

Impact of methods changes to the National Accounts and Sector & Financial Accounts, Q1 1997 to Q2 2015

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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 annual GDP from 1997 to 2013, 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 second quarter of 2015. This dataset is consistent with the UK National Accounts Blue Book 2015, to be published on 30 October 2015.

Changes introduced in Blue Book 2015

This article sets out the impact of methodological improvements and new data to be introduced in Blue Book 2015 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. Although smaller in scale than [Blue Book 2014](#), the annual National Accounts 2015 include a range of important changes, including measures designed to:

1. Address Gross National Income (GNI) reservations on a European System of Accounts 1995 (ESA 1995) basis;
2. Incorporate the impact of reclassification decisions; and
3. Implement a range of other methodological improvements.

Among these changes, addressing the GNI reservations has the greatest impact on current price National Accounts aggregates. GNI – which captures the value of income generated by production which accrues to the individuals in an economy, and was previously known as Gross National Product – is one measure of [economic well-being](#), and forms the basis for the relative contributions of member states to the budget of the European Union (EU). Due to its operational importance, the EU statistical office (Eurostat) carries out regular audits of the methods and data used in its estimation to ensure comparability across countries. Changes introduced in this category in Blue Book 2015 include a range of methodological improvements which

apply to all member states – known as transversal reservations – and a number of UK-specific improvements, all of which are designed to ensure international comparability.

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 UK ‘exhaustiveness’ provisions, which are designed to account for both (a) under-coverage of the incomes accruing to small businesses and (b) income concealed by businesses and households through the [evasion of taxes](#). The first of these changes ensures that sufficient provision is made for the income of businesses which fall below the Value Added Tax (VAT) and Pay as You Earn (PAYE) thresholds, using updated administrative data from Her Majesty’s Revenue and Customs (HMRC). The second replaces the existing National Accounts treatment of concealed income with new, more comprehensive, modelled estimates of evaded corporation and income tax provided by HMRC.

Several other changes are also being implemented under the GNI improvements category. Following detailed analysis of the output of [Non-Profit Institutions Serving Households \(NPISH\) sector](#) – which was the subject of [substantial changes in 2014](#) – ONS has also introduced changes to refine the accuracy of estimates of the contribution of NPISH to aggregate expenditure. Other changes in this category include revised treatments of vehicle registration tax, the consumption of fixed capital on roads and the repair and [maintenance of dwellings](#). A further set of changes has also been introduced to improve the measurement of [cross-border property income flows](#), although these are neutral in terms of their impact on current price Gross Domestic Product (GDP).

Alongside these GNI improvements, ONS has also been undertaking work to ensure that recent reclassification decisions are reflected in the National Accounts. These include the reclassification of Network Rail from the Private Non-Financial Corporations (PNFC) sector to Central Government, the reclassification of Transport for London from Public Corporations to Local Government, as well as a range of other changes – including a reclassification of the 3G/4G mobile telephone spectrum sales. Some of these have an impact on a range of National Accounts aggregates because of both improved data and differences in the measurement of output between sectors. In particular, the switch from a turnover-based measure of output for Network Rail to an expenditure-based measure – consistent with the move from the private to the public sector – has increased current price output every year since 2004.

Thirdly, the annual Blue Book is also an opportunity for ONS 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 base and reference years by a year, on this occasion from 2011 to 2012 – 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 2013 for the first time. It also includes several other changes related to the measurement of Gross Fixed Capital Formation (GFCF), such as a [revised deflator for software](#)

[investment](#). Further changes in this category that also have an impact on National Accounts aggregates include measures to:

1. align estimates of owner occupiers' housing costs in the National Accounts with CPIH in 2010,
2. improve estimates of the imputed present value of local authority pension schemes,
3. strengthen estimates of the consumption of alcohol and tobacco,
4. improve estimates of trade in non-monetary gold,
5. correct two errors – in the measurement of insurance industry output and estimates of global narcotics prices.

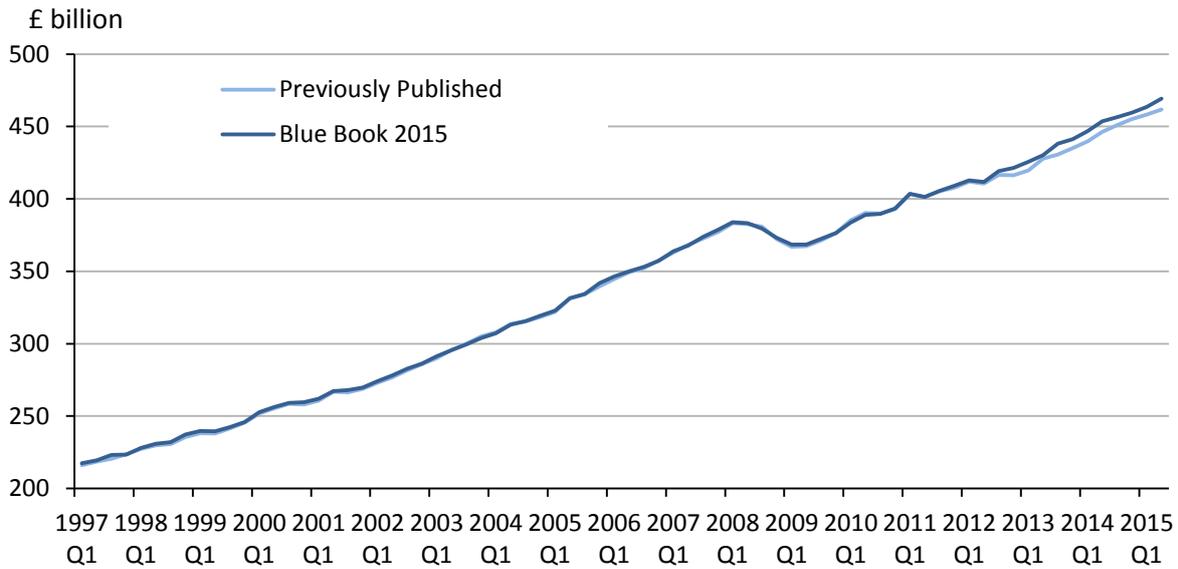
Finally, revisions also arise from the introduction of newly available survey data. Reflecting the long time-lags associated with some datasets, these data will have an impact on estimates from 2011 onwards. This includes new data from the Annual Business Survey, the International Trade in Services survey and on wages and salaries from HMRC.

Estimated impact of Blue Book 2015 on GDP: 1997 to Q2 2015

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 their [impact on current price Gross Domestic Product \(GDP\) between 1997 and 2010](#) and on [current price Gross National Income \(GNI\) between 2002 and 2010](#). Provisional estimates of their [impact on chained volume measures of GDP between 1997 and 2013](#) were published on 5 August and were subsequently [finalised on 11 September](#).

Current price estimates

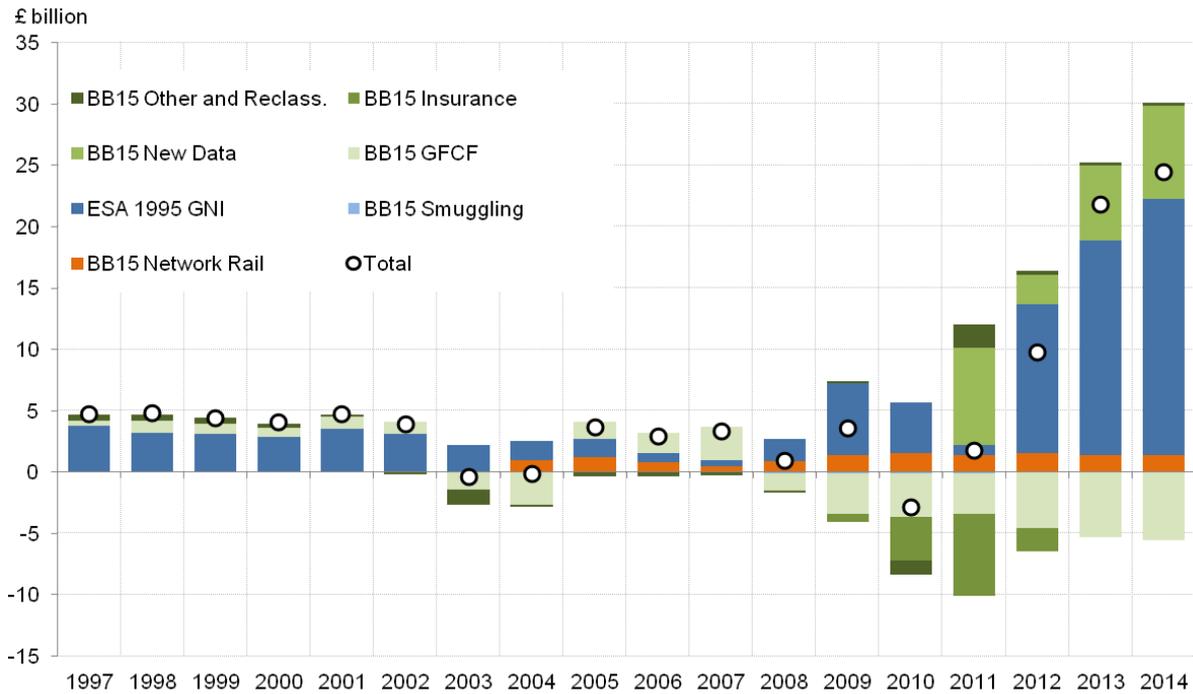
The impact of these changes on current price estimates of GDP is relatively modest, concentrated in the most recent years and is considerably smaller than the impact of changes introduced in Blue Book 2014. Figure 1 presents the previously published quarterly current price level of GDP (consistent with the [second estimate of GDP](#) published on 28 August 2015), compared with estimates consistent with Blue Book 2015. It shows that changes to the National Accounts had very little impact between 1997 and 2011: increasing the estimate of GDP by just £0.7bn per quarter on average over this period, or around 0.2%. The revision is slightly larger in later periods: it was £9.8bn over the 2012 calendar year, rising to £21.8bn (1.3%) in 2013 and £24.5bn (1.4%) in 2014. By contrast, the changes introduced in Blue Book 2014 were significantly larger: raising the level of current price GDP by 4.1% on average between 1997 and 2013.

Figure 1: Current price GDP levels: Previously published compared with Blue Book 2015, current price, seasonally adjusted

Source: ONS

Much of this revision is accounted for by the changes to the GNI improvements made in the National Accounts, although new data and changes to Gross Fixed Capital Formation (GFCF) also made substantial contributions in recent quarters. Figure 2 divides the revision to the current price level of GDP into two broad categories – those arising from addressing the GNI reservations (in darker blue and denoted by ESA 1995) and those arising from the other Blue Book changes. It shows that the majority of the revisions over the period since 1997 are related to addressing the GNI reservations, which can in particular be attributed to the changed exhaustiveness provisions in the National Accounts. New and corrected data alongside Network rail classification changes also make a positive contribution in recent years, offset by downwards revisions arising GFCF in particular.

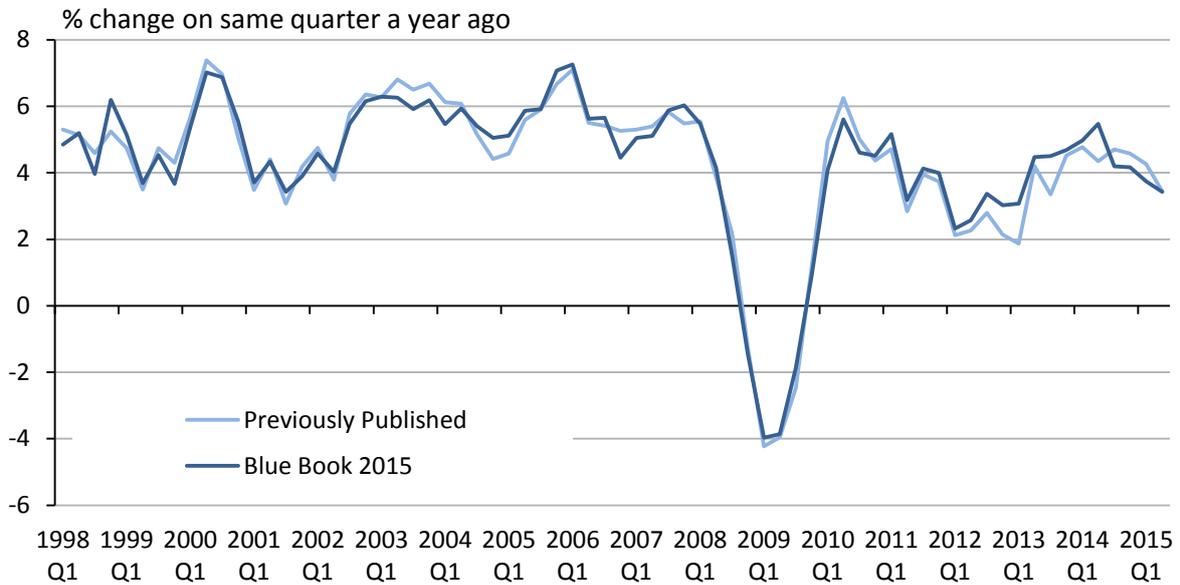
Figure 2: Contributions to the revision to current price GDP: Previously published compared with Blue Book 2015, current price, £bn



Source: ONS

The modest scale of these revisions to the level of current price GDP implies equally modest changes to the growth rate of this series. Figure 3 shows the quarter on same quarter a year ago growth rate for the previously published and Blue Book 2015 series presented in Figure 1. As with the level of current price GDP, the differences between these series are concentrated towards the end of the period, through 2012 to 2014 in particular. For 2012 and 2013, the average revision to quarter on same quarter a year ago growth was 0.6 percentage points – compared with an average revision of 0.3 percentage points per quarter in 2011 and an average revision of -0.1 percentage points per quarter between 1998 and 2010. While growth continued to be revised up in the first half of 2014, there were downward revisions in the second half, resulting in an average revision of 0.1 percentage points across the year as a whole. Taking the Q2 1997 to Q2 2015 period as a whole, the average revision to quarterly growth is 0.0 percentage points.

Figure 3: Current price GDP quarter on same quarter a year ago growth rates: Previously published compared with Blue Book 2015, current price, seasonally adjusted

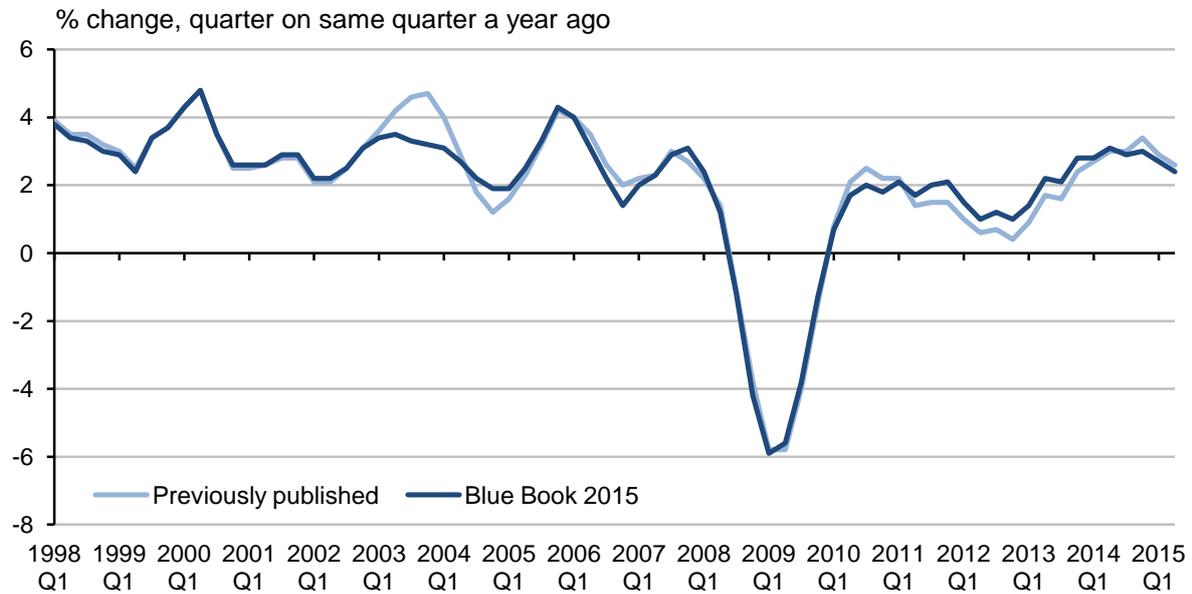


Source: ONS

Constant price (Chained volume measure)

The changes introduced in Blue Book 2015 also have a relatively modest impact on the growth of the chained volume measure of GDP from 1998 onwards, largely coinciding with the changes to growth in GDP in current prices. Figure 4 shows the quarter on same quarter a year ago growth rates for real GDP on both a previously published and Blue Book 2015 basis. The average compound quarterly growth rate of the UK economy is unchanged to one decimal place between Q1 1997 and Q2 2015 (0.5% per quarter). Compound average quarterly growth between Q1 1997 and Q1 2008 was revised down from 0.8% per quarter to 0.7%, but remains unchanged at 0.5% per quarter since the start of the recovery in Q3 2009.

Figure 4: Real GDP quarter on same quarter a year ago growth rates, previously published compared with Blue Book 2015, chained volume measure, seasonally adjusted



Source: ONS

The relatively small scale of the revisions through much of this time period is reflected in the annual growth rates of real GDP and the revisions presented in Table 1 below. While the compound average annual growth rate for the whole period is unrevised at 2.0%, the revisions for single years vary between -0.4 and +0.5 percentage points – excluding 2003, which is revised down by 1.0 percentage point. While the changes to earlier years are generally relatively modest, the revisions towards the end of the period tend to be larger, when the impact of both new data and recent methods changes is greatest. Real GDP growth in 2011, 2012 and 2013 are all revised upwards on an annual basis, by 0.3, 0.5 and 0.5 percentage points respectively, but this did not continue into 2014, with growth revised down slightly from 3.0% to 2.9%.

Table 1: Revision to annual real GDP growth: Previously published compared with Blue Book 2015, chained volume measure, seasonally adjusted

	%		<i>Percentage points</i>
	Previously published	Blue Book 2015	Difference
1998	3.5	3.4	-0.1
1999	3.2	3.1	0.0
2000	3.8	3.8	0.0
2001	2.7	2.8	0.1
2002	2.5	2.5	0.0
2003	4.3	3.3	-1.0
2004	2.5	2.5	0.0
2005	2.8	3.0	0.2
2006	3.0	2.7	-0.4
2007	2.6	2.6	0.0
2008	-0.3	-0.5	-0.1
2009	-4.3	-4.2	0.1
2010	1.9	1.5	-0.4
2011	1.6	2.0	0.3
2012	0.7	1.2	0.5
2013	1.7	2.2	0.5
2014	3.0	2.9	-0.1

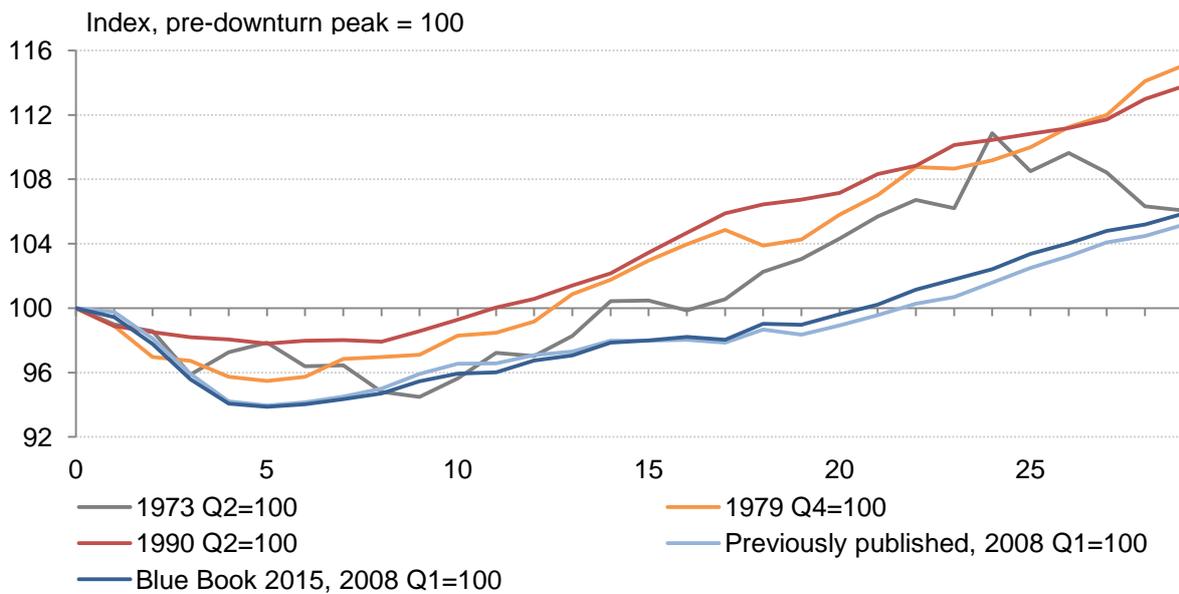
Source: ONS

Note: Figures may not sum due to rounding.

The economic downturn and recovery: GDP and GDP per capita

As a consequence of these revisions, the profile of GDP following the most recent economic downturn has also changed. However, the timing and depth of the downturn in 2008-09 is broadly unchanged, and the recovery remains the weakest of the past half-century (Figure 5). The cumulative fall in output between the peak and trough of the economic downturn (Q1 2008 to Q2 2009), which was previously estimated to have been 6.0%, has increased slightly to 6.1%. The strength of the recovery has also been revised: suggesting a weaker initial recovery, followed by stronger growth between 2011 and 2013, enabling UK output to re-attain its pre-downturn peak in Q2 2013, one quarter earlier than previously estimated. The stronger growth during this later period means that the UK economy is estimated to have been 5.9% larger than the pre-downturn level by Q2 2015 compared with the 5.2% previously published. However, as shown in Figure 5, the recovery remains weak by historical standards.

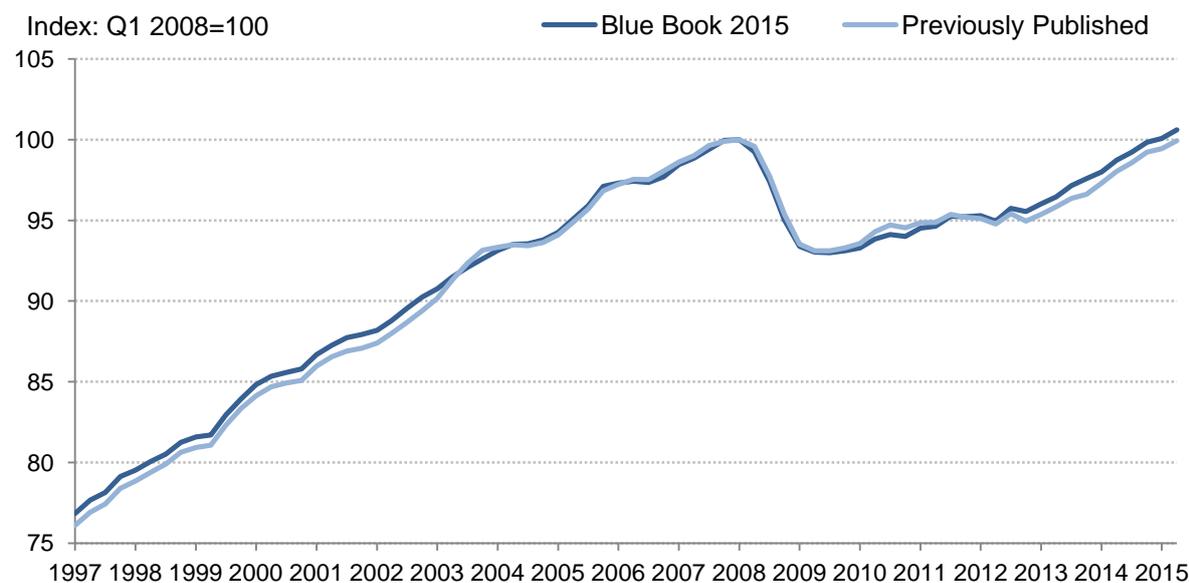
Figure 5: Comparison of GDP growth following pre-downturn peaks: Previously published compared with Blue Book 2015, chained volume measure, seasonally adjusted



Source: ONS

These changes to the strength of the recovery also have a bearing on the level of real GDP per capita, which is an important indicator of living standards. On a Blue Book 2015 basis, output per capita in Q2 2015 was 0.6% above its pre-downturn peak – it was 0.1% below peak levels on the previously published basis (Figure 6).

Figure 6: GDP per capita: Previously published compared with Blue Book 2015: Q1 2008=100, chained volume measure, seasonally adjusted



Source: ONS

Productivity implications

As GDP growth has been revised throughout the period from 1997 to Q2 2015, these revisions will be incorporated into subsequent estimates of labour productivity. On 1 October 2015, ONS will publish new estimates of labour productivity across a range of measures up to Q2 2015, as well as revised estimates of labour productivity back to Q1 1997. As well as Blue Book 2015 estimates of GDP (output), these revised estimates will incorporate new data on hours worked following a seasonal adjustment review and benchmarking to seasonally adjusted Labour Force Survey (LFS) totals.

Trends in productivity at an industry level will also be published in the Labour Productivity release on 1 October 2015.

Revisions to the expenditure components of GDP

This section examines the impact of improvements to the National Accounts in Blue Book 2015 on the components of the expenditure measure of Gross Domestic Product (GDP). Key findings are:

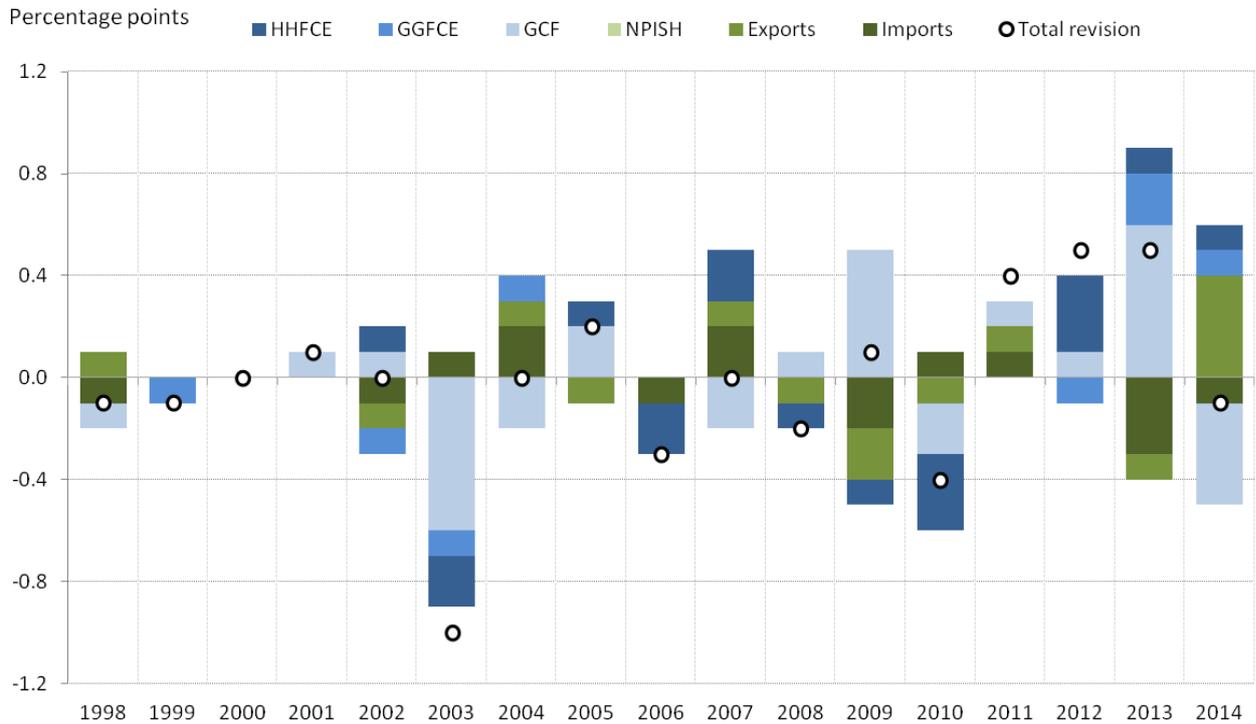
- Estimates of Household Final Consumption Expenditure (HHFCE) are affected relatively little by the Blue Book 2015 changes. This reflects the relatively small changes which are related to this series, including adjustments to alcohol & tobacco consumption, estimates of the imputed rentals for homes owned overseas and the alignment of domestic owner occupier housing costs with CPIH in 2010.

- Gross Fixed Capital Formation (GFCF) has been more affected by Blue Book 2015 revisions. These changes include a revised deflator for software investment, a new treatment of transfer costs associated with non-produced assets and changes to the treatment of expenditure on major dwelling repairs. Changes to valuables and inventories have an impact on the other components of Gross Capital Formation (GCF), and have an impact in 2003 in particular.
- Estimates of exports, imports and net trade have all been affected slightly by the changes introduced in Blue Book 2015. In particular, changes to the treatment of non-monetary gold, the revised treatment of imputed rent on properties held overseas, and the correction relating to the insurance industry affected both imports and exports of services, leading to revisions to the contribution of net trade to GDP.

The changes introduced in Blue Book 2015 affect some of the expenditure components of GDP to a greater degree than others. Figure 7 gives some sense of the drivers of these revisions to annual GDP growth. It highlights the importance of GCF to the aggregate revisions. It makes the largest or joint largest contribution to the revision in 13 of the 17 years presented, and has a notable impact on 2003, 2009, 2013 and 2014. In 2003, much of the [change arises from processing changes to the acquisitions and disposals of valuables series](#)¹, while in later years it arises from several changes to investment data. This accounts for much of the additional growth recorded in 2013, while stronger household consumption also plays a role – especially in 2012. These effects are partially offset by a drag from net trade during 2013, whose contribution to GDP growth has been revised down in this year. In contrast, the negative contribution of GCF in 2014 is largely offset by the strong positive contribution of net trade, in particular the increase in exports.

¹ <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/national-accounts/articles/2011-present/measurement-of-nonmonetary-gold.pdf>

Figure 7: Contributions of the components of the expenditure measure of GDP to aggregate GDP revisions: Blue Book 2015 compared with previously published, chained-volume measure, seasonally adjusted

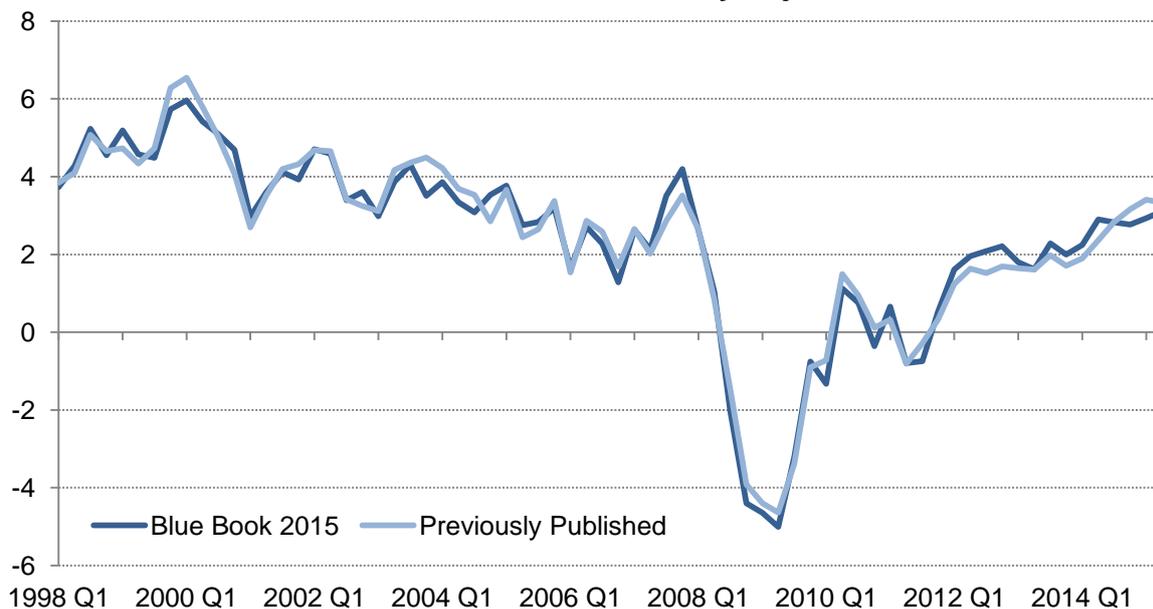


Note: Figures may not sum due to rounding.
Source: ONS

Household spending

The new methods and data introduced in Blue Book 2015 had a relatively small impact on the recent growth of HHFCE – the largest component of the expenditure measure of GDP. As is shown in Figure 8, which shows the quarter on same quarter a year ago growth rates for real HHFCE on both a previously published and Blue Book 2015 basis, HHFCE makes a relatively small contribution to the overall revision to GDP. The similarity of the growth rates of the two series suggests that the broad economic narrative of household consumption is little changed by the annual National Accounts. Taking the period as a whole, the compound average quarterly growth rate of real household consumption is unchanged at 0.6%, although the fall in consumption during the downturn is slightly smaller and the subsequent recovery is also marginally weaker.

Figure 8: Real households' final consumption expenditure, quarter on same quarter a year ago growth rates: Previously published compared with Blue Book 2015, chained volume measure, seasonally adjusted



Source: ONS

While the overall revision to the growth of HHFCE is very modest, changes in particular years highlight the impact of some of the specific changes introduced in Blue Book 2015. In particular, annual HHFCE growth during 2010 has been revised down from 0.5% to 0.0%, partly reflecting the alignment of the growth in the price measure for owner occupiers housing costs in the National Accounts with the respective series in [CPIH for each year](#). Smaller changes throughout the series reflect the impact of adjustments to the treatment of alcohol, tobacco and narcotics, as well as changes related to the value of imputed rentals paid on properties held overseas.

Gross Capital Formation

GCF comprises investment (GFCF), the acquisition and disposal of valuables and changes in inventories. Together these components accounted for 17.8% of current price GDP in 2015. GCF was subject to a number of changes which affected both the current price level of investment (including addressing several [Gross National Income \(GNI\) reservations](#), and the volume of investment (the same current price changes, as well as a [new deflator for investment in software](#)). These changes mean that GCF and its component parts account for a large fraction of the changes to aggregate GDP growth in recent years (Figure 7), although the magnitude and impact of these effects is considerably less than in [Blue Book 2014](#).

One of the main changes to the investment data included in the National Accounts concerns the deflation of investment in software, affecting the GFCF component of GCF. Software accounts for around 10% of total GFCF and 15% of business investment in current price terms between 1997 and 2013. It is divided between 'purchased' software – which companies buy either 'off-the-shelf' or from bespoke

producers – and ‘own-account’ software – which companies develop in-house. The new price index for ‘off-the-shelf’ purchases of software, recommended by a panel of expert independent stakeholders convened by ONS, now falls consistently over the period from 1997 to 2005, as opposed to rising gradually.

In addition to the change to the deflator for software – which slightly increases growth in the volume of investment over the period – GFCF was also subject to several smaller changes, including (a) the costs associated with the transfer of non-produced assets and (b) the treatment of spending on major repairs to dwellings and (c) the consumption of fixed capital on roads. The resulting profile of quarter on same quarter a year ago GFCF growth is shown in Figure 9. It indicates some relatively large revisions in 2005 (up from 1.6%, to 3.4% in the year as a whole), 2008 (down from -4.7% to -5.9%), 2010 (down from 5.9% to 5.0%), 2012 (up from 0.7% to 1.5%), 2013 (down from 3.4% to 2.6%) and 2014 (down from 8.6% to 7.5%).

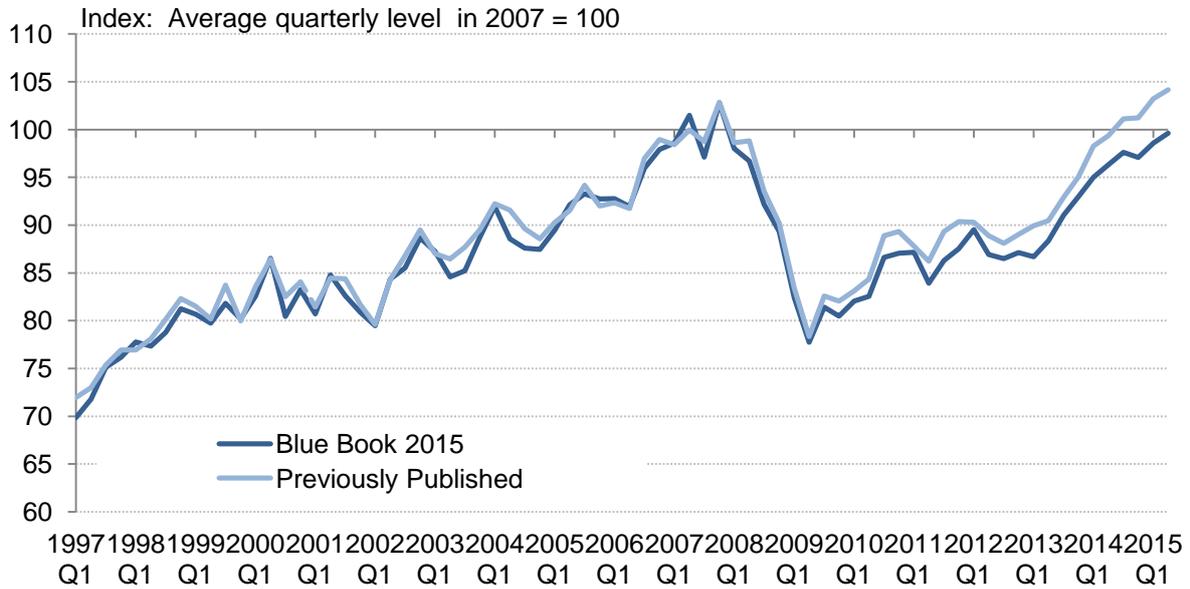
Figure 9: Quarter on same quarter a year ago growth rate of Gross Fixed Capital Formation: Previously published compared with Blue Book 2015, chained volume measure, seasonally adjusted



Source: ONS

Figure 10 shows the level of GFCF compared to the average quarterly level achieved in 2007. The cumulative impact of these changes results in marginally quicker growth prior to the downturn and a slightly deeper fall in GFCF during the downturn. The impact on the subsequent recovery is more pronounced; in Q2 2015 GFCF is now estimated to have been 0.4% below average levels achieved in 2007, compared with being 4.2% above on the previously published estimates.

Figure 10: Gross Fixed Capital Formation (GFCF), previously published compared with Blue Book 2015, indexed to 100 at average quarterly level in 2007, chained volume measure, seasonally adjusted



Source: ONS

There have also been similar changes to the broad profile of business investment, a subcomponent of GFCF, shown in Figure 11. In Q2 2015 business investment is now estimated to have been 9.3% above average levels achieved in 2007, compared 22% on the previously published estimate. Further information on how the Blue Book changes have affected GFCF and business investment will be [published alongside this article](#).

Figure 11: Business investment, previously published compared with Blue Book 2015, indexed to 100 at average quarterly level in 2007, chained volume measure, seasonally adjusted

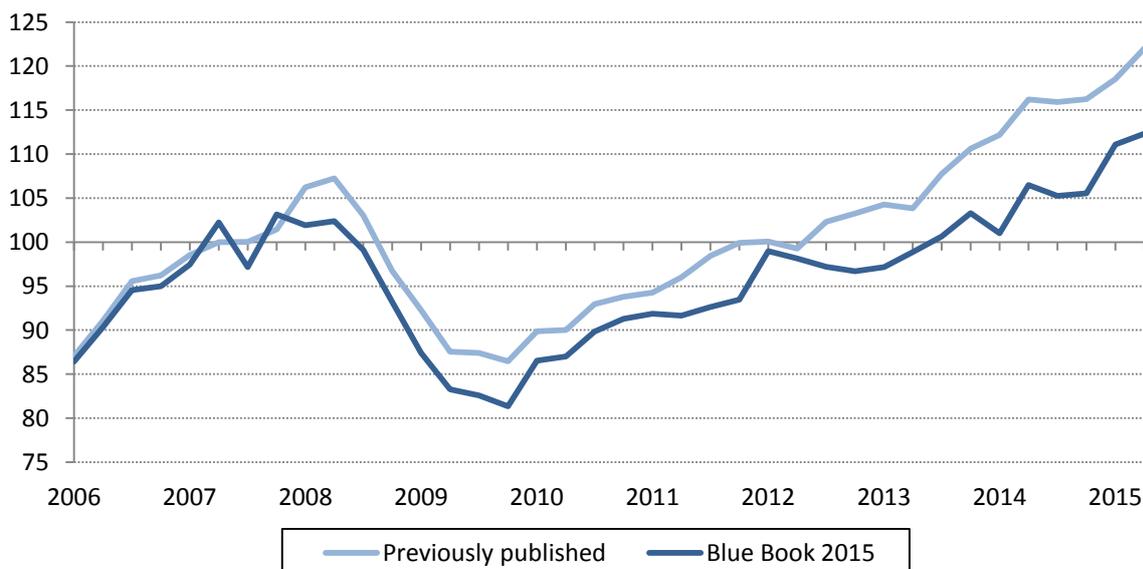
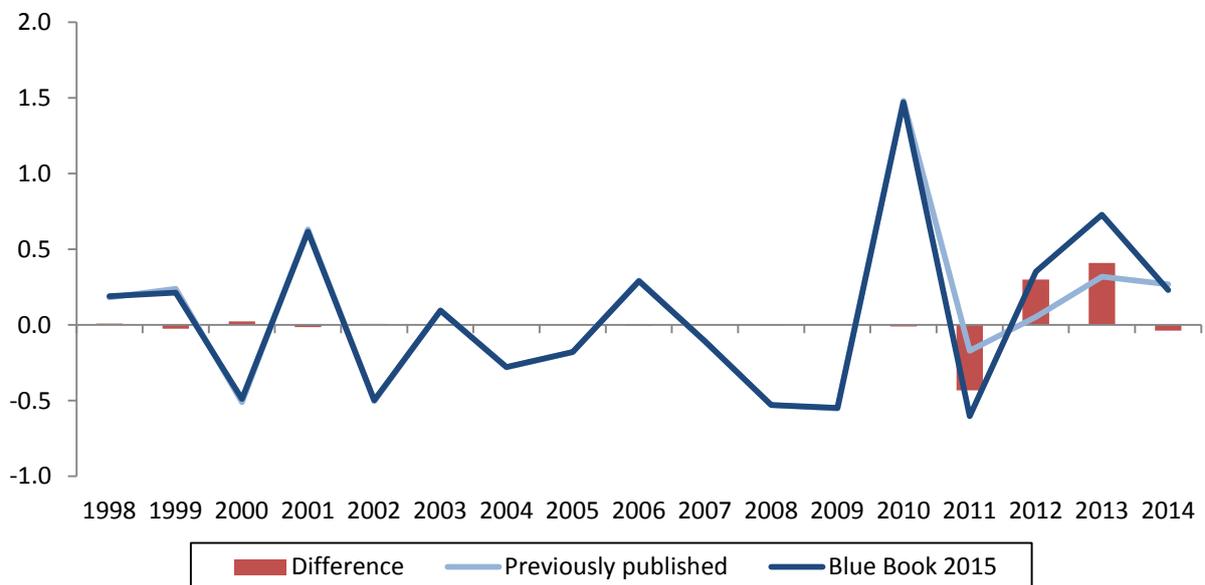


Figure 12 plots the contribution from changes in inventories to GDP growth in the previously published data and the new Blue Book 2015 data. This series is one of the smallest expenditure components (typically accounting for less than 1% of GDP), but can be a significant driver of GDP growth, as large 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 2010 period; however it is then shown to have a larger impact in each of 2011, 2012 and 2013 (still in a sporadic direction that is smaller than +/-0.5%). The inventory contribution to GDP in 2014 is also broadly unchanged.

Figure 12: Change in inventories contribution to GDP chained volume measure growth (percentage points, annual)



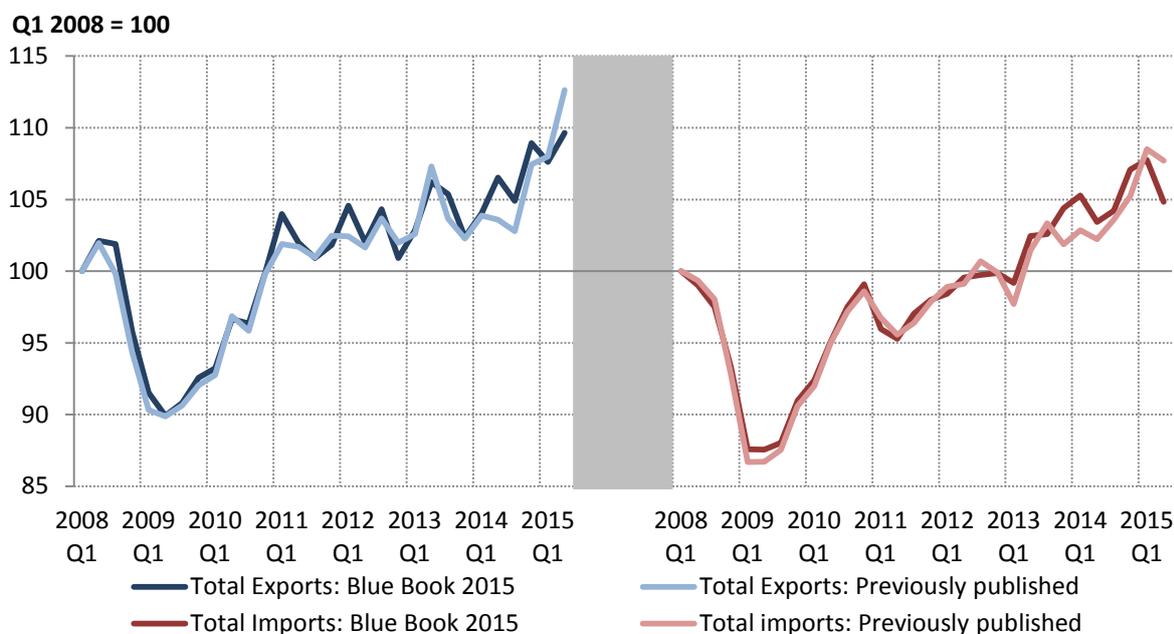
A further set of changes – relating to the treatment of valuables and non-monetary gold, and including the impact of exhaustiveness adjustments for under-coverage of small businesses – complete the impact of GCF on headline GDP. Changes to the methods of aggregating the expenditure measure of GDP – and to the component previous year and current year price series for valuables in particular – account for the remainder of the negative contribution to GDP growth in 2003. Further information on this effect is included in the [annex to the August Economic Review](#).

Net Trade

Alongside these revisions to household consumption and investment, the changes introduced in Blue Book 2015 also affect estimates of exports, imports and net trade. In particular, a revised treatment of non-monetary gold and changes to the measurement of cross border property income flows affect estimates of both imports

and exports². The impact of these changes is shown in Figure 13, which presents the levels of exports and imports on a Blue Book 2015 and previously published basis, indexed to their respective values in Q1 2008. It suggests that the magnitude of these effects is larger on the profile of exports, although imports have also been revised up – in the second half of 2013 and the first half of 2014 in particular.

Figure 13: Exports and Imports: Previously published compared with Blue Book 2015, Q1 2008=100, chained volume measure, seasonally adjusted

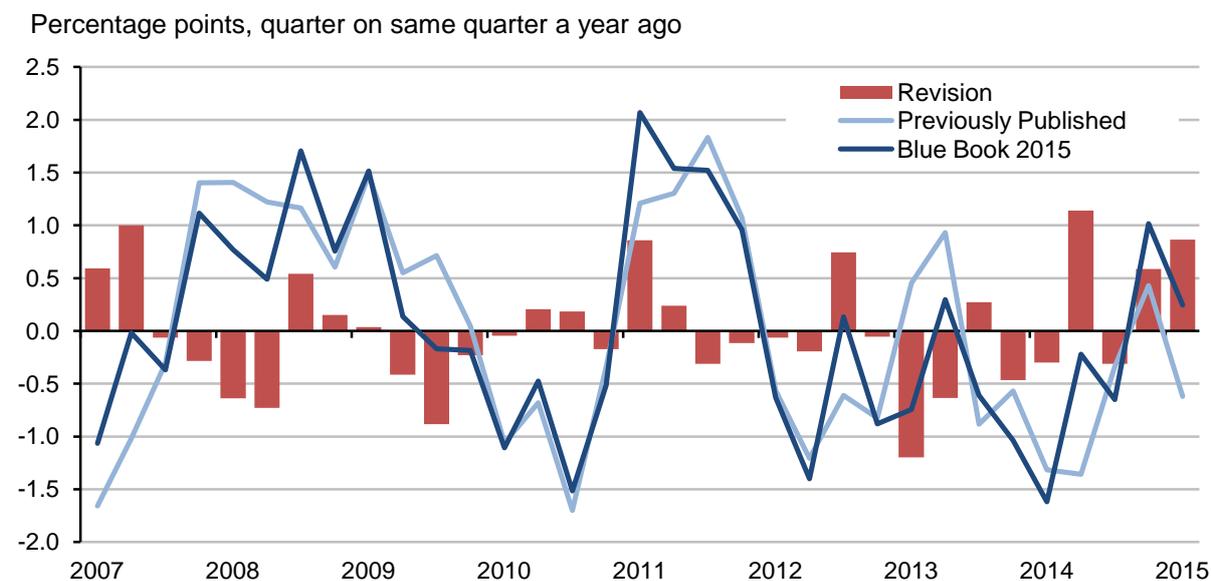


Source: ONS

The Blue Book 2015 changes to imports and exports result in revisions to the contribution of net trade to GDP over this period. Figure 14 shows the contribution of net trade to quarter on same quarter a year ago growth, on a previously published and Blue Book 2015 basis, as well as the revision between the two. It reflects the modest changes to growth rates presented in Figure 13, but also suggests that the contribution of net trade was smaller than previously thought in 2009 and 2013, and stronger in 2007, 2011 and 2014 in particular. Revisions prior to 2007 are smaller and average 0.0 percentage points. The impact of the improved treatment of non-monetary gold and other methods changes are covered further in Balance of Payments articles published on [11 September 2015](#) and [30 September 2015](#).

² Note that changes to the treatment of cross-border property income are neutral in current price GDP terms, as increased exports (imports) of services are offset by a corresponding reduction (increase) in household final consumption. Change to estimates of non-monetary gold will be the subject of a forthcoming article on National Accounts methods.

Figure 14: Net trade contribution to GDP growth: Previously published compared with Blue Book 2015, percentage points, chained volume measure, seasonally adjusted



Source: ONS

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

This section presents the impact of Blue Book 2015 improvements on the income components of GDP. The key findings are:

- Compensation of employees (COE) – which represents more than half of the income measure of GDP – has only changed modestly between the previous and Blue Book 2015 estimates.
- Estimates of the operating surplus of private non-financial corporations (PNFCs) have also been affected by exhaustiveness changes, albeit to a lesser extent. Estimates of the operating surplus of financial corporations are not affected by these changes; consequently there are only modest changes in this component.
- ‘Other income’ – including the mixed income component – has been affected by the set of exhaustiveness changes in recent years in particular, including improved estimates of unincorporated small business and concealed income.

Compensation of employees

The largest component of the income measure of GDP is 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). The main changes affecting this component in Blue Book 2015 are improvements to the way ONS capture the non-reporting of employee income, improved estimates of local government pension contributions and updated data on wages and salaries from Her Majesty’s Revenue and Customs (HMRC). Despite

these changes, revisions to the growth of COE have been relatively modest. Figure 15 compares estimates of quarter on same quarter a year ago growth in COE, both on a Blue Book 2015 consistent and previously published basis. In particular, the changes introduced in the Blue Book have not altered the relatively weak growth of COE observed since the onset of the economic downturn in 2008. Calendar year growth in COE in 2012, 2013 and 2014 was revised down by 0.3%, 0.4% and 0.9% respectively. Average quarter on same quarter a year ago growth between Q1 1998 and Q4 2007 remains unchanged at 6.1%, and the improvements have raised the overall level of COE by approximately 0.2% on average per annum.

Figure 15: Compensation of employees: Quarter on same quarter a year ago growth rates: Previously published compared with Blue Book 2015, current price, seasonally adjusted



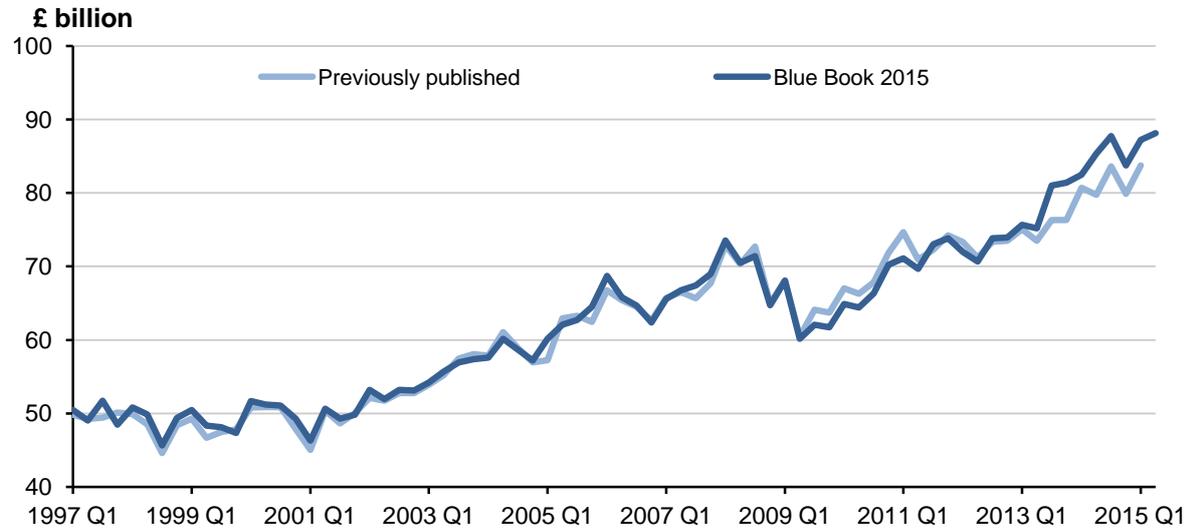
Source: ONS

Gross operating surplus: PNFCs

The gross operating surplus of PNFCs has been affected by both of the changes introduced in Blue Book 2015 to improve the exhaustiveness provisions in the National Accounts. These improvements relate to the coverage of the income of firms which fall below the Value added tax (VAT) and Pay as You Earn (PAYE) reporting thresholds, and to estimates of income concealed from the tax authorities. The new estimates of under-coverage are based on updated HMRC administrative data for sole traders and partnerships, while improvements to concealed income are obtained from a more comprehensive model based, in part, on HMRC analysis of evaded corporation and income tax.

The improved estimates of both under-coverage and concealed income have affected the level of PNFC profits, primarily in the period following the economic downturn in 2008. Figure 16 shows that in 2010 and 2011, the levels of profits have been revised down by £7.1bn and £4.4bn respectively. However, in 2013 and 2014 the methods changes and new data started to raise the level of profits, to the extent that the respective calendar year revisions totalled £12.1bn and £15.4bn.

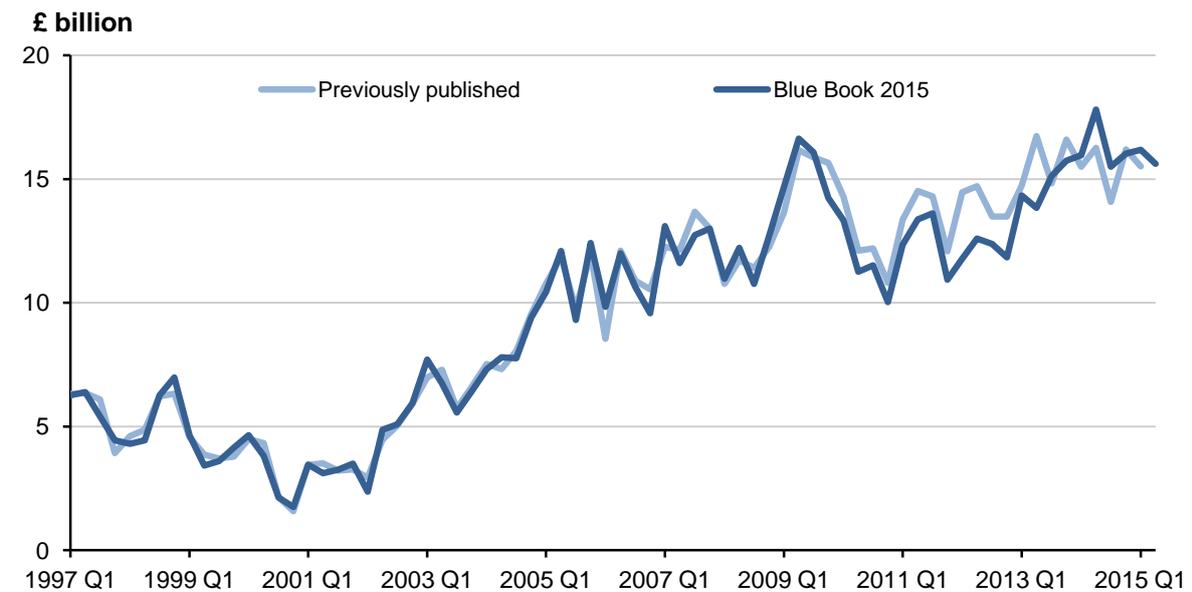
Figure 16: Gross operating surplus: Private non-financial corporations: Previously published compared with Blue Book 2015: current price, seasonally adjusted



Source: ONS

By contrast, the exhaustiveness changes did not affect estimates of financial corporations' income, and revisions to this series are consequently smaller (Figure 17). However, consistent downward revisions can be observed throughout the period from 2010 to 2013 inclusive. This is primarily attributable to the correction of an error identified in the input data from regulatory insurance data returns. This affected insurance estimates for the calculation of output and the subsequent consumption of insurance services, as well as the profits associated with those services. Revisions in the more recent years can also be attributed to new data.

Figure 17: Gross operating surplus: Financial corporations: Previously published compared with Blue Book 2015: current price, seasonally adjusted

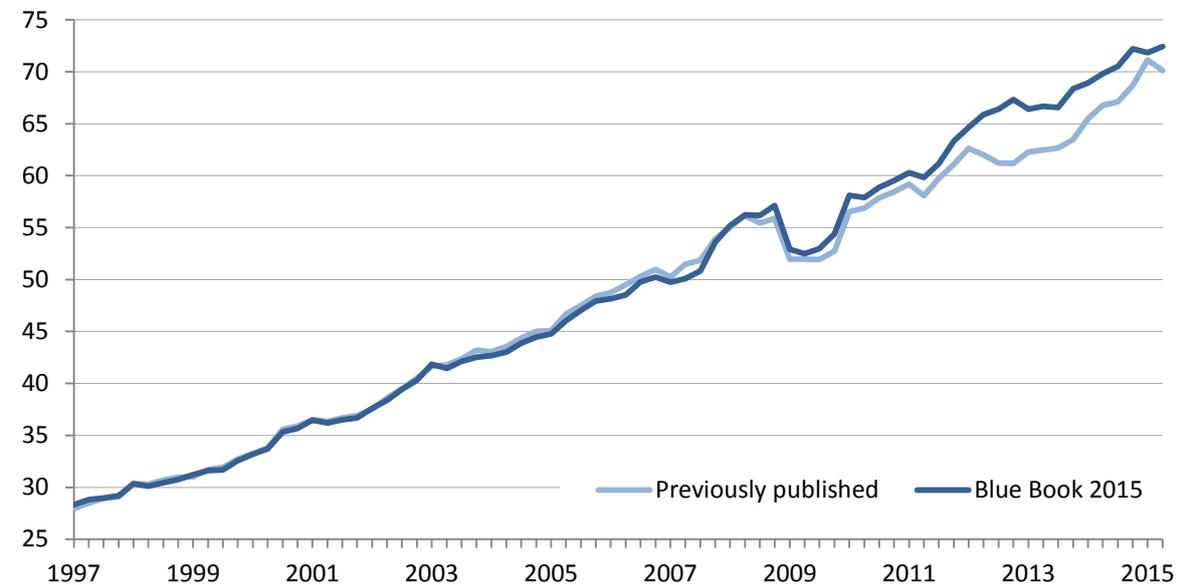


Source: ONS

Other Income

Finally, the change relating to the under-coverage of unincorporated small businesses has a particular impact on estimates of the income of the self employed. This income – which has been subject to upward revisions because a notable proportion of small businesses are accounted for by the self employed – accrues to the ‘mixed income’ component of other income. Figure 18 shows the level of other income (which also includes the operating surplus of the non-corporate sector) in current prices. During the downturn in 2008 and 2009, mixed income is now estimated to have been £2.2bn and £4.2bn higher respectively, with revisions to subsequent calendar years becoming larger, reaching just over £17bn in both 2012 and 2013, before falling back slightly to £13.5bn in 2014.

Figure 18: Other income (includes mixed income and the operating surplus of the non-corporate sector): Previously published compared with Blue Book 2015: current price, seasonally adjusted



Source: ONS

Table 2: Impact of the planned changes on the expenditure and income components of GDP, 2014

GDP Components	Growth rates (%changes on previous year)		
	Previously published data	Blue Book 2015	Difference (percentage points)
Expenditure Components (Chained Volume Measure)			
Household final consumption expenditure	2.6	2.7	0.1
Nonprofit institutions serving households	0.9	1.9	1.0
General government final consumption expenditure	1.6	1.9	0.3
Gross fixed capital formation	8.6	7.5	-1.1
Exports of goods and services	0.5	1.8	1.4
Imports of goods and services	2.4	2.8	0.4
Income Components (Current prices)			
Gross operating surplus: Corporations	5.6	8.2	2.6
Gross operating surplus: Government	2.8	3.2	0.5
Gross operating surplus: Household and NPISH	6.2	5.6	-0.7
Gross operating surplus :Mixed income	6.8	5.0	-1.8
Compensation of employees	3.1	2.3	-0.9
Taxes less subsidies	4.8	4.9	0.2
GDP (Current prices)	4.6	4.7	0.1
GDP (Chained Volume Measure)	3.0	2.9	-0.1

Table 3: Impact of Blue Book 2014 changes on quarterly growth rates of real GDP, chained volume measure (percentage growth: Q1 2014 to Q2 2015)

	GDP at market prices (chained volume measure, seasonally adjusted: £ million)		GDP at market prices (chained volume measure, % growth on previous period)		
	As Published on 28 August 2015 (2011 prices)	Blue Book 2015 (2012 prices)	As Published on 28 August 2015 (2011 prices)	Blue Book 2015 (2012 prices)	Revision (p.p.)
Quarter 1 2014	420,960	432,555	0.9	0.6	-0.3
Quarter 2 2014	424,808	436,598	0.9	0.9	0.0
Quarter 3 2014	427,844	439,374	0.7	0.6	-0.1
Quarter 4 2014	431,386	442,671	0.8	0.8	-0.1
Quarter 1 2015	432,995	444,297	0.4	0.4	0.0
Quarter 2 2015	435,905	447,199	0.7	0.7	0.0

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 one 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 2011 and 2012 are supplied in Table 4. From the Q2 2015 Quarterly National Accounts release, the last base and reference years move forward from 2011 to 2012. 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 784 parts per thousand (ppt) to 786ppt. Financial and Insurance Activities saw the largest decline in weight compared with 2011, falling to 76ppt.

The weights of Production and Manufacturing both increased in 2012 to 149ppt and 103ppt respectively. The weight of the Construction sector fell markedly to 59ppt.

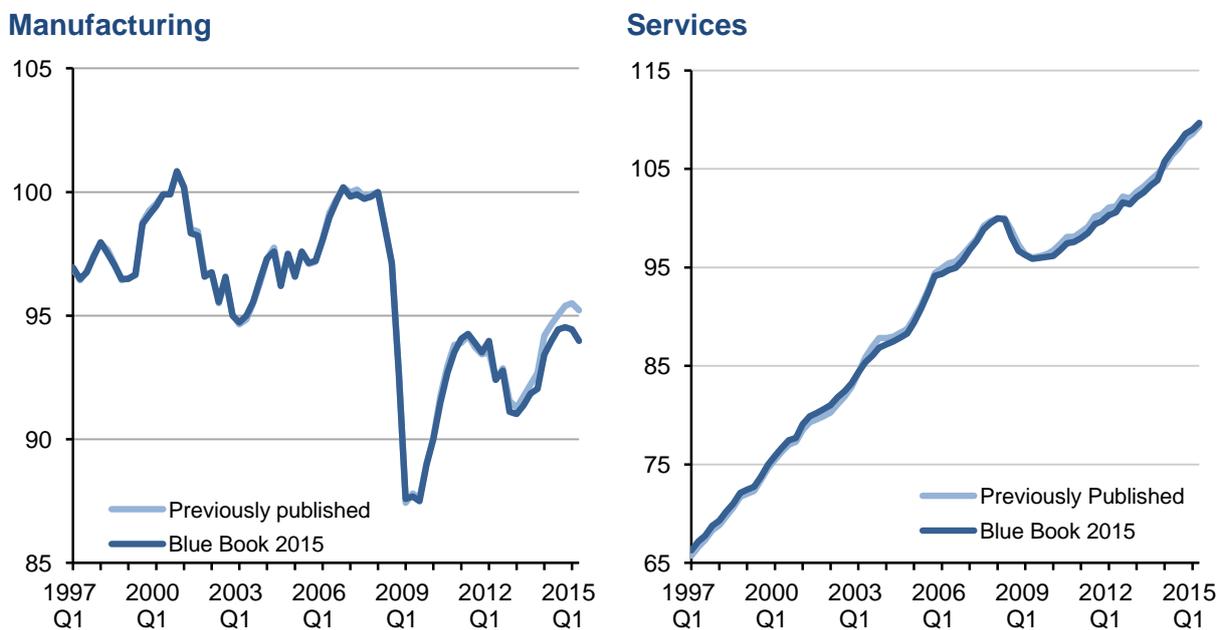
Table 4: Detailed gross value added weights for 2011 and 2012

Industry Description	Industry	Current 2011 GVA Weights (Parts Per Thousand)	Updated 2011	Updated 2012
			GVA Weights (Parts Per Thousand) as at Blue Book 2015	GVA Weights (Parts Per Thousand) as at Blue Book 2015
TOTAL	TOTAL	1000	1000	1000
AGRICULTURE, FORESTRY AND FISHING	A	6.4	6.9	6.8
PRODUCTION	B-E	146.3	148.8	148.9
MINING AND QUARRYING	B	22.9	23.2	20.0
MANUFACTURING	C	101.4	103.2	102.9
ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	D	10.4	9.9	13.9
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	E	11.5	12.5	12.1
CONSTRUCTION	F	63.5	60.9	58.7
SERVICES	G-U	783.9	783.5	785.6
WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	G	110.8	110.6	108.1
TRANSPORTATION AND STORAGE	H	42.0	43.5	42.9
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	I	28.6	25.5	27.4
INFORMATION AND COMMUNICATION	J	62.0	63.4	62.7
FINANCIAL AND INSURANCE ACTIVITIES	K	82.4	79.6	76.1
REAL ESTATE ACTIVITIES	L	107.8	110.6	116.7
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	M	72.5	70.1	72.2
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	N	44.3	44.8	45.9
PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	O	54.7	54.9	53.7
EDUCATION	P	68.0	66.8	65.0
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	Q	70.9	73.3	72.9
ARTS, ENTERTAINMENT AND RECREATION	R	14.6	14.0	15.5
OTHER SERVICE ACTIVITIES	S	21.2	22.2	22.4
ACTIVITIES OF HH AS EMPLOYERS; UNDIFFERENTIATED GOODS- AND SERVICES-ACTIVITIES OF HH FOR OWN USE	T	4.1	4.1	4.1

Revisions to the output components of GDP

Blue Book 2015 consistent data has not materially altered the profile of manufacturing output growth prior to and during the economic downturn. However it has acted to marginally reduce the strength of the recovery of manufacturing – shown in Figure 19. Comparing peak levels with Q2 2015, manufacturing output is now estimated to be 6.0% lower – this compares to previously published estimates that showed output to be 4.8% below peak levels. In Q2 2015 services output is estimated to be 10.3% above its pre-downturn peak (Q1 2008) - this compares to previously published estimate that showed output to be 9.4% above peak levels.

Figure 19: CVM Index Q1 2008=100; Manufacturing and Services



Sector accounts

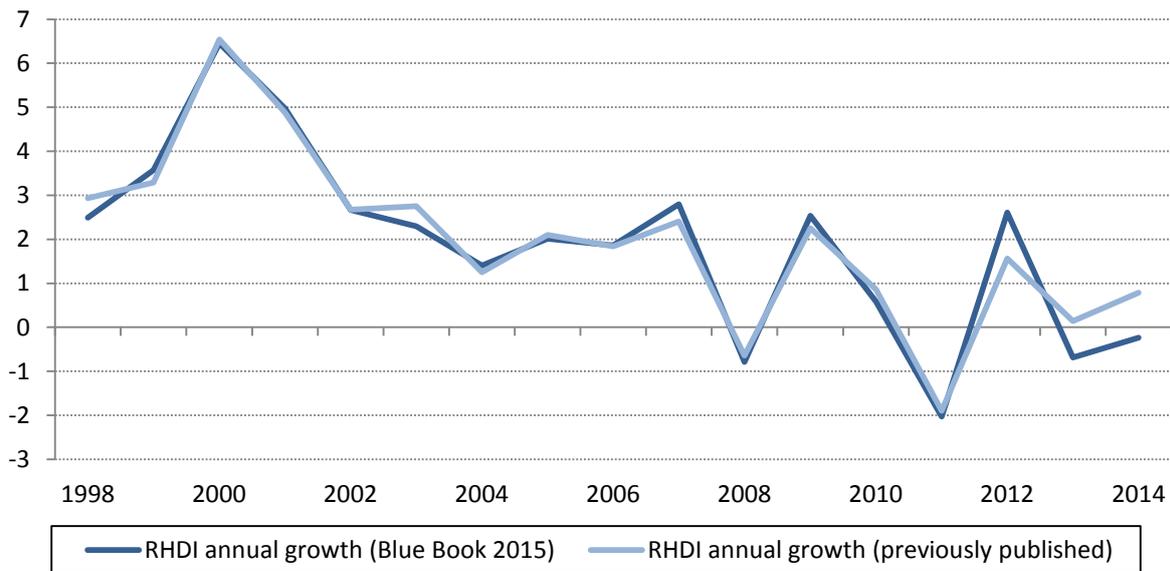
Improvements to methods and data used in the estimation of GDP have a number of impacts on other key macroeconomic aggregates published in the sector and financial accounts. These include estimates of Real Household Disposable Income, the Household Saving Ratio and the financial balances of different sectors of the economy. Revised sector and financial accounts have been published on an annual basis for the period 1997 to 2013, and have now been extended to include Q1 2014 to Q2 2015. An article released on [11 September 2015](#) explained the resultant changes to be contained in Blue Book 2015 in more detail. This section considers the impact on key indicators, updated to include 2014 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 NPISH saving ratio remains broadly unchanged on an annual basis, though it has been revised down by just over 1 percentage point in 2014. The narrative of a steep decline in the ratio over the last four years persists.
- Sector net lending balances are broadly unchanged over the period from 1997 to 2014. The aforementioned exhaustiveness changes have on average acted to improve the non-financial corporation net lending balance.

Real Household Disposable Income (RHDI) captures the real value of households' income after taxes, and is a key 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.

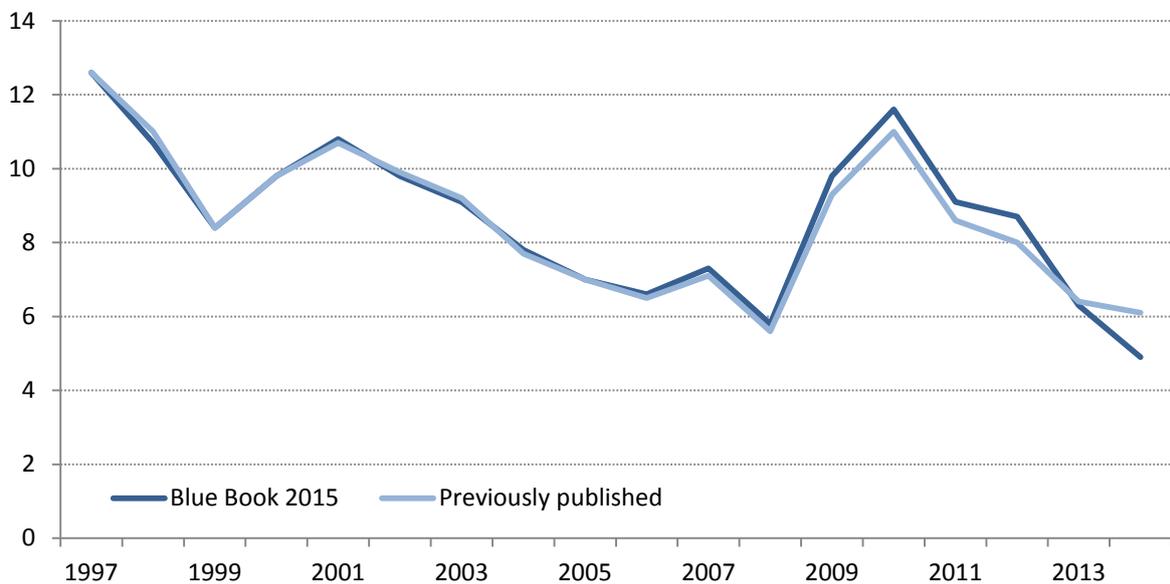
Estimates of nominal disposable income will have been affected by the aforementioned changes to the measurement of employee income, the NPISH sector and cross border property income. However, these changes have led to minimal RHDI growth revisions over the period 1997 to 2011 (Figure 20). Growth was stronger than previously estimated in 2012, but in 2013 and 2014 RHDI growth has been revised down and now shows a contraction in both years. This is a result of upward revisions to nominal disposable income in each year, but by gradually smaller amounts in both 2013 and 2014, exacerbated by slight revisions to the consumption deflator. The broader trend of RHDI growth remains one of gradual decline from a peak in 2000.

Figure 20: Real household disposable income growth, %



As a result of the slightly weaker income growth and stronger household consumption growth in 2014, the saving ratio has been revised down by 1.2 percentage points to 4.9% in 2014 (shown in Figure 21). There were also consistent, but smaller, upward revisions to the ratio from 2009 to 2012, while revisions to other years were minimal.

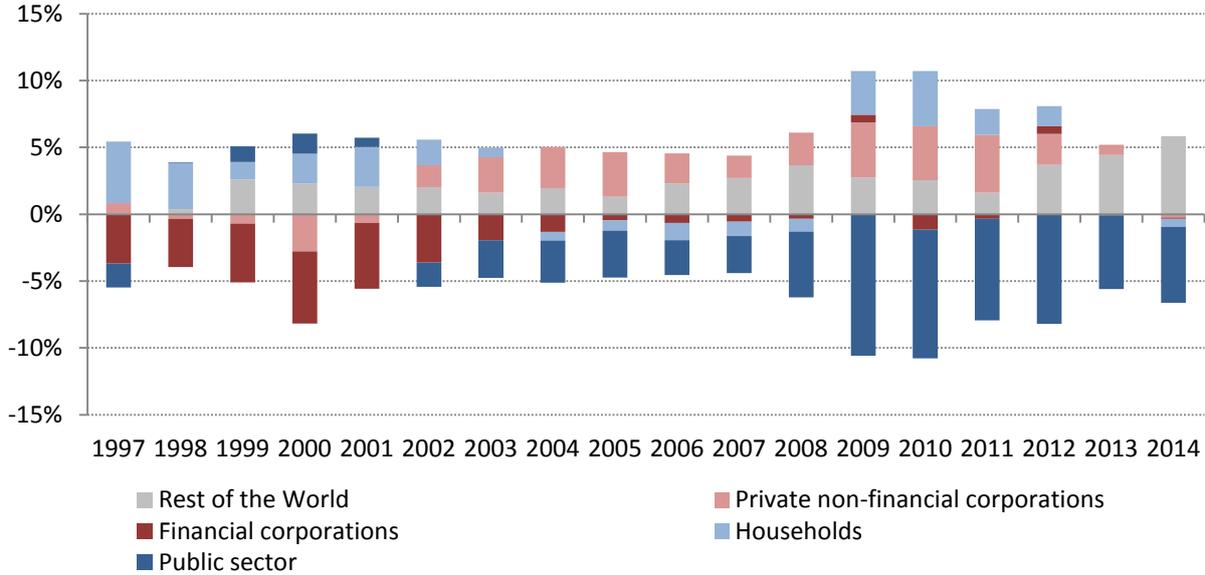
Figure 21: Household and NPISH saving ratio, %



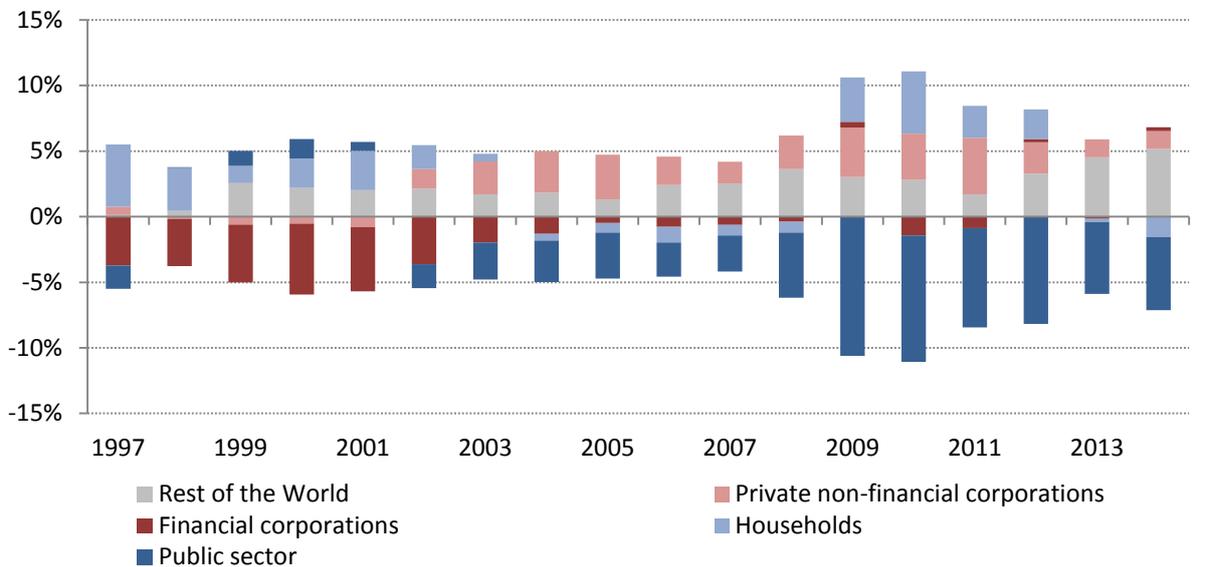
The measurement changes referred to above have contributed to some revisions to the financial balances of different sectors in the UK economy. However the balances have also been affected by some of the reclassification decisions that have been taken. Figure 22 shows the headline net lending and borrowing positions of the various sectors, expressed as proportions of nominal GDP, on a previously

published (Panel A) and Blue Book 2015 consistent basis (Panel B)³. Points below the axis indicate that the sector is a net borrower (i.e. running a deficit on their current and capital transactions), while points above the axis indicate that the sector is a net lender (i.e. running a surplus).

Figure 22: Sectoral net lending/borrowing positions: % of nominal GDP
Panel A: Previously published:



Panel B: Blue Book 2015 consistent



Note: Figures may not sum to zero; the difference is equal (but opposite sign) to the residual error between the expenditure and income-based estimates of GDP.

³ In Figure 22, ‘public sector’ refers to the sum of net lending/ borrowing for public corporations, central government and local government sectors.

Figure 22 shows that, on average, the headline lending and borrowing positions of the sectors have remained broadly unchanged. One of the main changes is to the position of private non-financial corporations in 2000, which has been revised up by £23.0bn. This is primarily due to the reclassification of the 3G/4G spectrum sales from an 'asset transaction' to a 'rent transaction', which acts to increase net lending in 2000 and redistribute this across subsequent years by decreasing net lending by smaller, consistent amounts. An equal and opposite impact can be observed for the central government sector.

There have also been revisions to 2014, most notably to the household and PNFC sectors. Households are now shown to have a slightly larger net borrowing position than the previously published estimates; this reflects the changes to income and consumption referred to above. The slightly improved PNFC position in 2014 reflects the incorporation of supply and use balancing adjustments (that act to increase the level of gross operating surplus), in addition to downward revisions to the level of current price GFCF.

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

The significant methods changes made for the publication of Blue Book 2015 with regard to the historic datasets (i.e. data for the period prior to 1997) are outlined below along with the impact these have on each of the GDP components.

Revisions to historic GDP data by change

Cross-border property income

The change relating to ‘withdrawals of income from quasi-corporations’, as detailed in this [article](#), has been taken back to 1987.

This revision, which is GDP neutral, affects the following GDP components:

- HHFCE
- Exports of services
- Imports of services
- GOS

Exhaustiveness

The changes, detailed in this [article](#), cover improvements to the estimation of concealed income/activity and also under-coverage of small businesses. This change has been taken back to 1985.

This revision, affects the following GDP components:

- HHFCE
- GOS

Non-profit intuitions serving households (NPISH)

The changes, detailed in this [article](#), covers further improvements to the measurement of NPISH estimates, first introduced in Blue Book 2014. This change has been taken back to 1985.

This revision, affects the following GDP component:

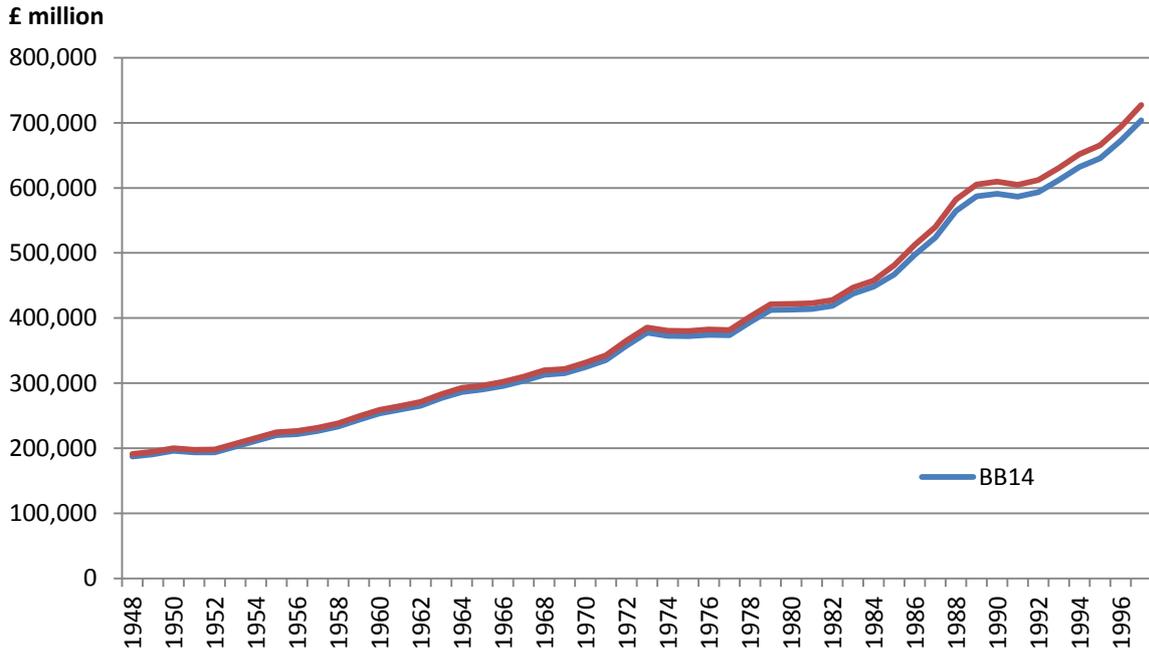
- HHFCE
- GOS

Revisions to historic GDP data by component

HHFCE

The main changes to HHFCE include cross-border property income, exhaustiveness and NPISH. The historic HHFCE data has been created by applying link factors at the COICOP level, back to 1985, and aggregating to top level HHFCE. Figure 23 shows the impact of the changes to the HHFCE estimates pre-1997.

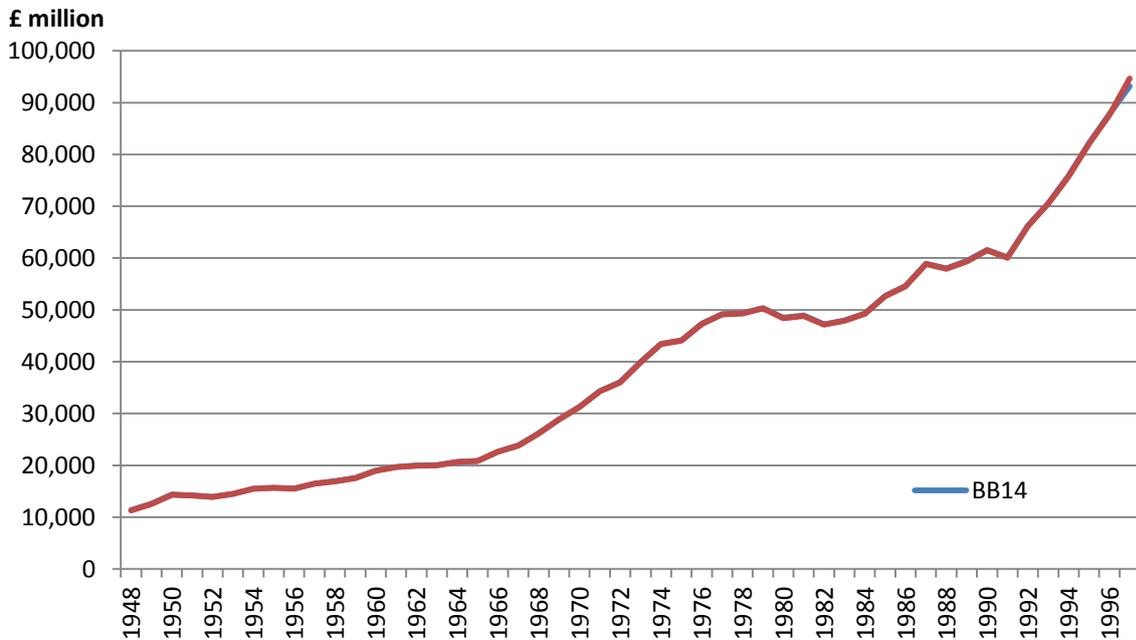
Figure 23: Total HHFCE, Blue Book 2015 compared with Blue Book 2014, 1948-1997, CVM, 2012=100



Exports of Services

The only change affecting exports of services is cross-border property income. Figure 24 shows the impact of the changes to the exports of services estimates pre-1997.

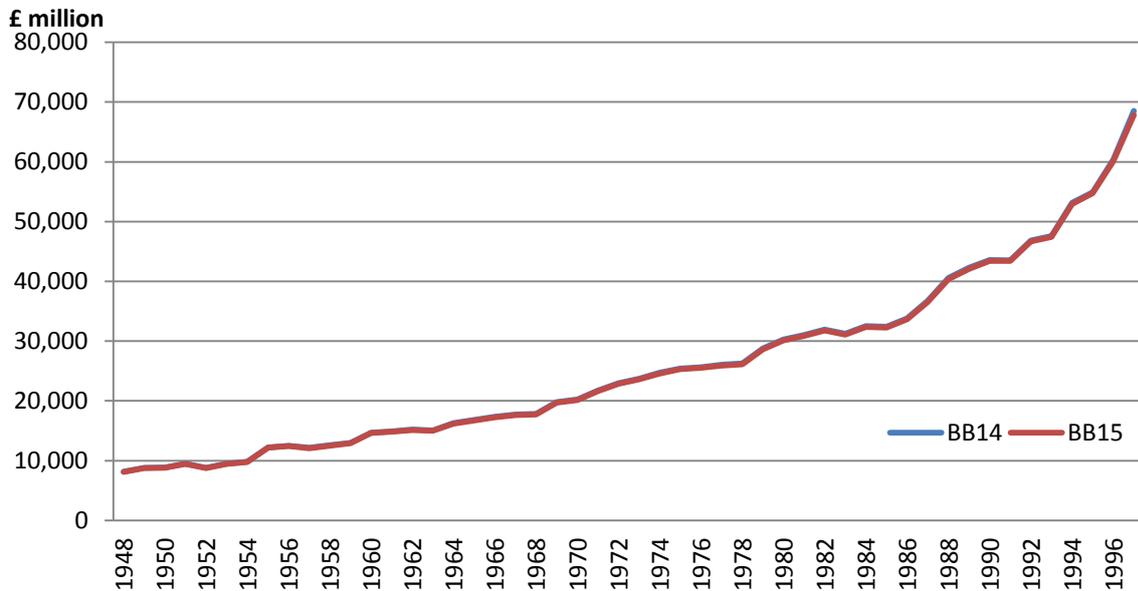
Figure 24: Total Exports of Services, Blue Book 2015 compared with Blue Book 2014, 1948-1997, CVM, 2012=100



Imports of Services

The only change affecting imports of services is cross-border property income. Figure 25 shows the impact of the changes to the imports of services estimates pre-1997.

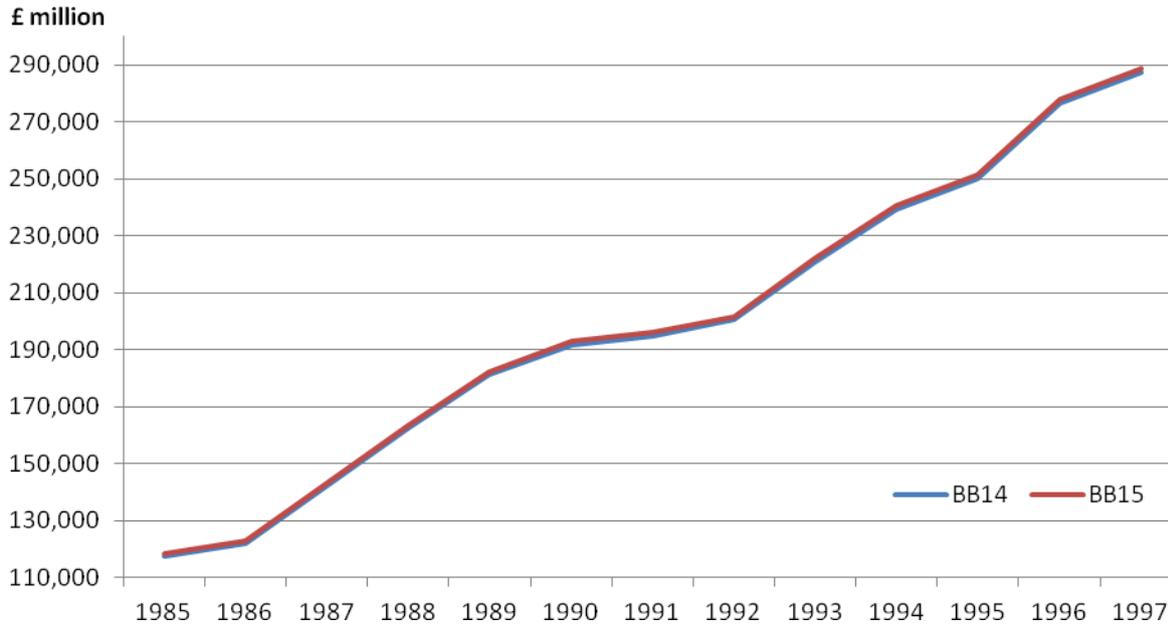
Figure 25: Total Imports of Services, Blue Book 2015 compared with Blue Book 2014, 1948-1997, CVM, 2012=100



GOS

The main changes to GOS include cross-border property income and exhaustiveness. Figure 26 shows the impact of the changes to the GOS estimates 1985-1997.

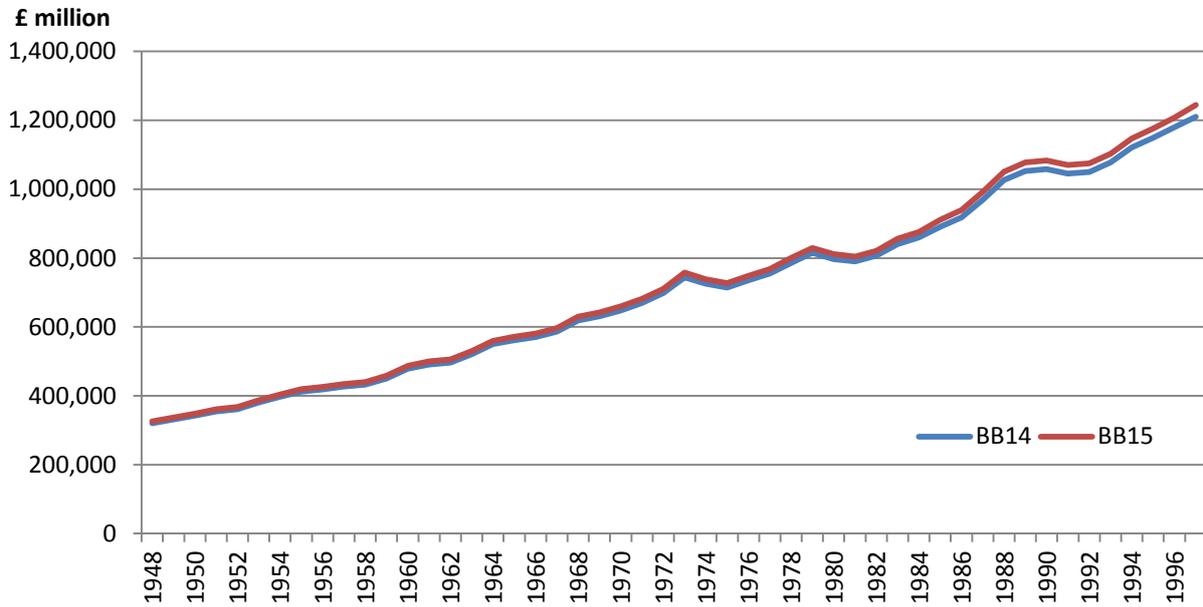
Figure 26: GOS, Blue Book 2015 compared with Blue Book 2014, 1985-1997, CP



GDP at market prices

Figure 27 shows the impact of the BB15 changes on headline GDP pre-1997.

Figure 27: GDP at market prices, Blue Book 2015 compared with Blue Book 2014, 1948-1997, CVM, 2012=100



Background notes

1. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice or from the Media Relations Office email: media.relations@ons.gsi.gov.uk
2. A list of those given pre-publication access to the contents of this article is published as part of this release.
3. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

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This document is also available on our website at www.ons.gov.uk.

Appendix A

List of relevant published articles

Detailed assessment of changes to the Balance of Payments and International Investment Position, 1997 to 2014	30 September 2015
GFCF and Business Investment– impact of incorporating Blue Book 2015 changes	30 September 2015
Final GDP CP and CVM quarterly and annual estimates, 1997 to 2013 and Annexes (212.5 Kb Excel sheet)	11 September 2015
Methodological improvements to the estimation of Capital Stocks and Consumption of Fixed Capital for Blue Book 2015 (269.4 Kb Pdf)	11 September 2015
Classification changes to National Accounts for Blue Book 2015 (512.6 Kb Pdf) and Annexes (67 Kb Excel sheet)	11 September

	2015
Detailed assessment of changes to SFA, 1997 to 2013 (1.83 Mb Pdf) and Annexes (64 Kb Excel sheet)	11 September 2015
Detailed assessment of changes to BoP, 1997 to 2013 (253.3 Kb Pdf) and Annexes (72 Kb Excel sheet)	11 September 2015
GDP, GNI and the UK's EU budget contributions: an explanatory note (237.5 Kb Pdf)	08 September 2015
Impact on GDP Current Price and Chained Volume Measure estimates, 1997 to 2013	05 August 2015
Impact of Blue Book 2015 Changes on Chained Volume Measure Gross Domestic Product Estimates, 1997 to 2010	17 July 2015
Methodological improvements to National Accounts for Blue Book 2015: Gross Fixed Capital Formation (1997-2010) (357.1 Kb Pdf)	17 July 2015
Impact of Blue Book 2015 Changes on Current Price Gross Domestic Product Estimates, 1997 to 2010	12 June 2015
Impact of ESA 1995 Changes on Current Price Gross National Income Estimates, 2002 to 2010	19 May 2015
Methodological improvements to National Accounts for Blue Book 2015: Non-Profit Institutions Serving Households (185.9 Kb Pdf)	19 May 2015
Methodological improvements to National Accounts for Blue Book 2015: Exhaustiveness (225.9 Kb Pdf)	19 May 2015
Methodological improvements to National Accounts for Blue Book 2015: Cross-Border Property Income (457.7 Kb Pdf)	19 May 2015
Methodological improvements to National Accounts for Blue Book 2015: Vehicle Registration Tax, Treatment of Roads, and Spending on Repairs and Maintenance of Dwellings (294.7 Kb Pdf)	19 May 2015
Changes to National Accounts for Blue Book 2015: the deflation of investment in software (522.5 Kb Word document)	26 March 2015
Methodological improvements and ESA 2010 changes to historic GDP datasets for Blue Book 2014 (139.9 Kb Pdf)	23 February 2015
Latest developments to national accounts and Balance of Payments	15 January 2014