Office for National Statistics

Imports of services

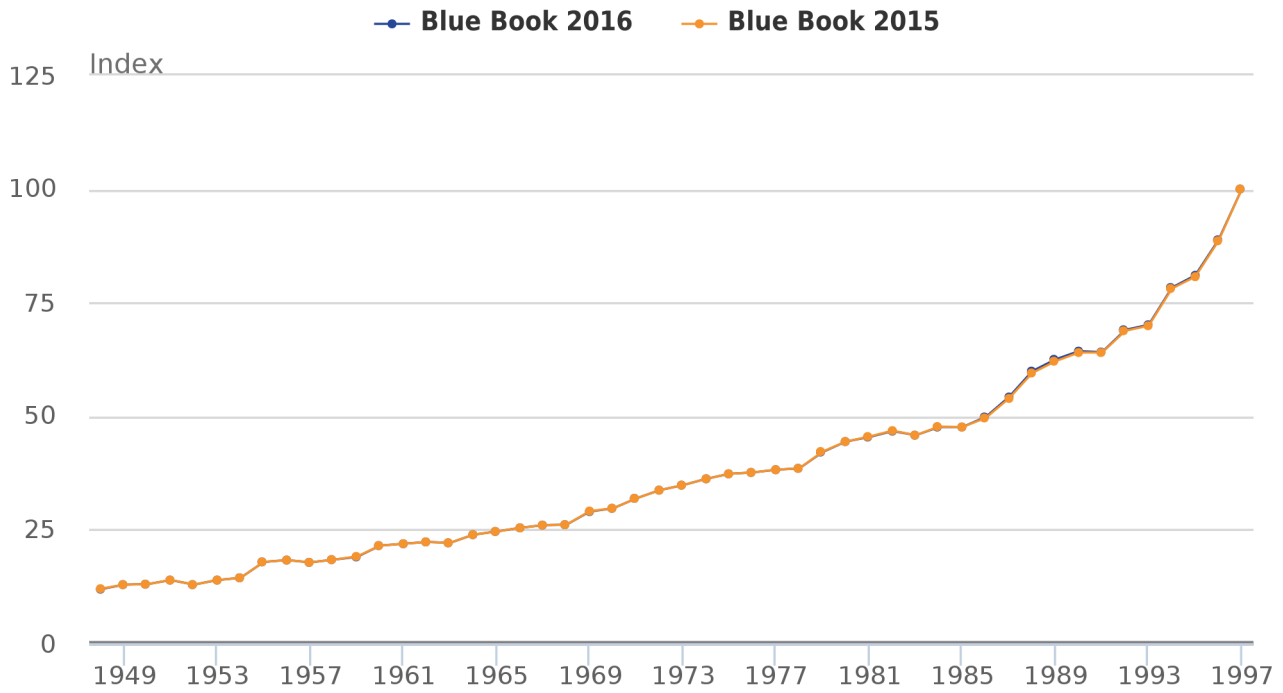
Similarly, the only change affecting imports of services is imputed rental which revises the current price data by less than 2%. Figures 32 and 33 show the impact of this change to the historic estimates.

Figure 32: Imports of services, Blue Book 2016 compared with Blue Book 2015, 1948 to 1997, current price, seasonally adjusted



Source: Office for National Statistics

Figure 33: Imports of services, Blue Book 2016 compared with Blue Book 2015, 1997=100, chained volume measure, seasonally adjusted

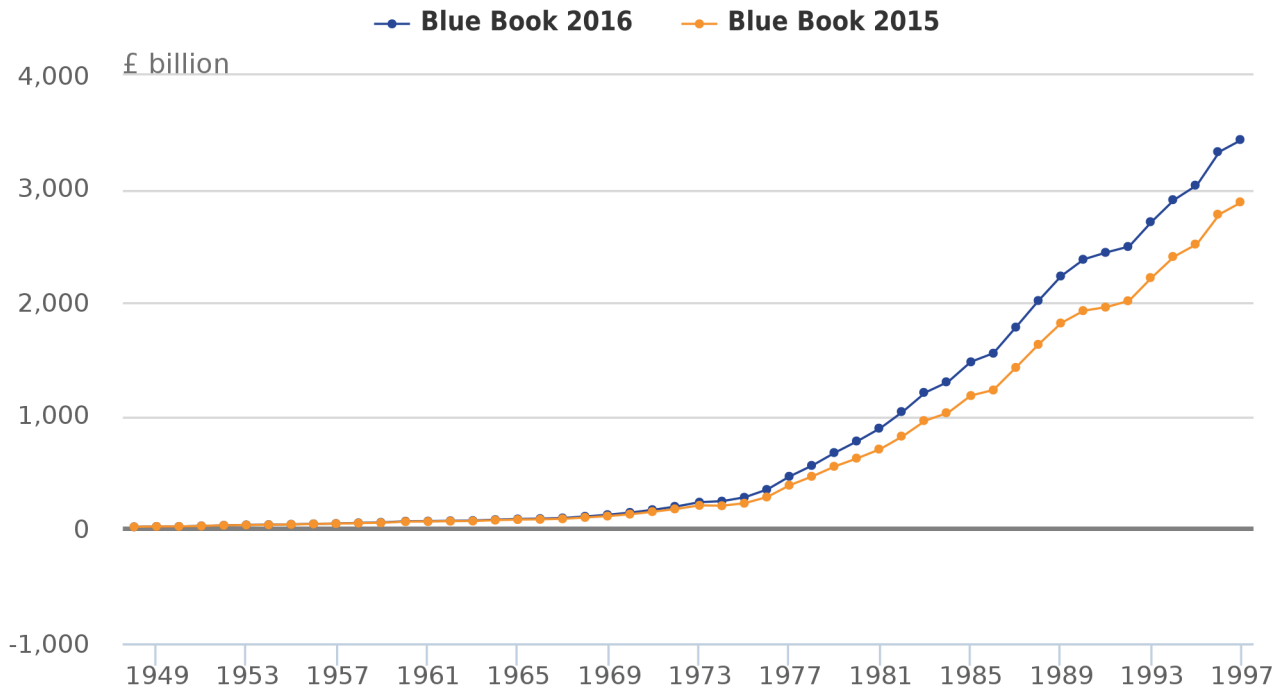


Source: Office for National Statistics

Gross operating surplus

The only change affecting gross operating surplus (GOS) is imputed rental. Figure 34 shows the impact of this change to the historic GOS estimates.

Figure 34: Gross Operating Surplus (GOS), Blue Book 2016 compared with Blue Book 2015, 1948-1997, current price, seasonally adjusted

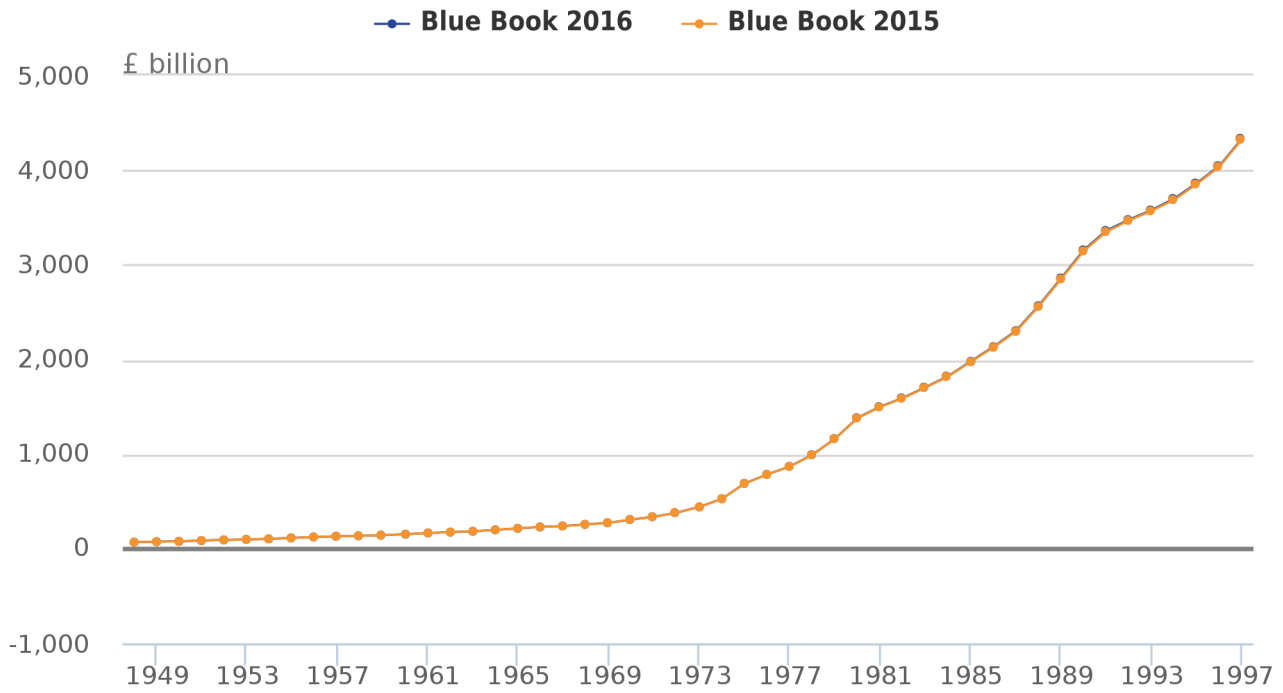


Source: Office for National Statistics

Compensation of employees

The only change affecting compensation of employees (CoE) is imputed rental which revises the series by less than 0.4%. Figure 35 shows the impact of this change to the historic CoE estimates.

Figure 35: Compensation of Employees (COE), Blue Book 2016 compared with Blue Book 2015, 1948-1997, current price, seasonally adjusted

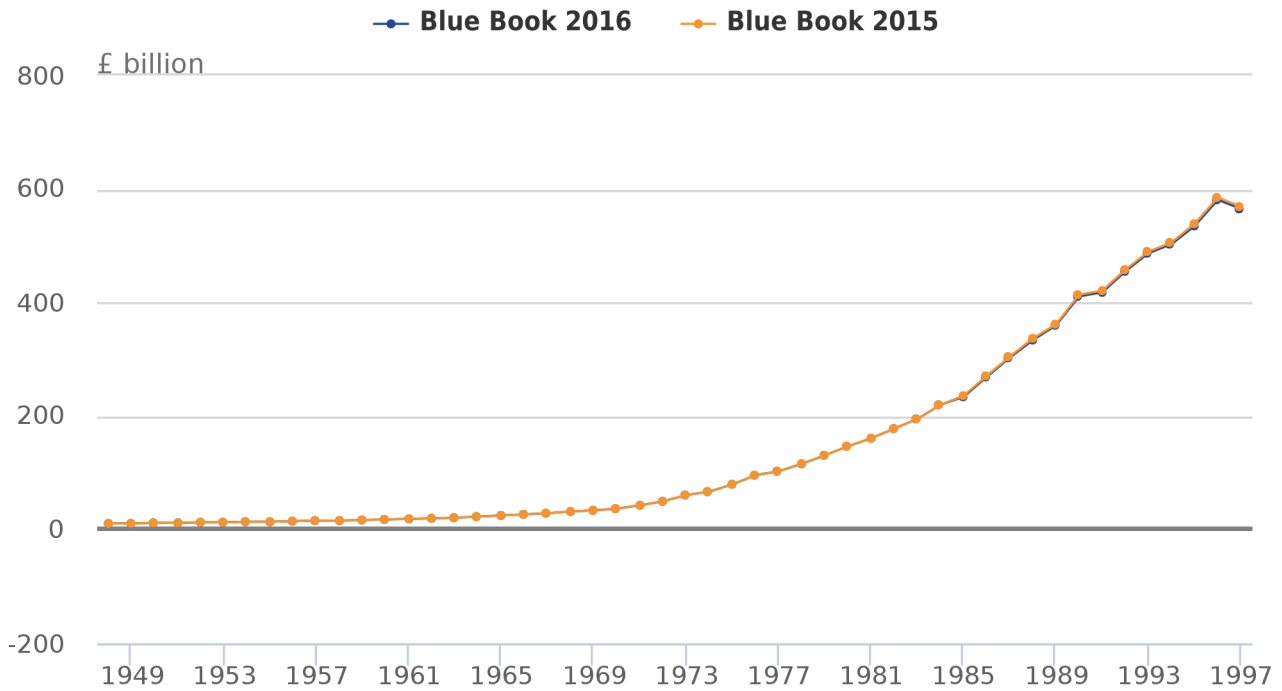


Source: Office for National Statistics

Mixed income

The changes affecting mixed income are estimates of VAT fraud and illegal activities. The series has been revised by less than 1%; Figure 36 shows the impact of these changes to the historic mixed income estimates.

Figure 36: Mixed income, Blue Book 2016 compared with Blue Book 2015, 1948 to 1997, current price, seasonally adjusted



Source: Office for National Statistics

21. Appendix A

List of relevant published articles

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<u>Latest developments to National Accounts and Balance of Payments; Changes to be implemented for Blue Book 2016 and Pink Book 2016</u>	17 November 2015
<u>National Accounts articles: Latest developments to National Accounts and Balance of Payments; Changes to be implemented for Blue Book 2016 and Pink Book 2016</u>	24 February 2016
<u>National Accounts articles: Impact of Blue Book 2016 Changes on Current Price Gross Domestic Product Estimates, 1997 to 2011</u>	24 February 2016
<u>National Accounts articles: Impact of Blue Book 2016 changes on chained volume measure gross domestic product estimates, 1997 to 2011</u>	23 March 2016
<u>Changes to National Accounts: Imputed Rental</u>	23 March 2016
<u>National Accounts Articles: Detailed assessment of changes to Balance of Payments annual estimates 1997 to 2011</u>	26 April 2016
<u>National Accounts articles: Detailed assessment of changes to Sector and Financial Accounts annual estimates 1997 to 2011</u>	26 April 2016
<u>Impact of Blue Book 2016 changes on current price and chained volume measure Gross Domestic Product estimates, 1997 to 2014</u>	20 May 2016
<u>National Accounts historic dataset developments since Blue Book 2011</u>	23 May 2016
<u>National accounts articles: Impact of Blue Book 2016 changes on chained volume measure Balance of Payments, 1997 to 2014</u>	7 June 2016
<u>National accounts articles: Impact of Blue Book 2016 changes on chained volume measure Sector and Financial Accounts, 1997 to 2014</u>	7 June 2016