

Office for
**Budget
Responsibility**

Forecast evaluation report

December 2018

Office for Budget Responsibility

Forecast evaluation report

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December 2018



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Foreword

The Office for Budget Responsibility (OBR) was created in 2010 to provide independent and authoritative analysis of the UK public finances. Twice a year – at the time of each Budget and Autumn/Spring Statement – we publish a set of forecasts for the economy and the public finances over the coming five years in our *Economic and fiscal outlook (EFO)*. We use these forecasts to assess the Government's progress against the fiscal targets that it has set for itself.

In each *EFO*, we stress the uncertainty that lies around all such forecasts. We compare our central forecasts to those of other forecasters. We highlight the limited confidence that should be placed in our central forecast given the inaccuracy of past official forecasts. We use sensitivity and scenario analysis to show how the public finances could be affected by alternative economic outcomes. And we highlight the residual uncertainties in the public finances, even if one were confident about the path the economy was going to take – for example, because of uncertain estimates of the cost or yield associated with new policy measures.

Notwithstanding these uncertainties – and the fact that no one should expect any central economic or fiscal forecast to be met in its entirety – we believe that it is important to spell out our forecast in considerable quantitative detail and then to examine how it compares to subsequent outturn data and explain any discrepancies. That is what we endeavour to do in this report.

We believe that it is important to publish the detail of our forecasts for two main reasons:

- The first is **transparency and accountability**: the whole rationale for contracting out the official fiscal forecast to an independent body is to reassure people that it reflects dispassionate professional judgement rather than politically motivated wishful thinking – even if people disagree with the particular conclusions we have reached. The best way to do that is to 'show our working' as clearly as we can.
- The second is **self-discipline**: the knowledge that a forecast must be justified in detail forces one to make only those judgements that can be defended with reference to the evidence. One cannot hide them in the knowledge that no one will ever know.

Assessing the performance of our forecasts after the event is also important for transparency and accountability – and for helping users to understand how they are made and revised. Identifying and explaining forecast differences also helps improve our understanding of the way in which the economy and public finances behave, and hopefully allows us to improve our judgements and forecast techniques for the future. We have taken that a step further in recent years through a systematic review of key models that are used to help us construct individual elements of our fiscal forecasts.

We describe the arithmetic divergence between our central forecasts and the subsequent outturns as ‘differences’ rather than ‘errors’, because in many cases it would have been impossible to avoid them given the information available when the forecast was made. Where we do find genuine errors, which could (and should) have been corrected if we had spotted them, they are described as such. Errors of this sort are inevitable from time to time in a highly disaggregated forecasting exercise like ours.

In judging our own performance – and in assessing the relative performance of different forecasters – it is important to remember that the current outturn data represent a relatively early draft of economic history. The stories we have told in previous reports often need to be updated after subsequent data revisions. So what appear to have been accurate or inaccurate forecasts today may look very different in the wake of inevitable – and often large – statistical revisions. This was certainly the experience of the recession and recovery of the 1990s and there continue to be significant revisions to the history of the late 2000s recession and its aftermath.

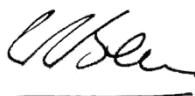
We have continued the approach used in past reports of trying to understand the underlying economic forces that have led outturns to diverge from our central forecast. But, as in previous reports and the Treasury’s *End of year fiscal reports* that preceded them, we also present the detailed decomposition of specific fiscal year forecasts. As with all our reports, we would be very grateful for feedback on its content and for suggestions of ways to improve future reports.

The forecasts we publish represent the collective view of the three independent members of the OBR’s Budget Responsibility Committee (BRC). Our economy forecast is produced by OBR staff working with the BRC. For the fiscal forecast, given its highly disaggregated nature, we also draw heavily on the help and expertise of officials from across Government, most notably in HM Revenue and Customs and the Department for Work and Pensions. We are very grateful for this work and for the analysis that they have contributed to the production of this report. While recognising these valuable contributions, we also stress that the BRC takes full responsibility for the judgements underpinning the forecasts and for the performance of them presented in this report.

In line with our memorandum of understanding with government departments, we provided a full and final copy of this report to the Treasury 24 hours in advance of publication.



Robert Chote



Sir Charles Bean



Andy King

The Budget Responsibility Committee

1 Executive summary

- 1.1 Twice a year at the OBR, we provide a detailed central forecast for the economy and the public finances. These provide a transparent benchmark against which to judge the significance of new economic and fiscal data and against which to estimate and explain the likely impact of policy decisions. But since the future can never be known with precision, all such ‘point’ forecasts are necessarily surrounded by uncertainty – the likelihood that any given one will turn out to be accurate in all respects is negligible.
- 1.2 We stress these uncertainties in every *Economic and fiscal outlook (EFO)* we publish. We present probability distributions around our central forecasts based on past forecast performance, sensitivity analysis of key assumptions and assessments of the fiscal implications of different economic scenarios. And once a year, in our *Forecast evaluation report (FER)*, we compare the latest outturn data to our earlier central forecasts and seek to explain the inevitable differences.
- 1.3 Throughout this report, we describe the arithmetic divergence between the central forecasts and the subsequent outturns as ‘differences’ rather than ‘errors’, because in many cases they would have been impossible to avoid given the information available when the forecast was made. Where we do find genuine errors, which could (and should) have been corrected if we had spotted them, they are described as such. These are inevitable from time to time in a highly disaggregated forecasting exercise such as ours.
- 1.4 The backdrop to this report is:
- a **real economy** which, apart from a weather-related dip in early 2018, has grown at a steady but subdued rate since the referendum;
 - a **labour market** that has continued to exhibit strong growth in employment, but weak growth in earnings and productivity; and
 - a falling **budget deficit** and a **public debt to GDP ratio** that has broadly stabilised, once allowance is made for the impact of the monetary policy actions following the referendum, which have added to the headline public sector net debt measure.
- 1.5 It is now a little over two years since the UK voted to leave the EU, which allows us to make a fuller assessment of the performance of the economy and public finances and our forecasts over that period. An initial evaluation of our post-referendum judgements regarding the consequences of the referendum vote is summarised below.

What questions do we seek to answer in this report?

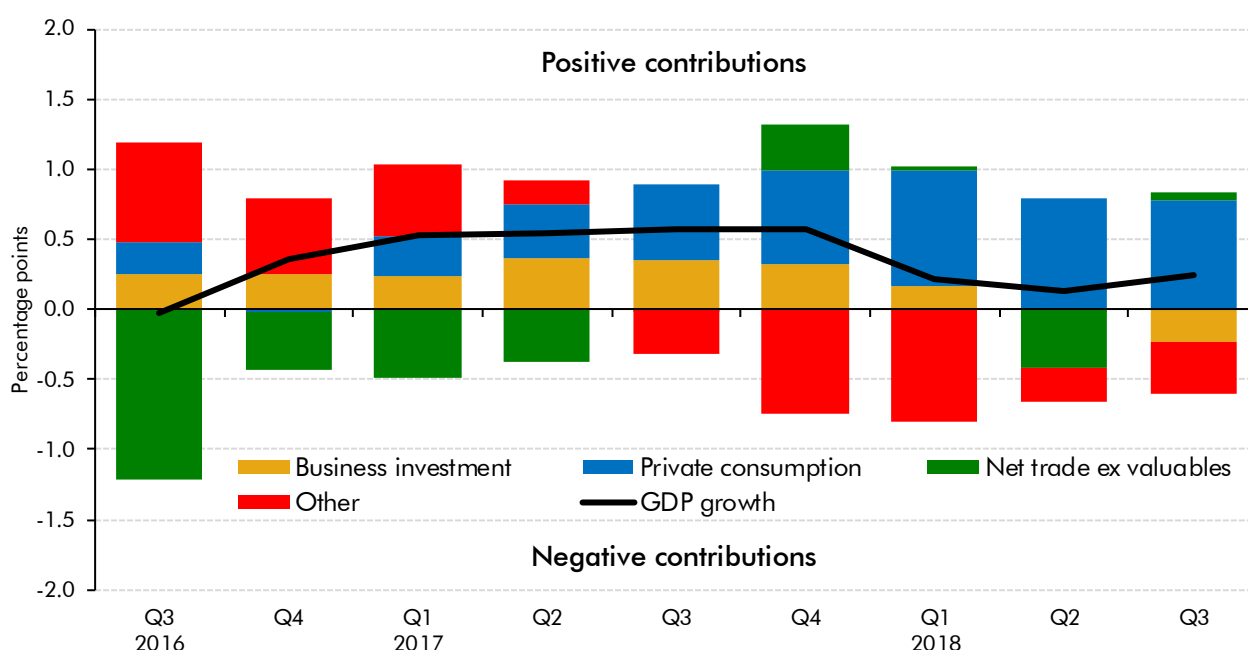
- 1.6 The focus of this year's report is an evaluation of the performance of our March 2016, November 2016 and March 2017 forecasts. This is the first *FER* in which we have sufficient data to make an initial assessment of our forecasts immediately preceding and following the vote to leave the EU. For the economy forecasts we explore why the slowdown in GDP growth was slower to emerge following the referendum than we anticipated, although now appears to be largely on track. We also ask why out of the three forecasts evaluated it was our March 2016 fiscal forecast – which pre-dated the referendum – that appears to have been most accurate for 2017-18.

Assessing our Brexit-related economy forecast judgements

- 1.7 In November 2016, we made several forecast judgements regarding the shorter-run effects of the vote to leave the EU, some of which can be judged against the latest outturns (and are summarised in Chart 1.1):
- **GDP growth** initially held up better than we expected, but more recently GDP growth has been slower than we expected in our November 2016 forecast. Overall, we expected cumulative GDP growth between the second quarter of 2016 and the third quarter of 2018 of 3.6 per cent. The ONS currently estimates that growth over this period was very close to this at 3.8 per cent.
 - We forecast that the fall in the pound would raise inflation, squeezing real incomes and real **consumer spending**. Inflation was only slightly higher than in our November 2016 forecast, which means that real incomes were squeezed to around the extent that we expected. But real consumption has consistently held up better than we anticipated, supported by a further decline in the household saving rate.
 - We judged that the referendum result would generate uncertainty about **investment** returns that would cause some projects to be postponed or cancelled. Business investment initially held up better than we expected, perhaps due to the lead times involved in some major investment projects or the effect that the unexpected strengthening of the global economy had on exporting firms. More recently, business investment has been weaker than expected and has fallen this year, so cumulative growth since the referendum now lies below our November 2016 forecast.
 - We expected that the substantial fall in the pound around the time of the referendum would provide only a modest boost to **net trade**. While trade outturns have been extremely volatile, it appears that the boost to net trade was initially even smaller than we expected, but subsequently it has moved more into line with our November 2016 forecast.
- 1.8 Overall, the slowing in growth took a little longer to emerge than we expected as households and businesses took time to adjust their spending. And, of course, many non-Brexit related forecast judgements, such as the strength of the global economy and

movements in commodity prices will also have affected the path of the UK economy. Nevertheless, on the current vintage of data, our early assessments of the immediate impact of the Brexit vote have fared reasonably well.

Chart 1.1: Contributions to November 2016 cumulative real GDP forecast differences



Source: ONS, OBR

1.9 Our November 2016 forecast also included judgements on the likely longer-run impact of the UK's departure from the EU, but it remains too early to unpick any early effect on underlying productivity and potential output. Our potential output adjustment was predicated largely on heightened policy uncertainty weakening business investment. As discussed in more detail in our recent discussion paper,¹ over time impediments from trade frictions are likely to become more important, while greater restrictions on migration are likely to weigh on labour supply growth. In November 2016, we assumed:

- The vote to leave the EU would be associated with lower **net inward migration**, due both to weaker 'pull factors' – such as the fall in the value of UK wages in terms of potential immigrants' home currencies as a result of the weaker pound – and to the UK adopting a tighter migration regime after leaving the EU than is currently in force. The latest data do indeed indicate that net inward migration has slowed on the back of lower net immigration from the EU, consistent with the weaker pull factors. But it has not slowed to the extent implied by the ONS principal migration projection that we used as the basis for our forecast, as net immigration from non-EU countries has picked up, partially offsetting the reduced inflow from the EU.
- We assumed that leaving the EU would reduce **medium-term export and import growth** as the trade intensity of the economy adjusted to the associated increase in trade frictions. Two years on, it remains too early to assess that judgement.

¹ OBR, *Discussion paper No.3: Brexit and the OBR's forecasts*, October 2018.

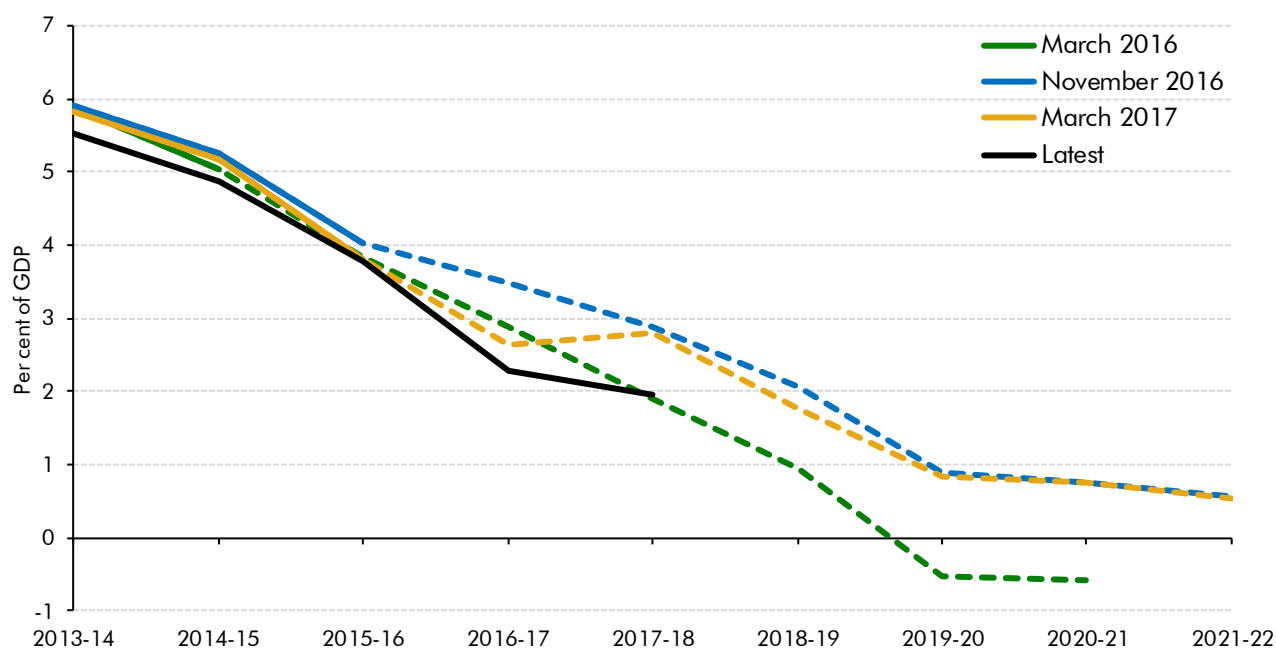
Explaining 2017-18 fiscal forecast differences

- 1.10 In our November 2016 and March 2017 *EFOs*, we made significant upward revisions of just under £20 billion (on a like-for-like basis) to our borrowing forecasts for 2017-18, in tandem with the downward revisions to our GDP growth forecasts following the referendum. Given the reasonable performance of our GDP forecasts over the past two years, we might therefore expect the associated borrowing forecasts to have proven to be reasonably accurate. In fact, it is our final pre-referendum forecast in March 2016 that has so far come closest to the public sector net borrowing outturn in 2017-18. So what explains this apparently counter-intuitive result?
- 1.11 Looking at each of the three forecasts in more detail (which are presented on a like-for-like basis²):
- Relative to our **March 2016 forecast**, borrowing was around £4½ billion too high. Total spending was significantly higher than expected due to much higher local authority spending and the impact of higher inflation on debt interest spending. Higher receipts offset almost of all this effect, largely due to continued strength in onshore corporation tax receipts.
 - Our **November 2016** forecast was around £14½ billion too high, which is more than explained by our in-year forecast for 2016-17 having been too high. The main drivers were an unusual pattern of receipts through the year and unexpectedly large underspending by central government departments. So the over-pessimism of this forecast had little to do with our judgements about the impact of the referendum result.
 - Our **March 2017** forecast was around £15 billion too high. The difference is again partly attributable to our in-year forecast for 2016-17 also being too high, with subsequent ONS revisions explaining the bulk of the over-forecast. A combination of higher receipts and lower spending explains the rest of the difference.
- 1.12 The reason that our March 2016 forecast for 2017-18 borrowing proved more accurate is largely because the public finances in 2016-17 were in a stronger position than we thought at the time or than the ONS reported in its initial monthly data releases. Most of our fiscal forecasting models predict the *growth* in receipts or spending from an estimated starting point – our in-year forecast – rather than the *level* of receipts or spending directly. This means that while our November 2016 and March 2017 forecasts were closer to capturing the slowdown in the pace at which borrowing fell (Chart 1.2), the absolute differences relative to outturn were dominated by the starting point for that slowdown having been too high. We discussed the difficulty of in-year forecasting in detail in a recent working paper.³

² Excluding the effect of a number of classification and methodological changes since the forecast was generated, such as the ONS change in the accounting treatment of corporate taxes. See Chapter 3 for more detail.

³ Taylor, J., and Sutton, A., *Working paper No.13: In-year fiscal forecasting and monitoring*, September 2018.

Chart 1.2: Restated forecasts and outturns for public sector net borrowing



Source: ONS, OBR

Refining our forecasts

Lessons learnt

- 1.13** The lessons highlighted in our *FERs* have often been acted upon by the time we write the report, because they were identified during the preparation of our *EFO* forecasts.
- 1.14** One lesson that we identified in last year's *FER* was the importance of the in-year estimates for receipts and spending that form the starting point for our fiscal forecasts. In a recent working paper,⁴ we reviewed the performance of these forecasts and identified our bonus assumptions, onshore corporation tax forecasts, and potential bias in revisions to gross operating surplus as priority areas for further work. Other lessons identified in previous *FERs* that have been a source of forecast difference this year include:
- The importance of the **composition of labour income**, in particular the continued strength in employment growth and weakness in average earnings growth.
 - The importance of **tax payment timing assumptions**, particularly for corporation tax. The speed at which companies pay off the liabilities arising from a particular year's profits can have a marked effect on receipts.
 - The unexpectedly strong downward **trend in tax credits caseloads**.

⁴ Taylor, J., and Sutton, A., *Working paper No.13: In-year fiscal forecasting and monitoring*, September 2018.

- Savings associated with **major reforms of the incapacity and disability benefits** systems had fallen short of expectations, due largely to challenges in delivering the reforms.
- The use of **borrowing to finance local authority capital expenditure** has continued to increase much more strongly than we had assumed.

1.15 While most of the major issues that we have identified in this year's report have featured in previous editions, we have identified some new issues that include:

- The challenges in **anticipating how quickly shocks will affect the economy and the public finances**. Cumulative growth in business investment since the EU referendum has been slightly below our post-referendum forecasts, although it held up better than expected initially.
- The difficulties in **predicting how households will respond to real income shocks**. Real household consumption has consistently held up better than we expected following the referendum, as a further fall in the saving ratio partially offset the adverse effect of higher inflation on real household incomes.
- Importance of trends in the **use of corporation tax deductions and reliefs**. A substantial proportion of the rise in onshore corporation tax receipts over the past few years appears to reflect a fall in the use of deductions (particularly loss and group relief).

Review of fiscal forecasting models

1.16 Last year we identified 19 separate tax and spending models to look at in greater detail, making 38 specific recommendations, half of which have been fully resolved and 12 partly resolved. This work has generated a new fuel duty model that captures compositional changes in the vehicle stock more effectively, and a new approach to the modelling of the self-assessment effective tax rate (ETR) that allows greater disaggregation across self-assessment income streams. We have also introduced a range of new diagnostic tools to improve our scrutiny of microsimulation models, and our ability to decompose the sources of forecast difference in key receipts models, such as corporation tax.

1.17 In this year's modelling review, we have selected 12 new separate tax and spending forecast models to look at in greater detail, and identified 26 new priorities for model development. We have also carried forward 13 recommendations that were not fully resolved from last year's review. The assessment of models added to the review this year has identified some overarching issues that we plan to work on over the coming year:

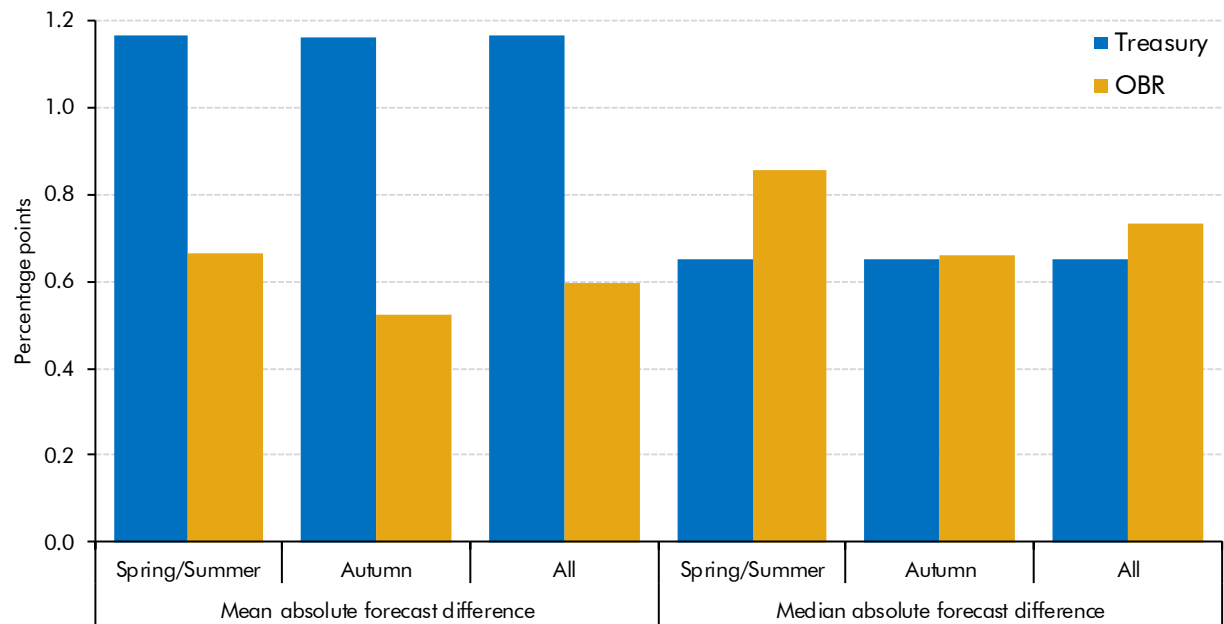
- **Understanding and fully exploiting outturn data sources**. In particular, HMRC's 'real-time information' (RTI) system, which is a relatively new tax collection system that can provide more detailed and timely information on personal tax revenues and the labour market. Similarly, we continue to prioritise further development of new universal credit administrative data to help inform our welfare spending forecasts.

- **Aligning our models with the ONS accounting treatment.** Our recent in-year fiscal forecasting working paper set out the processes that the ONS uses to time-shift cash tax receipts in order to align them more closely with the timing of the underlying economic activity. One area where this is particularly important is onshore corporation tax. Another is the ‘accounting adjustments’ process that converts the raw central government spending data into the National Accounts aggregates. We will also prioritise any work needed to adjust our student loans modelling in the event of any potential changes to the ONS accounting treatment.
- **The challenges of building and developing models to estimate devolved tax revenue and spending.** An increasing number of tax and spending streams are being devolved to Scotland, Wales and (potentially) Northern Ireland, posing new modelling challenges. The required data may not be available at sub-national level, may be more volatile than the UK equivalent, or may be published with a considerable lag. Estimating the effect of policy changes in only one part of the UK can also be challenging, particularly if new policies cause behavioural responses, as might be expected with different income tax rates in Scotland and the rest of the UK. We have prioritised the development of the devolved income tax and carer’s allowance forecasts this year.

Comparison with past forecasts

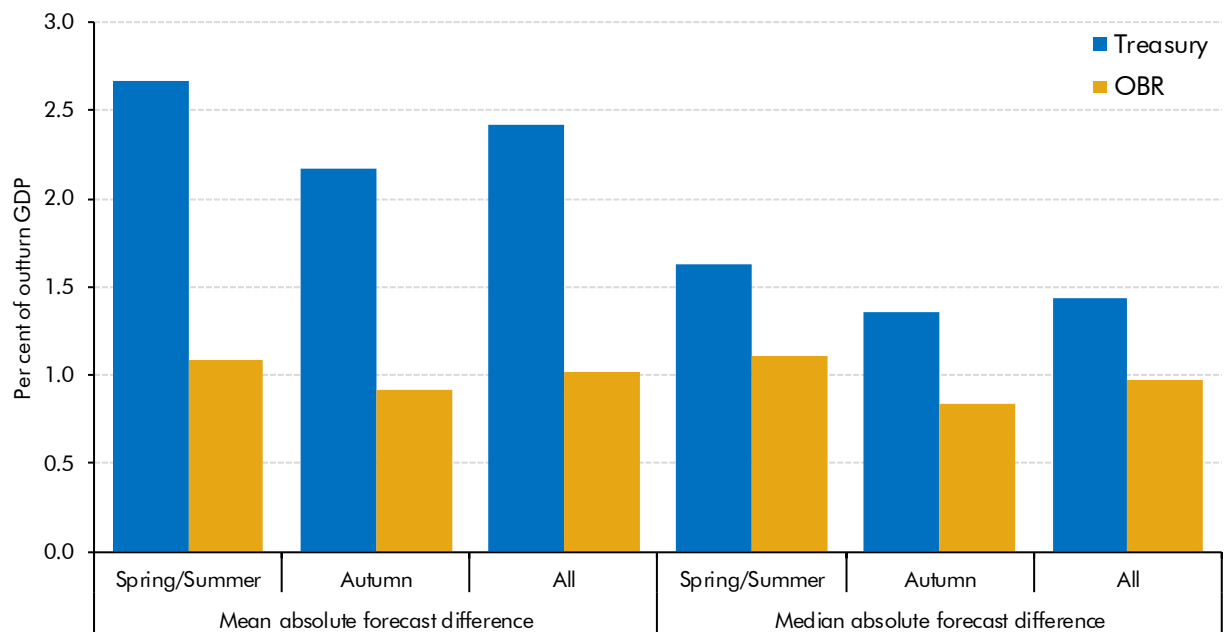
- 1.18 In Annex B we compare the absolute size of our forecast differences to the average across official forecasts made in the 20 years before the OBR was created, although any differences between our forecast record and that of the Treasury before us could be influenced by many factors beyond the control of the forecaster in question. And we are comparing forecasts over two periods with very different economic characteristics.
- 1.19 We have so far produced 18 forecasts. This provides a reasonably large sample for comparison at shorter horizons, but the number of forecasts that we can compare against outturns at longer time horizons is still relatively small. And we have not yet had to forecast through a recession. This is typically when the largest differences arise, because the timing and depth of economic downturns are so hard to predict. To address this recession-related bias in the mean absolute forecast difference of past Treasury forecasts, we also compare OBR and Treasury median differences to permit a more like-for-like assessment.
- 1.20 For what it is worth, our economy forecasts have been significantly more accurate on average than those of the previous 20 years, based on the mean absolute forecast difference. But comparing the median absolute forecast differences shows that this is almost entirely down to recession years that represent outliers in the distribution of forecast differences. By contrast, our fiscal forecasts outperform the previous 20 years both on the mean and median comparisons. But the outperformance is greater for the mean, showing that the recession effect to some degree flatters this comparison too.

Chart 1.3: 3-year-ahead real GDP growth forecast differences



Source: HMTreasury, OBR

Chart 1.4: 3-year-ahead public sector net borrowing forecast differences



Source: HMTreasury, OBR

2 The economy

Introduction

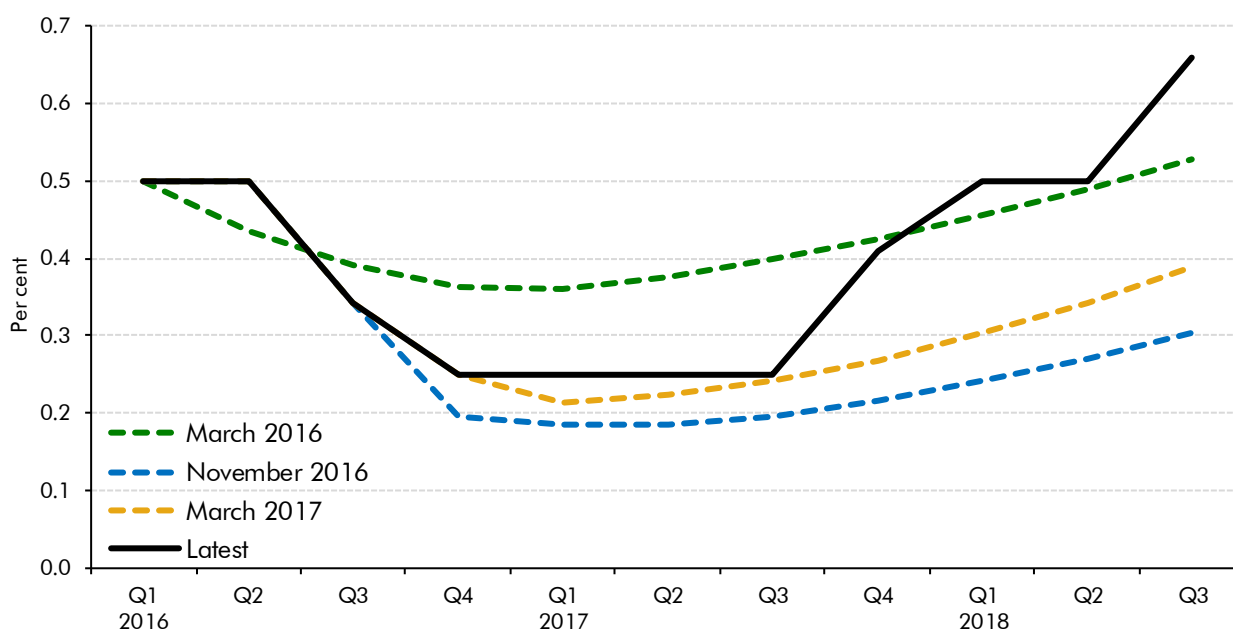
- 2.1 The focus of this year's *Forecast evaluation report (FER)* is the performance of our March 2016, November 2016 and March 2017 forecasts. In this chapter we compare our economy forecasts against the latest outturn data since the second quarter of 2016, to assess their performance since the vote to leave the EU. In particular we:
- document how **monetary policy and asset prices** have deviated from market expectations when our forecasts were made (from paragraph 2.2);
 - describe how the **growth and composition of real and nominal GDP** have evolved relative to our forecasts (from paragraph 2.5);
 - assess developments in **individual sectors of the economy** (from paragraph 2.16), including households, businesses, the government sector and the external sector; and
 - consider movements in **wages, employment and productivity** (from paragraph 2.32).

Forecast conditioning assumptions

Monetary policy

- 2.2 The Bank Rate assumptions on which our forecasts are conditioned are based on prevailing market expectations, derived from the price of interest rate swaps. Chart 2.1 shows that at the time of our March 2016 forecast, these implied a Bank Rate of 0.4 per cent until the first quarter of 2018, when it edged back up to 0.5 per cent. Bank Rate was then cut to 0.25 per cent in August 2016 following the vote to leave the EU. This was part of a package of measures that also included further purchases by the Bank of England of government bonds, corporate bonds and the provision of cheap funding to banks to ensure the rate cut was passed on to the interest rates paid by people and businesses. Our November 2016 and March 2017 forecasts were based on the expectation that Bank Rate would remain close to this level until early 2019. Bank Rate has in fact risen earlier than that, with the Monetary Policy Committee (MPC) lifting Bank Rate to 0.75 per cent in August 2018. This reflected the MPC's judgement that economic slack was limited and that the tight labour market would raise domestic cost pressures.

Chart 2.1: Successive market-based projections for Bank Rate



Source: Bank of England, OBR

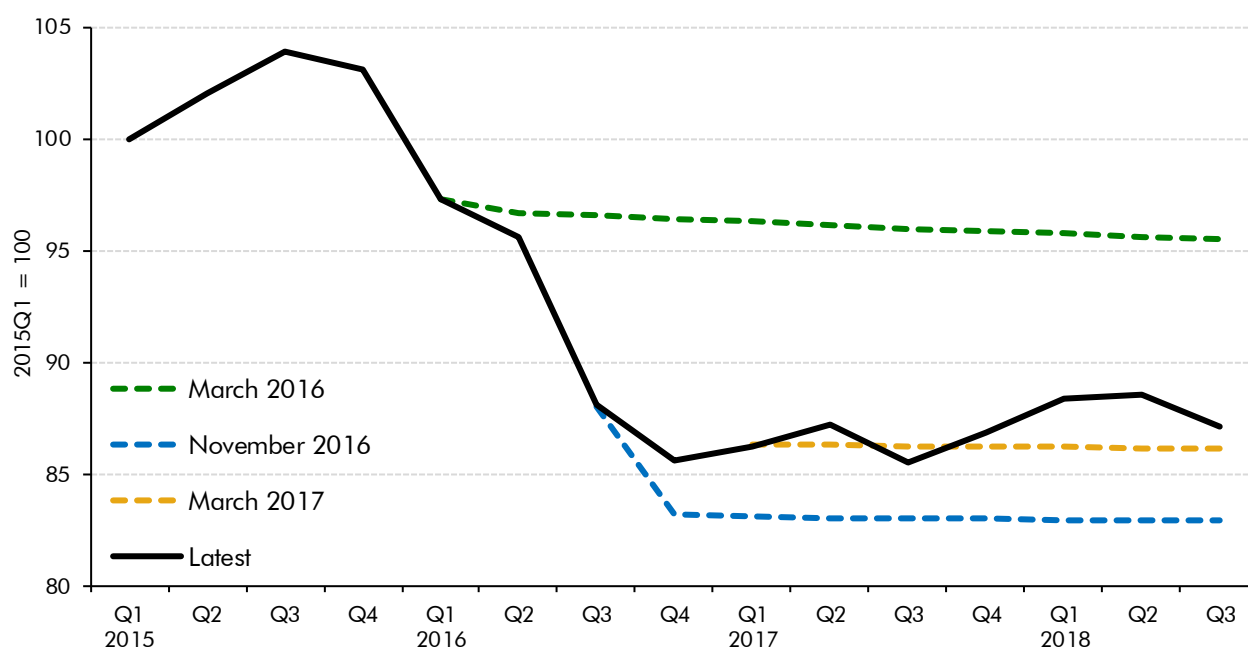
Other conditioning assumptions

2.3 Our economy forecasts are conditioned on several other market-derived assumptions, including oil and equity prices, and government bond yields. Table 2.1 compares our March 2016, November 2016 and March 2017 assumptions to subsequent outturns for the third quarter of 2018:

- The sterling effective **exchange rate** index (ERI) started depreciating in late 2015, dropping substantially after the vote to leave the EU in June 2016. By the third quarter of 2016 it had fallen 15 per cent from that peak and has remained relatively stable since. As a result, the exchange rate has been much weaker than the assumption underpinning our March 2016 forecast, but broadly in line with the assumptions underpinning the two post-referendum forecasts (Chart 2.2).
- **Sterling oil prices** rose from £24 per barrel at the start of 2016 to £58 in the third quarter of 2018, the highest since mid-2014, although they have since fallen back somewhat, averaging £52 in November 2018 so far. The increase was smaller in dollar terms, but has been compounded in sterling terms by the fall in the exchange rate. The rise we have seen was not reflected in futures prices at the time of any of the three forecasts, so they all underestimated the oil price.
- **Gilt yields** have fallen below market expectations at the time of our March 2016 forecast, consistent with expectations of weaker UK output growth following Brexit. They have also been somewhat lower than assumed in the other two forecasts.

- We assume that **equity prices** grow in line with nominal GDP from their prevailing level at the time of each forecast. In the event, equity prices rose significantly in the initial post-referendum period as the fall in the value of the pound boosted the sterling-denominated profits of multinational corporations listed on the FTSE. Our March 2016 assumption therefore significantly underestimated equity prices, whereas our November 2016 and March 2017 assumptions were closer to the outturn.

Chart 2.2: Sterling effective exchange rate assumptions



Source: Bank of England, Bloomberg, OBR

Table 2.1: Conditioning assumptions for 2018Q3

	Oil price (£ per barrel)	Equity prices (FTSE All-share)	Gilt rate (per cent)	ERI exchange rate (index)
March 2016 forecast	30.7	3597	2.0	85.4
November 2016 forecast	45.9	4031	2.0	74.2
March 2017 forecast	44.4	4122	1.6	77.0
2018 Q3 average	58.2	4173	1.5	77.9
Difference ¹				
March 2016	89.7	16.0	-0.5	-8.8
November 2016	26.7	3.5	-0.3	5.1
March 2017	30.9	1.2	-0.1	1.1

¹ Per cent difference except gilt rate in percentage points.

2.4 These conditioning assumptions are important determinants of our fiscal forecasts. For example, the sterling exchange rate and oil prices directly affect UK oil and gas revenues, while gilt yields affect debt interest spending. These assumptions also affect other economic determinants of our fiscal forecasts. For example, the exchange rate and oil prices affect inflation, which in turn feeds into the uprating of tax thresholds, excise duties and benefits,

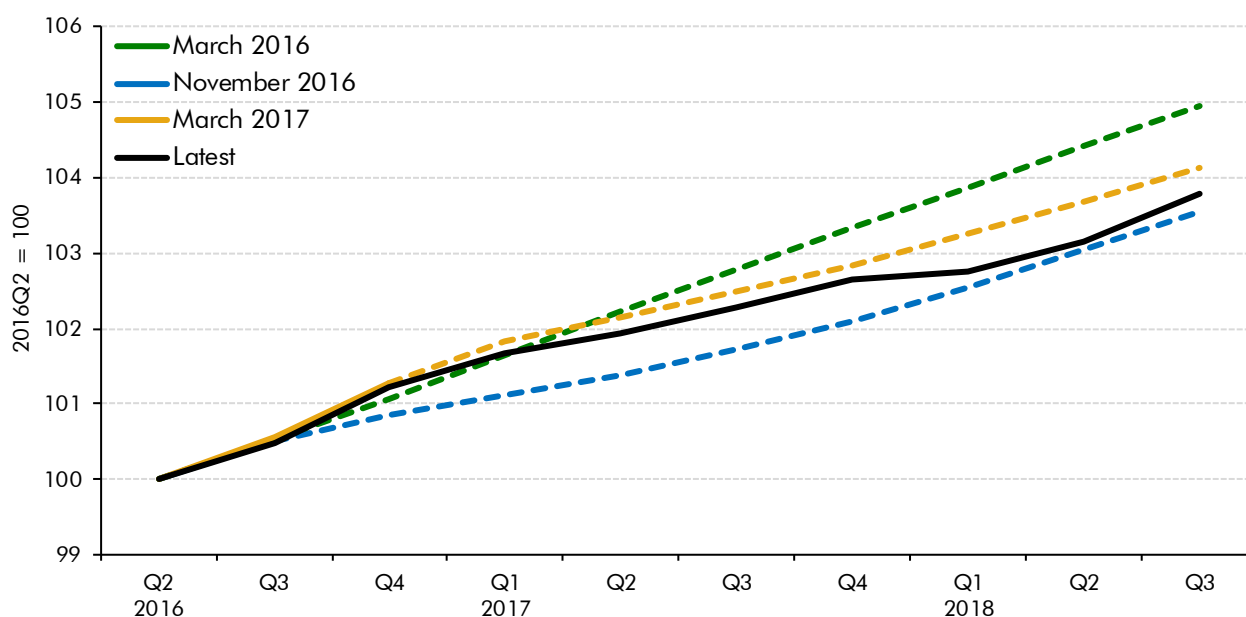
and debt interest spending on index-linked gilts. Relative to our March 2016 fiscal forecasts, movements in the exchange rate and oil prices were especially significant.

The growth and composition of GDP

Real GDP

2.5 Chart 2.3 shows that we revised our real GDP growth forecast lower after March 2016, partly as a result of applying our broad-brush judgements on the impact of the referendum vote. In our November 2016 forecast, the first one after the referendum, we expected the depreciation of sterling to squeeze household incomes by pushing up import prices and heightened uncertainty to lead to lower business investment. In our March 2017 forecast, we pushed back the expected slowdown on the basis of the data available at the time. Subsequent outturns have moved the path of GDP since the referendum broadly in line with our November 2016 forecast. But it is important to remember that the current vintage of data is a relatively early draft of economic history and that the ONS may make further significant revisions due to new information or the use of new methodologies. Box 2.1 discusses the pattern of revisions to GDP growth since 2010, which have often changed our interpretation of recent economic performance.

Chart 2.3: Real GDP outturns and forecasts



Note: Solid lines represent the outturn data that underpinned the forecasts at the time (the dashed lines).

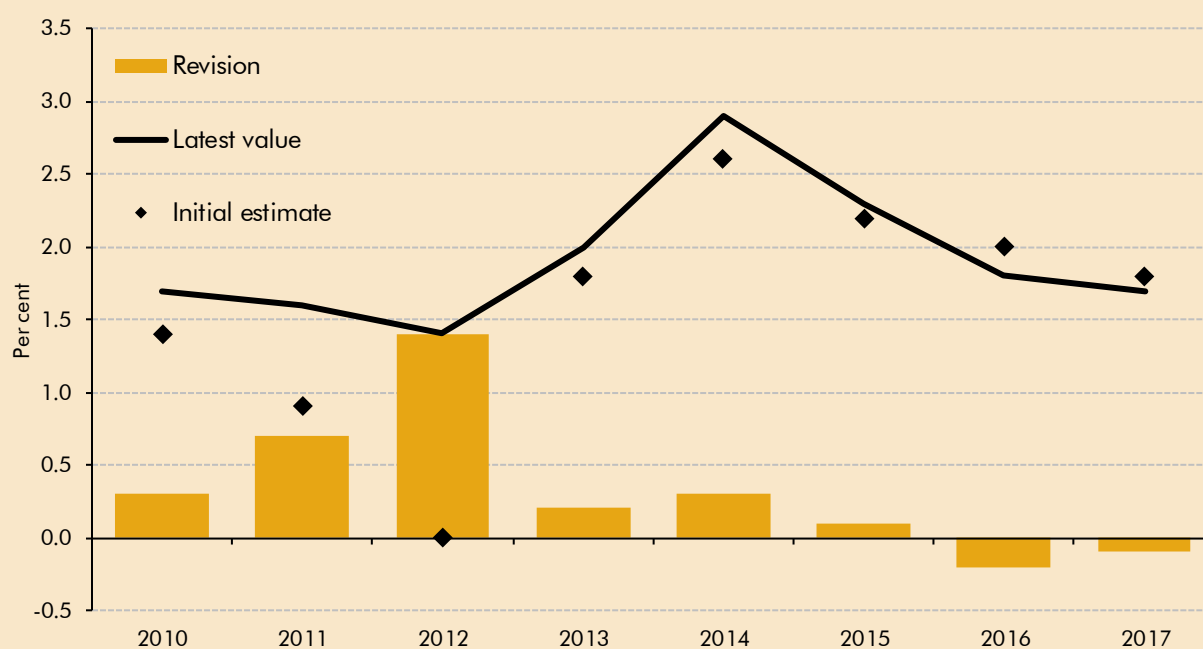
Source: ONS, OBR

Box 2.1: Rewriting history – output growth since 2010

The path of real GDP growth in the post-crisis period looks rather different today to the picture painted by earlier vintages of data. Growth in 2012 is now recorded at 1.4 per cent according to the latest data, whereas the first estimate suggested that GDP in that year had flatlined. At the time, there was concern that the UK was about to enter a ‘triple-dip’ recession in 2012, but subsequent revisions have removed even the ‘double-dip’ recession from the data.

Growth in each quarter from late 2011 to early 2013 has been revised up since the first estimate, the first time six consecutive quarters have been revised in the same direction since 1999. The largest revision was to the first quarter of 2012, where the first estimate of a 0.2 per cent drop in GDP has been revised up to an expansion of 0.6 per cent. This is the largest revision to a quarterly growth rate since 2009, while the revision to the annual growth rate in 2012 is the largest since 1992.

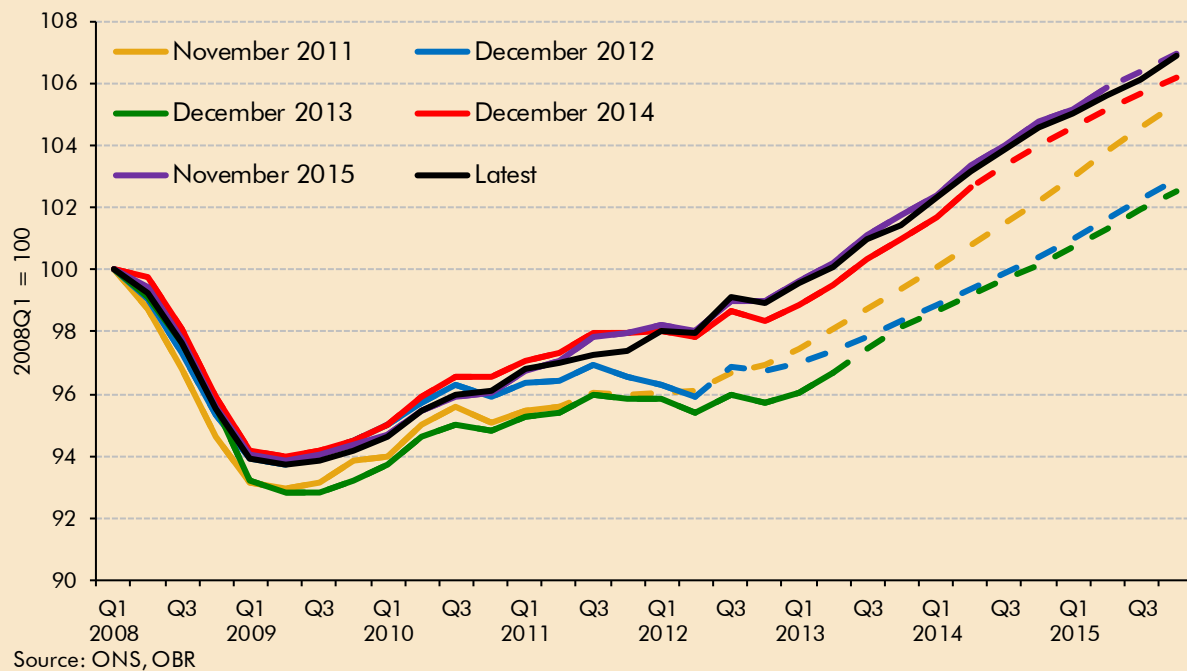
Chart A: Revisions to annual GDP growth



Source: ONS, OBR

The weakness in the early vintages of data inevitably affected our forecast judgements around that time. In our December 2012 forecast, for example, ONS data had shown three consecutive quarters of contraction from late 2011 to mid-2012. Chart B shows that our forecast was consequently more pessimistic than in previous *Economic and fiscal outlooks* – it appeared at the time that our November 2011 forecast had been too optimistic, although subsequent data revisions reversed that conclusion.

Chart B: Forecasts and outturns for real GDP

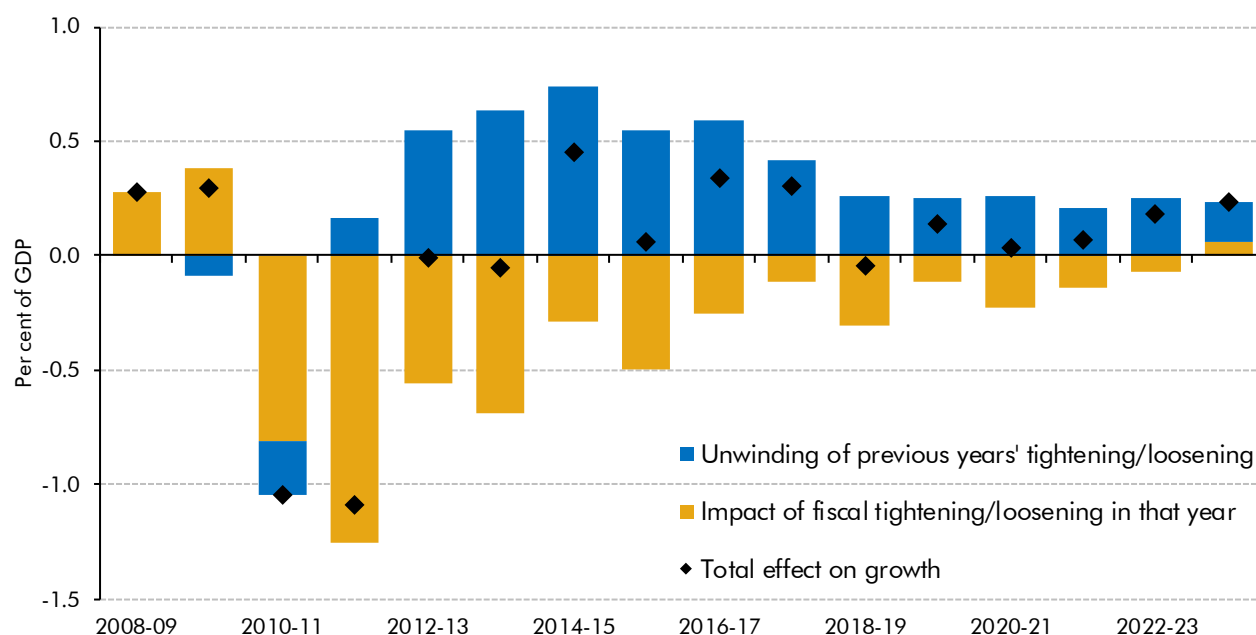


Fiscal policy and GDP growth

- 2.6** To assess the impact of fiscal policy on GDP growth, we can combine the Institute for Fiscal Studies (IFS) measures-based estimates of the size of the fiscal consolidation with our view of fiscal multipliers. These multipliers imply that a discretionary tightening of 1 per cent of GDP would reduce output by between 1 per cent (in the case of cuts to capital spending) and 0.3 per cent (for income tax and NICs increases) in the first instance, with the impact unwinding over time such that ultimately fiscal consolidation does not reduce demand in the long term.
- 2.7** Chart 2.4 shows the impact of discretionary fiscal policy on GDP growth in each year between 2008-09 and 2023-24 on the basis of the latest IFS estimates. They suggest that fiscal policy increased GDP growth in 2017-18 by 0.3 percentage points, as the -0.1 percentage point effect of new consolidation in the year is more than offset by the +0.4 percentage point effect of previous years' consolidation effects unwinding. The effect of fiscal policy on GDP growth is expected to be neutral in 2018-19 and positive in 2019-20.¹

¹ These estimates assume that the multipliers taper from implementation rather than announcement. Since our July 2015 forecast we have assumed that multipliers taper from announcement when assessing the impact of future discretionary fiscal policy changes on the economic forecast. For further details see Box 3.2 of our July 2015 *Economic and fiscal outlook*.

Chart 2.4: Implied impacts of discretionary fiscal policy on GDP growth



Source: IFS, OBR

2.8 There remains much debate about whether the weakness of post-crisis GDP growth (even after the revisions described in Box 2.1) could reflect higher or more persistent multipliers than assumed in our forecasts, and therefore a greater drag from fiscal tightening than originally assumed. Our assessment has been that the differences between GDP growth outturns and our June 2010 forecast were more likely to have been accounted for by other factors – notably the euro-area crisis and its associated implications for confidence and credit availability.² Even if the fiscal multipliers were higher in the immediate post-crisis period, this may be less likely at the current juncture now that Bank Rate has risen above its effective lower bound, and is expected to rise further.

Nominal GDP

2.9 Public discussion of economic forecasts tends to focus on real GDP – the volume of goods and services produced in the economy. But the nominal or cash value is more important for the behaviour of the public finances. Tax receipts are driven by components of nominal GDP (for example, VAT is mainly driven by nominal consumer spending and income tax and NICs mainly by nominal compensation of employees). The share of GDP devoted to public spending is also more important in nominal terms, since a substantial fraction of that spending is set in multi-year cash plans (public services, grants, administration and capital spending) or linked to consumer price inflation (social security and public service pensions).

2.10 Nominal GDP growth has been stronger than we expected in our initial post-referendum forecasts. While real GDP growth has been close to our expectations, the GDP deflator – a whole economy measure of prices – has risen more than we forecast. Between the second quarter of 2016 and the third quarter of 2018, cumulative growth in nominal GDP was 1.1

² See Box 2.2 of our 2017 *Forecast evaluation report* for further discussion.

and 0.5 percentage points higher than our November 2016 and March 2017 forecasts, respectively.

The expenditure composition of GDP

- 2.11** The composition of GDP is also important for the public finances, since the effective tax rates on the different components of income and spending vary widely. So, in order to assess the differences between our forecasts and outturns for the budget deficit, it is helpful to examine how the different components of GDP have evolved.
- 2.12** Tables 2.2 to 2.4 below shows our forecasts for the expenditure components of GDP and compares them against the latest outturn data. The forecasts for these separate components are discussed in more detail from paragraph 2.16 onwards.

Table 2.2: Contributions to real GDP growth from 2016Q2 to 2018Q3

	Percentage points						GDP
	Private consumption	Business investment	Other private investment	Total government	Net trade	Stocks and statistical discrepancy	
March 2016 forecast	3.2	1.4	0.3	0.3	-0.3	0.0	5.0
November 2016 forecast	1.8	0.3	0.2	0.3	0.9	0.1	3.6
March 2017 forecast	2.1	0.4	0.6	0.5	0.3	0.2	4.1
Latest data	2.6	0.1	0.6	0.3	0.8	-0.5	3.8
Difference ¹							
March 2016	-0.6	-1.3	0.3	0.0	1.0	-0.5	-1.2
November 2016	0.8	-0.2	0.5	-0.1	-0.1	-0.6	0.2
March 2017	0.5	-0.3	0.1	-0.2	0.4	-0.7	-0.3

¹ Difference in unrounded numbers.

Table 2.3: Contributions to nominal GDP growth from 2016Q2 to 2018Q3

	Percentage points					GDP
	Private consumption	Private investment	Total government	Net trade	Stocks and statistical discrepancy	
March 2016 forecast	6.4	2.3	0.9	-0.2	0.2	9.6
November 2016 forecast	5.5	1.1	0.9	-0.4	0.2	7.3
March 2017 forecast	5.7	1.6	0.9	-0.2	0.0	7.9
Latest data	5.7	1.5	1.4	0.7	-0.9	8.4
Difference ¹						
March 2016	-0.7	-0.8	0.5	0.9	-1.1	-1.2
November 2016	0.3	0.4	0.5	1.1	-1.0	1.1
March 2017	0.0	-0.1	0.5	0.9	-0.9	0.5

¹ Difference in unrounded numbers.

Table 2.4: Growth in National Accounts deflators from 2016Q2 to 2018Q3

	Per cent						
	Private consumption	Private investment	Total government	Exports	Imports	Terms of trade	GDP
March 2016 forecast	4.7	3.5	2.7	3.7	3.6	0.1	4.4
November 2016 forecast	5.5	4.2	2.7	9.8	13.1	-2.9	3.6
March 2017 forecast	5.4	4.2	1.7	7.8	9.2	-1.4	3.7
Latest data	4.6	5.3	5.2	11.6	11.6	0.0	4.4
Difference ¹							
March 2016	-0.1	1.8	2.6	7.8	7.9	-0.1	0.0
November 2016	-0.9	1.2	2.5	1.8	-1.5	2.9	0.9
March 2017	-0.8	1.1	3.6	3.8	2.3	1.4	0.8

¹ Difference in unrounded numbers.

The income composition of GDP

- 2.13** In addition to breaking down changes in GDP across spending categories, we can also break them down across income categories. This is even more important for the public finances, given the amount of revenue raised from taxes on labour income and profits and because these components face different effective tax rates.
- 2.14** Table 2.5 shows differences between the three forecasts and the latest outturn data. Total employee compensation – wages and salaries plus employers’ social contributions – is the largest component, representing around half of total nominal GDP. According to the latest data, compensation of employees contributed 4.4 percentage points towards nominal GDP growth between the second quarter of 2016 and third quarter of 2018, slightly below our March 2016 forecast but above both our November 2016 and March 2017 forecasts.
- 2.15** Table 2.5 also shows a large contribution to GDP growth in March 2017 from the statistical discrepancy (the difference between the ONS headline measure of nominal GDP and the income measure). This statistical discrepancy was apparent in the quarterly outturn data available at the time of that forecast. Most of it was allocated to other components of GDP when the 2016 GDP figures were fully balanced in the 2018 *Blue Book*. The 2017 GDP figures will be fully balanced in the 2019 *Blue Book*, scheduled to be released in October 2019. As the income approach to measuring GDP shows weaker growth than the other two measures from the start of 2017, and data on most major tax receipt streams have been stronger than expected, this raises the possibility that GDP growth may be revised higher once the tax data are fully incorporated in the National Accounts (as discussed in Chapter 2 of our October 2018 *EFO*).

Table 2.5: Contributions to GDP income growth from 2016Q2 to 2018Q3

	Percentage points					
	Compensation of employees	Corporations' gross operating surplus	Other income	Taxes on products and production	GDP	Statistical discrepancy
March 2016 forecast	4.9	1.6	2.2	0.9	9.6	0.0
November 2016 forecast	3.2	1.6	-0.1	0.7	7.3	1.9
March 2017 forecast	3.7	1.6	-0.6	0.8	7.9	2.4
Latest data	4.4	1.8	0.7	0.9	8.4	0.6
Difference ¹						
March 2016	-0.4	0.2	-1.5	-0.1	-1.2	0.6
November 2016	1.3	0.2	0.8	0.2	1.1	-1.3
March 2017	0.8	0.2	1.3	0.0	0.5	-1.8

¹ Difference in unrounded numbers.

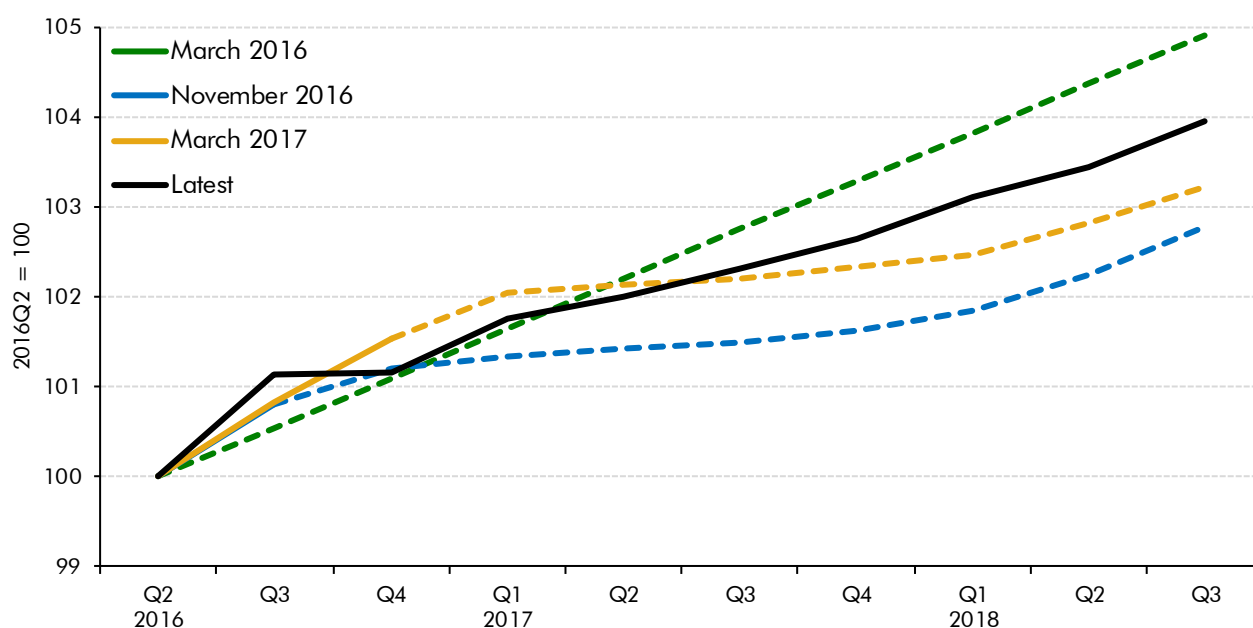
Developments by sector

Households

Private consumption

2.16 Relative to our post-referendum forecasts, private consumption has provided an upside surprise to GDP, growing 4.0 per cent between the second quarter of 2016 and the third quarter of 2018, but still below the 4.9 per cent we expected in our last forecast before the referendum (Chart 2.5).

Chart 2.5: Forecasts and outturns for private consumption



Source: ONS, OBR

Income, spending and saving

- 2.17** Wages and salaries growth since the second quarter of 2016 has been broadly in line with our March 2016 forecast, but its composition has been different, with weaker average earnings growth than expected offset by stronger employment growth. ‘Mixed income’ (largely a measure of self-employment earnings) has grown by less than we forecast. All else equal, that would be expected to lead to lower growth in total labour income, but we subtract households’ social contributions from that measure and these have also grown much less than expected, so labour income has grown faster than predicted. While that March 2016 forecast turned out to be too pessimistic relative to the latest outturns, our post-referendum forecasts predicted that labour income growth would be lower still, mainly because we revised down wages and salaries growth following the vote to leave the EU. This explains the larger forecast differences for labour income growth in these cases.
- 2.18** Disposable income growth has been lower than labour income growth, partly due to lower growth in income from social benefits as a result of falling unemployment, plus the cash freeze on most working-age benefits. Despite repeated downward revisions, we nevertheless still overestimated growth in disposable income in each forecast. The latest data imply that real disposable income has barely grown since the third quarter of 2016 (Table 2.6).

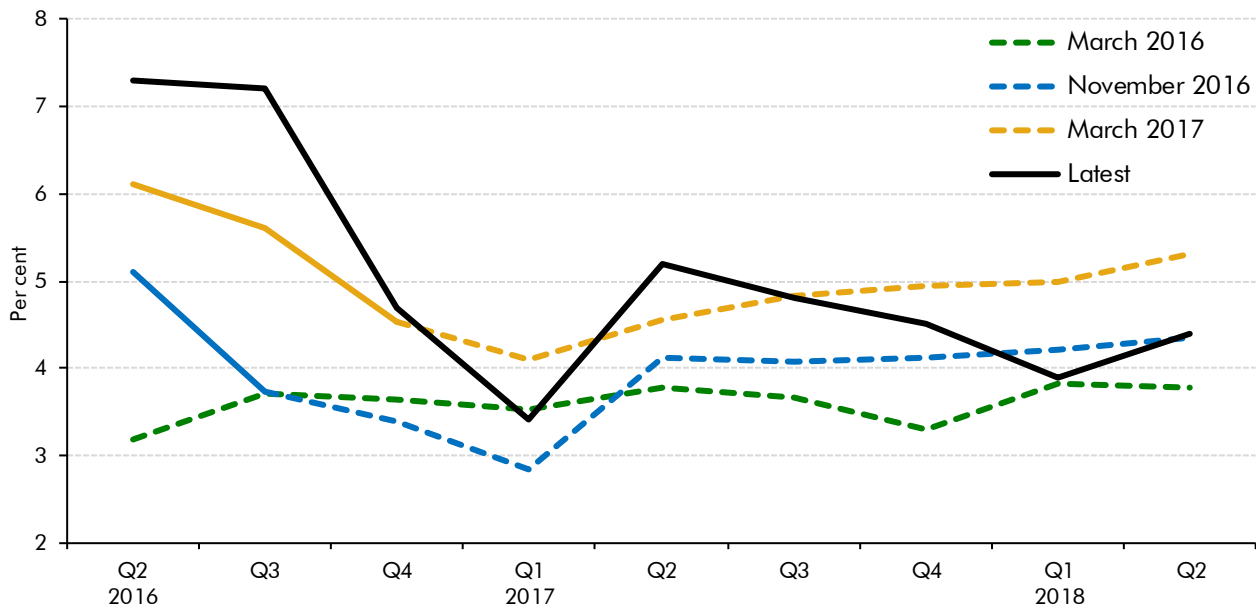
Table 2.6: Income and consumption growth from 2016Q2 to 2018Q2

	Per cent, unless otherwise stated					
	Nominal disposable income	Labour income	Nominal consumption	Increase in price level	Real disposable income	Real consumption
March 2016 forecast	8.0	6.8	8.7	4.1	3.7	4.4
November 2016 forecast	5.6	4.1	7.2	4.9	0.7	2.2
March 2017 forecast	5.1	4.3	7.8	4.9	0.3	2.8
Latest data	4.6	9.2	7.8	4.2	0.4	3.4
Difference ¹						
March 2016	-3.4	2.3	-0.9	0.1	-3.3	-0.9
November 2016	-1.0	5.0	0.6	-0.7	-0.3	1.2
March 2017	-0.5	4.9	0.0	-0.6	0.2	0.6

¹ Difference in unrounded numbers.

- 2.19** Nominal consumption growth has been close to our forecasts, but disposable income growth has been weaker than expected, so the household saving ratio fell by more than we forecast. However, its level is now actually higher than forecast due to large revisions in the 2017 *Blue Book* (as discussed in Box 2.1 of our 2017 *Forecast evaluation report*). It is the change in the saving ratio rather than its level that is more relevant for our growth forecasts.

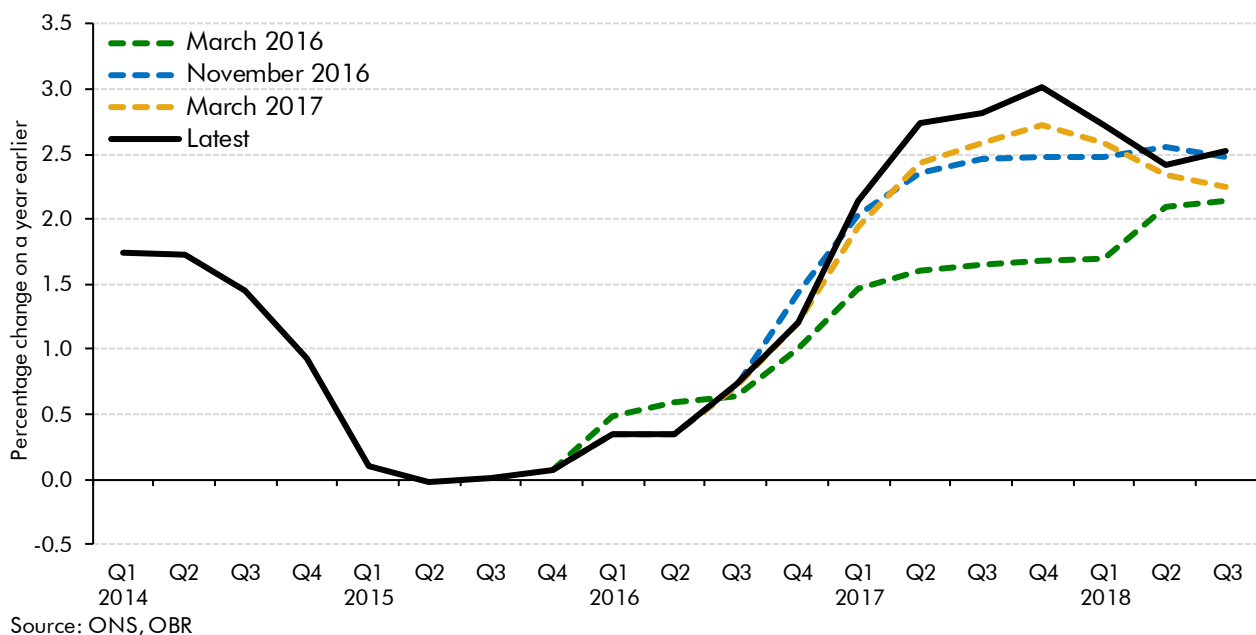
Chart 2.6: The household saving ratio



Consumer price inflation

2.20 In March 2016, we forecast that CPI inflation would rise steadily from 0.7 per cent in the fourth quarter of 2015 to 2.1 per cent by the third quarter of 2018. In the event, CPI inflation picked up more significantly, peaking at 3.0 per cent in the final quarter of 2017 and then easing to 2.5 per cent in the third quarter of 2018. That was predominantly due to the depreciation of sterling associated with the vote to leave the EU. In our post-referendum forecasts of November 2016 and March 2017, we raised our CPI inflation forecasts to take account of the depreciation, but outturns have continued to be slightly higher than expected, in part reflecting the unexpected rise in oil prices (Chart 2.7).

Chart 2.7: Forecasts and outturns for CPI



- 2.21** We forecast RPI inflation by adding a ‘wedge’ to our CPI forecast. In March 2016, we expected the wedge to average 0.8 percentage points in 2017, and increased this to 0.9 and 1.3 percentage points respectively in the following two forecasts. The latter revision predominantly reflected expectations of faster house price inflation, which is used as a proxy for housing depreciation in the RPI. But house price inflation has been weaker than we expected in March 2017, with the wedge in that year coming in at 0.9 percentage points.

Housing market

- 2.22** In June 2016, the ONS introduced a new house price index based on Land Registry data. Relative to the previous series, on which our March 2016 forecast was based, the new index generally shows lower post-crisis house price inflation, although the differences are relatively small. House price inflation has been lower than we expected over the period, particularly latterly (Table 2.7).
- 2.23** Property transactions have been quite volatile in recent years, largely reflecting changes in policy – most notably a surge in transactions in March 2016, as purchasers of buy-to-let properties and second homes brought forward transactions to avoid paying the 3 per cent stamp duty surcharge pre-announced in the 2015 Autumn Statement. We allowed for this in our March 2016 forecast, but significantly underestimated the amount of forestalling.³ In our November 2016 and March 2017 forecasts, we expected property transactions to grow rapidly from mid-2016 but the latest outturn data show slower growth.

Table 2.7: Housing market indicators from 2016Q2 to 2018Q3

	Per cent, unless otherwise stated	
	House price inflation	Growth in transactions
March 2016 forecast	11.0	3.0
November 2016 forecast	9.4	17.4
March 2017 forecast	11.7	21.8
Latest data	9.3	11.5
Difference ¹		
March 2016	-1.7	8.6
November 2016	-0.2	-5.9
March 2017	-2.4	-10.3

¹ Difference in unrounded numbers.

Private investment

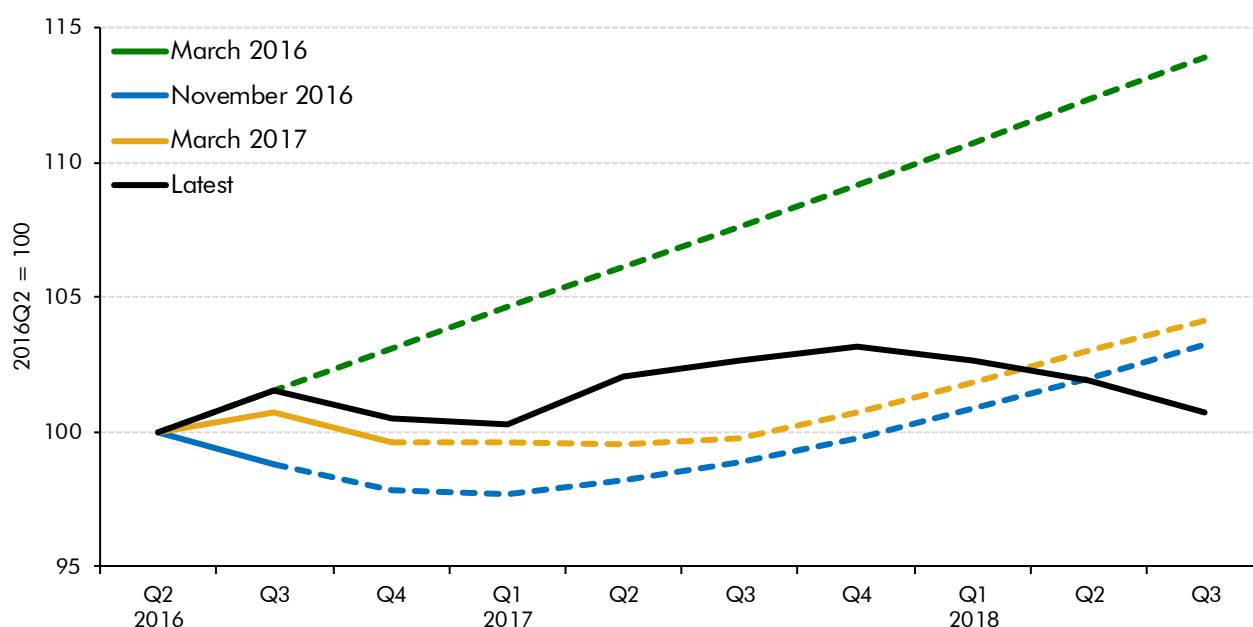
- 2.24** At the time of our March 2016 forecast, investment intentions surveys suggested that uncertainty about the EU referendum was already leading to some capital spending decisions being cancelled or delayed, which prompted us to revise our business investment forecast down. However, we still expected business investment to grow strongly and to rise as a share of GDP as normally happens in the later stages of a recovery, making a

³ For more information see: Mathews (2016): Working paper No.10: *Forestalling ahead of property tax changes*.

contribution of 1.4 percentage points to real GDP growth between the second quarter of 2016 and the third quarter of 2018.

2.25 In November 2016, we revised down our business investment forecast again, due to additional uncertainty created by the referendum result. This revision initially looked too large, with business investment reported to have been broadly flat through 2016 in the data available at the time of our March 2017 forecast. According to the latest data, however, business investment has been much weaker than in our last pre-referendum forecast in March 2016, and slightly weaker than in our first post-referendum forecast in November 2016, contributing only 0.1 percentage points to real GDP growth. This illustrates once again both the volatility and the susceptibility to revision of estimates of business investment.

Chart 2.8: Forecasts and outturns for business investment



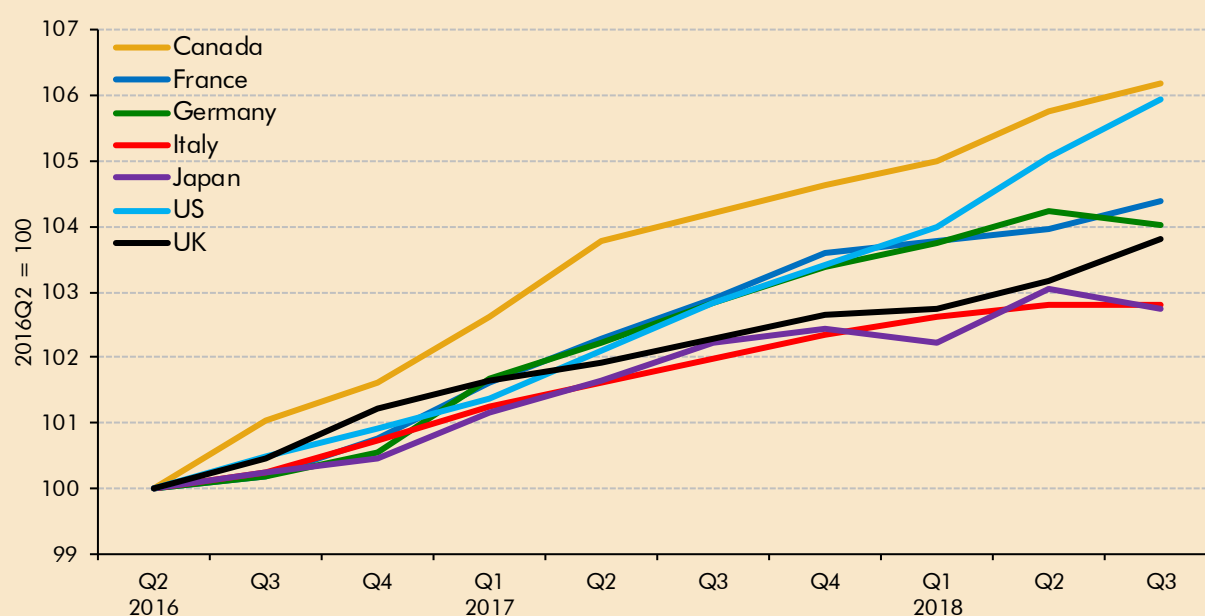
Source: ONS, OBR

2.26 Box 2.2 shows how the recent path of output and particularly investment since the vote to leave the EU compares against the rest of the G7 group of major advanced economies.

Box 2.2: G7 growth and investment since the EU referendum

UK real GDP has grown slightly faster than we expected in our initial post-referendum forecast in November 2016. This has meant that, within the G7, growth in the UK has been only slightly weaker than that in Germany and France and has actually outpaced that in Japan and Italy (Chart C). But UK growth has slowed since the vote, and has been much weaker than anticipated in our final pre-referendum forecast in March 2016 and growth in the US and Canada.

Chart C: Real GDP in the G7 economies

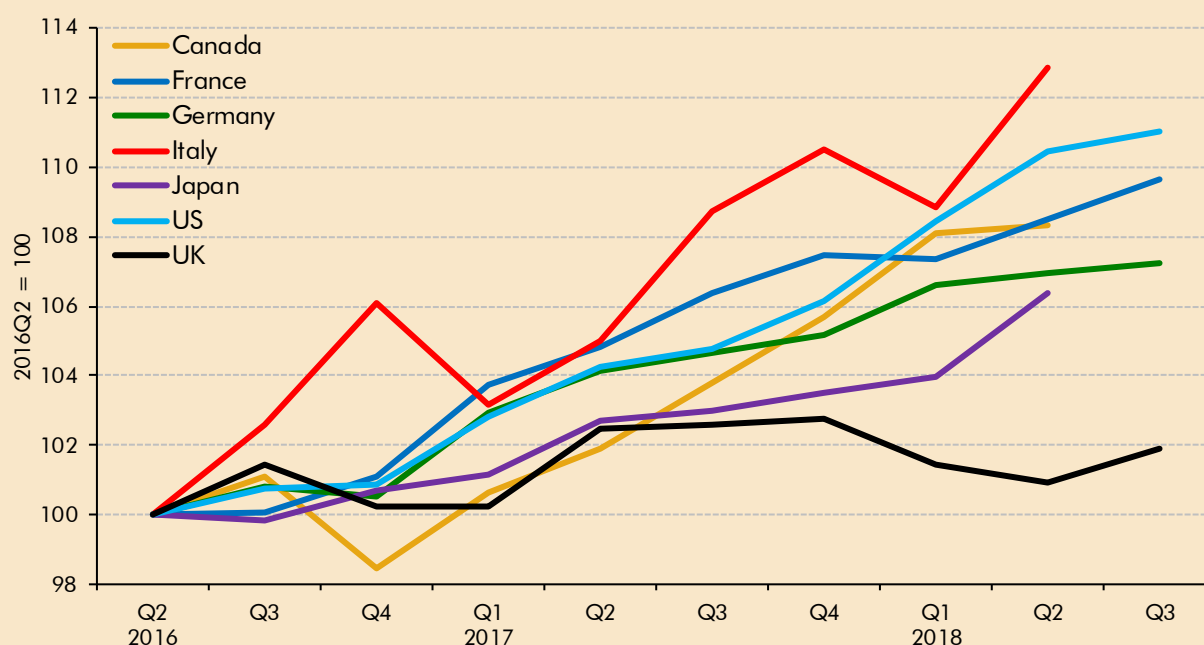


Note: For Canada, 2018Q3 data was unavailable so an average of July and August was used instead.
Source: OECD

The main drag on UK GDP growth since the referendum has been non-dwellings investment – a key driver of future productivity growth.^a It has grown by less than 2 per cent in the UK in the nine quarters since the EU referendum, compared to over 6 per cent in every other G7 economy (Chart D). In the nine quarters prior to the referendum, non-dwellings investment in the UK grew in line with the rest of the G7, with the total increase of 4.0 per cent, similar to the 3.9 per cent average in the rest of the G7 (excluding Canada where mining investment fell sharply as a result of the large drop in energy prices).

While it is difficult to know what portion of the recent underperformance of investment versus the rest of the G7 is due to the referendum result, Bank of England analysis of its Decision Markers Panel Survey suggests that nominal business investment growth has been 3 to 4 percentage points weaker than it otherwise would have been, specifically as a result of Brexit – due to both the expected effect of Brexit on future sales and the uncertainty created by the referendum result. Given the effect of the fall in the pound on the price of investment goods, the Bank's analysis suggests that the effect on real investment would be greater than on nominal investment.^b

Chart D: Non-dwellings investment in G7 economies



Source: OECD

The weakness in non-dwellings investment in the UK means that it has fallen as a share of GDP since the referendum, which is unusual at this stage of the economic cycle with apparently little spare capacity left in the economy. Other factors would also appear to make for a friendly investment environment, including low interest rates and improvements in exporter profitability due to the recent strength in the global economy and the fall in the pound. Recent IMF analysis estimates that, since the EU referendum, business investment has grown by 5.5 percentage points less than would be expected given these fundamental economic factors.^c

^a In this box, we concentrate on non-dwellings investment (which includes some government as well as business investment), due to the definitional difficulties in comparing business investment across countries.

^b Bank of England, Agents' summary of business conditions and results from the Decision Maker Panel Survey, 2018Q2.

^c Gornicka, IMF Working Paper: *Brexit Referendum and Business Investment in the UK*, October 2018.

2.27 Residential investment is the next biggest element of private investment. The latest data show that residential investment growth was significantly stronger than in our March 2016, November 2017 and March 2017 forecasts as investment on new builds and improvements to existing homes have risen rapidly.

Table 2.8: Growth in real private investment from 2016Q2 to 2018Q3

	Per cent		
	Business	Residential	Total
March 2016 forecast	13.9	6.9	11.3
November 2016 forecast	3.2	5.6	3.2
March 2017 forecast	4.1	6.5	6.9
Latest data	0.7	16.3	5.0
Difference ¹			
March 2016	-13.2	9.4	-6.3
November 2016	-2.5	10.7	1.8
March 2017	-3.5	9.8	-2.0

¹ Difference in unrounded numbers.

Government

2.28 Our forecasts for the economy and public finances incorporate the tax and spending plans set out by the Government at the time. In March 2016, we expected real government consumption to increase modestly between the second quarter of 2016 and the third quarter of 2018, although the latest data have shown even weaker growth. Nominal government investment has been higher than in all three forecasts being assessed. But most of the difference is explained by an 8.6 per cent quarterly jump recorded in the third quarter of 2018, which as a first estimate is highly susceptible to revision.

2.29 The arithmetic contribution of these government consumption and investment differences to our overall GDP forecast difference does not reflect all the ways fiscal policy affects growth or any offsetting factors (e.g. if faster growth in government spending were associated with faster growth in imports). We use ‘fiscal multipliers’ to assess the overall effect of changes in fiscal policy on growth (as shown in Chart 2.4). Changes in other elements of domestic spending can also have partially offsetting effects on imports.

Table 2.9: Growth in general government spending from 2016Q2 to 2018Q3

	Per cent					
	Consumption		Investment		Total	
	Real	Nominal	Real	Nominal	Real	Nominal
March 2016 forecast	1.2	4.0	1.8	3.9	1.3	4.0
November 2016 forecast	1.2	4.2	4.3	5.1	1.5	4.3
March 2017 forecast	2.0	3.9	4.4	4.4	2.3	4.0
Latest data	0.6	5.9	5.3	10.5	1.2	6.5
Difference ¹						
March 2016	-0.6	1.9	3.5	6.6	-0.1	2.5
November 2016	-0.6	1.7	1.0	5.5	-0.3	2.2
March 2017	-1.4	2.0	0.9	6.1	-1.1	2.5

¹ Difference in unrounded numbers.

The external sector and net trade

2.30 In March 2016, we forecast that net trade would slightly reduce GDP growth between the second quarter of 2016 and the third quarter of 2018. We revised up our expectations for net trade in November 2016 (so that it made a positive contribution), reflecting the large depreciation in the pound following the EU referendum, and the effect of weaker domestic demand on imports growth. The boost to net trade since the referendum has been broadly in line with our post-referendum forecasts.

Table 2.10: Growth in trade from 2016Q2 to 2018Q3

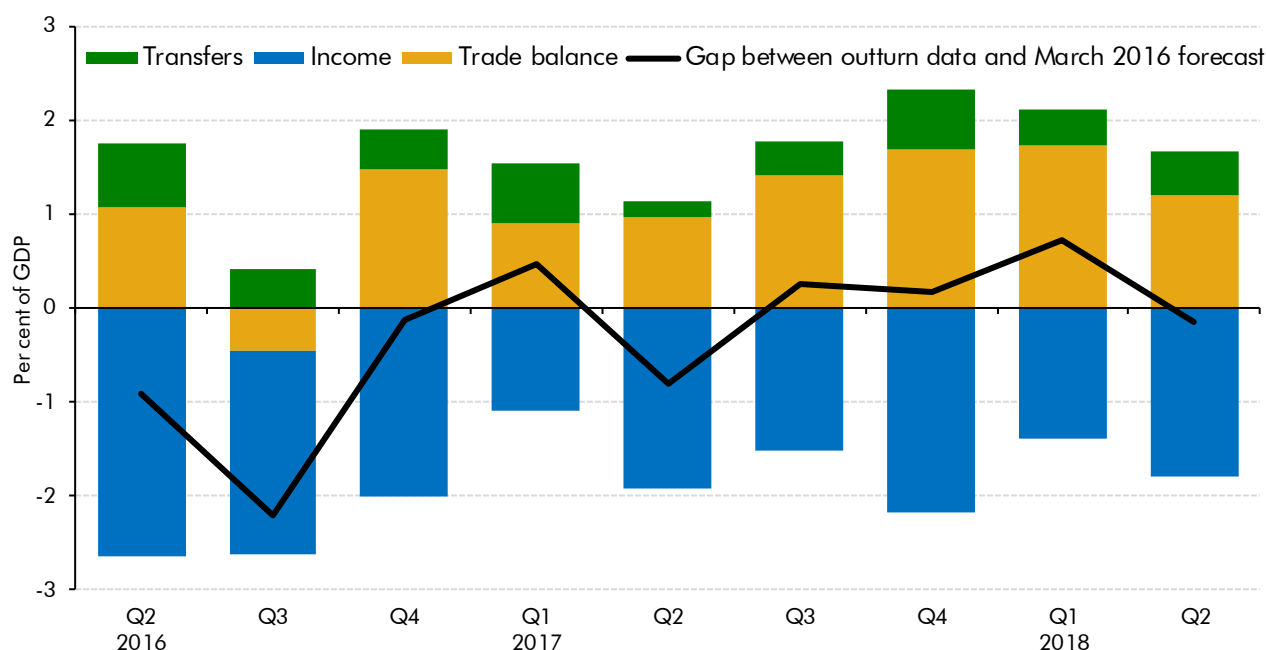
	Per cent, unless otherwise stated			
	Exports	Imports	Net trade contribution (ppts)	Trade balance in 2018Q3 ¹
March 2016 forecast	7.7	7.6	-0.3	-2.3
November 2016 forecast	6.8	3.5	0.9	-2.8
March 2017 forecast	6.2	4.8	0.3	-1.7
Latest data	7.7	4.9	0.8	-0.6
Difference ²				
March 2016	0.0	-2.7	1.0	1.8
November 2016	0.9	1.4	-0.1	2.3
March 2017	1.5	0.1	0.4	1.2

¹ Trade in nominal terms, as a per cent of GDP.

² Difference in unrounded numbers.

2.31 Chart 2.9 shows the difference in the UK's current account balance between the latest data and our March 2016 forecast. During 2016 the current account deficit was wider than we expected due to the weakness of the income balance. That income balance weakness has continued into 2017 and (so far) in 2018 but has been broadly offset by upside surprises to the trade balance and net transfers. The current account deficit in the latest quarter was 0.2 per cent of GDP wider than we forecast in March 2016, whereas it was 0.4 per cent of GDP narrower than in our November 2016 forecast, which was mainly due to a wider trade deficit in that forecast.

Chart 2.9: March 2016 current account forecast differences



Source: ONS, OBR

The labour market and productivity

- 2.32** Developments in the labour market are important for the public finances. The level and composition of labour income are both key determinants of tax receipts, while on a smaller scale unemployment influences welfare spending.
- 2.33** Population growth since the second quarter of 2016 has been broadly in line with the ONS's principal projection that we used as the basis for all the forecasts being evaluated. Participation rates have similarly been close to expectations.
- 2.34** Unemployment has consistently fallen faster than we predicted. In March 2016, we expected it to stabilise at 5.3 per cent in the medium term. In November 2016, we revised it up slightly in the near term, as slower output growth was expected to create more spare capacity in the economy – although we did not expect heightened uncertainty following the vote to leave the EU to lead to aggressive job-shedding. In March 2017, we revised our estimate of the equilibrium unemployment rate down to 5 per cent, given further falls in unemployment accompanied by limited evidence of rising wage pressures. As discussed in our October 2018 *EFO*, we have since revised it down still further.
- 2.35** That fall in unemployment has meant that employment has been higher than we expected. We also expected average hours worked to fall in each of those forecasts, as a pick-up in average earnings growth on the back of rising productivity led households to choose to work fewer hours in aggregate. In the event, they have remained broadly flat. The combined effect of unexpectedly high employment and no drop in average hours has meant total hours worked increased much more quickly than we expected.

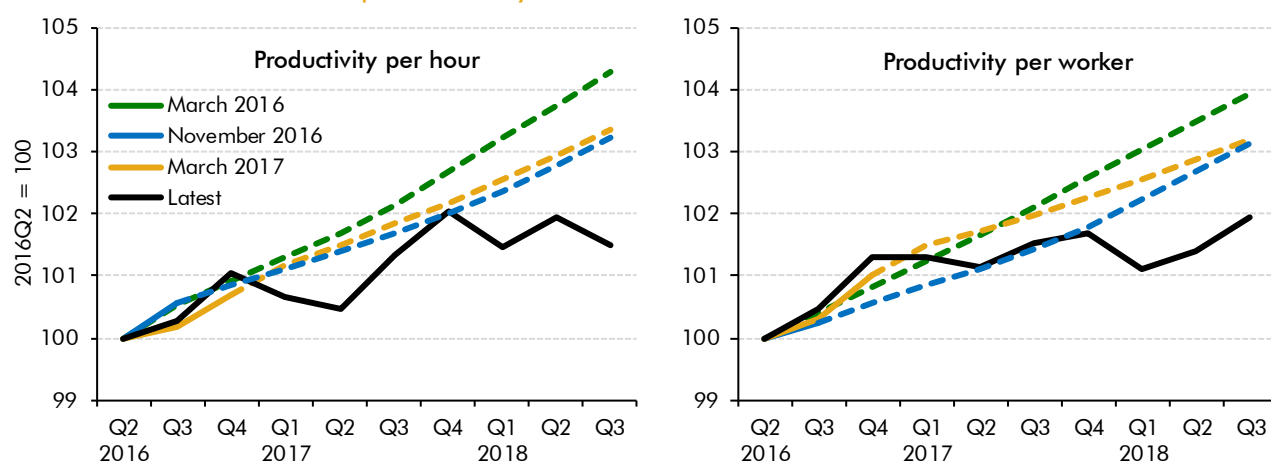
Table 2.11: Labour market indicators from 2016Q2 to 2018Q3

	Change in thousands, unless otherwise stated					
	Total employment	Unemployment (LFS)	Participation	Population	Average hours (per cent)	Total hours worked (per cent)
March 2016 forecast	340	103	443	712	-0.3	0.7
November 2016 forecast	151	203	354	714	-0.1	0.4
March 2017 forecast	327	88	414	724	-0.2	0.9
Latest data	674	-259	415	709	0.4	2.6
Difference ¹						
March 2016	334	-362	-28	-3	0.8	1.8
November 2016	523	-462	61	-5	0.5	2.2
March 2017	347	-347	1	-15	0.6	1.7
Memo: 2018Q3 levels	32,409	1,381	33,790	53,119	32.2	1,043

¹ Difference in unrounded numbers.

2.36 The fact that employment and average hours worked were stronger than expected, while real GDP growth has generally surprised to the downside, meant that productivity has fallen well short of our recent forecasts on both the output-per-hour and output-per-worker measures (Chart 2.10). While we made smaller downward revisions to trend output per hour growth in March 2016 and November 2016, it was this pattern that led us to make a larger downward revision to our trend productivity growth assumption in the November 2017 EFO.

Chart 2.10: Successive productivity forecasts and outturns



2.37 Rather than use the official ONS measure of average weekly earnings (AWE), our forecast uses an implicit measure constructed by dividing the National Accounts measure of wages and salaries by the number of employees. In the March 2016 forecast, we expected average earnings growth to pick up in 2017, reflecting both faster productivity growth and higher prices but, as in previous forecasts, wage growth has turned out lower than we expected. We revised average earnings growth down in November 2016 by an average of 0.4 percentage points a year over the forecast period, reflecting both lower productivity growth and greater labour market slack. The profile in our March 2017 forecast was very similar,

with a flatter path for the labour share broadly offsetting downward revisions to our forecasts for growth in productivity per worker and the GDP deflator.

- 2.38 The latest data show that earnings growth according to the National Accounts measure has been somewhat weaker than in our March 2016 forecast, but much closer to the November 2016 and March 2017 forecasts (Table 2.12). Productivity per worker has been considerably weaker than in even those later forecasts, implying that unit labour costs rose more than predicted. As already noted, these repeated disappointments regarding productivity growth were the prime motivation for the downward revision in November 2017 to our trend productivity growth assumption.

Table 2.12: Earnings, productivity and real wage growth from 2016Q2 to 2018Q2

	Per cent				
	Average earnings	Productivity per hour	Productivity per worker	Real product wage	Real consumption wage
March 2016 forecast	7.3	3.7	3.5	3.4	3.4
November 2016 forecast	5.1	2.8	2.7	1.9	0.1
March 2017 forecast	5.2	2.9	2.9	2.4	0.8
Latest data	5.0	1.9	1.4	1.3	0.7
Difference ¹					
March 2016	-2.3	-1.8	-2.1	-2.1	-2.6
November 2016	-0.1	-0.9	-1.3	-0.5	0.6
March 2017	-0.1	-1.0	-1.5	-1.1	0.0

¹ Difference in unrounded numbers.

3 The public finances

Introduction

3.1 This chapter:

- gives an **overview of our public sector net borrowing (PSNB) forecasts** since June 2010 (from paragraph 3.2);
- discusses our **March 2016, November 2016 and March 2017 PSNB forecasts for 2017-18** and the **receipts** (from paragraph 3.6) and **spending** (paragraph 3.30) forecasts that underpinned them; and
- assesses our forecasts for **public sector net debt** in 2017-18 (from paragraph 3.51).

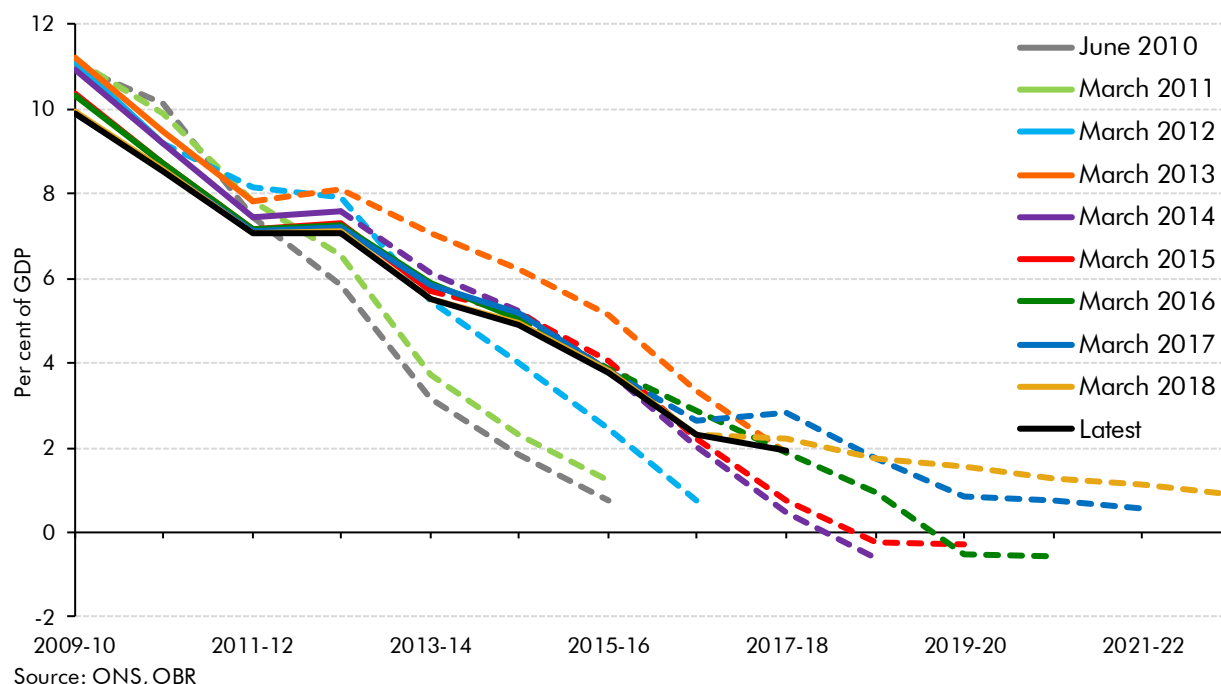
Forecasts since June 2010

3.2 The Office for National Statistics (ONS) has implemented significant changes in the definition of key public finance statistics in recent years. To improve comparability with the latest outturns, we have restated our earlier forecasts to reflect the incorporation of the 2010 European System of Accounts (ESA10) in September 2014 and various changes to the classification of housing associations. Annex A details how. (*Briefing paper No.7: Evaluating forecast accuracy* provides more information on our approach to restating forecasts.)

3.3 Chart 3.1 shows that the deficit has not fallen as quickly as our earlier forecasts predicted:

- PSNB fell by an average of 1.4 per cent of GDP a year in **2010-11 and 2011-12**, less than the 1.8 per cent average that we forecast in June 2010 (on a comparable basis);
- deficit reduction then slowed significantly in **2012-13**, with PSNB falling 0.5 per cent of GDP when the one-off transfer of Royal Mail's historic pension fund is excluded;
- PSNB fell by 1.1 per cent of GDP a year on average **from 2013-14 to 2016-17** (from a 2012-13 level that excludes the Royal Mail transfer), broadly in line with our forecasts from December 2014 onwards; and
- PSNB fell by 0.3 per cent of GDP in **2017-18** on the latest ONS estimates, less than our earlier forecasts predicted, but more than those since March 2017 did.

Chart 3.1: Restated forecasts and outturns for public sector net borrowing



2017-18 in detail

Public sector net borrowing

3.4 Table 3.1 sets out our March 2016, November 2016 and March 2017 forecast differences for public sector net borrowing (PSNB) in 2017-18. It shows that:

- Relative to our **March 2016 forecast**, borrowing was around £4½ billion higher than expected on a like-for-like basis (excluding the effect of several classification and methodological changes since the forecast was generated, such as the ONS change in the accounting treatment of corporate taxes). Total spending was £10½ billion higher, reflecting much higher local authority spending than expected as well as the impact of higher inflation on debt interest costs (see Box 3.1 for more detail). Higher receipts offset the bulk of this effect, coming in around £6 billion higher than expected – largely explained by the continued strength in onshore corporation tax receipts.
- Our **November 2016 forecast** for borrowing in 2017-18 was around £14½ billion too high, which is more than explained by our in-year forecast for 2016-17 being too high. As we set out in a recent working paper,¹ our over-forecast for borrowing in 2016-17 was driven by several factors (which had little to do with the judgements we made about the impact of the EU referendum). It was driven partly by unusually large revisions to the in-year receipts and spending data that underpinned our forecast, partly by an unusual end-loaded pattern of tax receipts in that year and partly by unexpectedly large underspending by central government departments. In contrast, the

¹ Taylor, J., and Sutton, A., *Working paper No.13: In-year fiscal forecasting and monitoring*, September 2018.

year-on-year fall in borrowing in 2017-18 was smaller than expected, largely driven by faster growth in local authority spending than we had assumed.

- Our **March 2017 forecast** was around £15 billion too high. Around a third of this difference reflects our in-year forecast for 2016-17 being too high (despite being made only one month before the end of that fiscal year). Subsequent ONS revisions explain the bulk of the in-year over-forecast (as we described in Box 3.1 of our 2017 *Forecast evaluation report (FER)*). The remainder of the difference is explained by higher receipts (partly reflecting the impact of higher employment on income tax and NICs receipts) and lower overall spending (reflecting a range of smaller factors).

3.5 One unforeseen economic development affecting our March 2016 forecast was the upside surprise in inflation in 2017-18 as a result of the fall in the exchange rate. Box 3.1 describes the effect of that surprise on receipts, spending and borrowing.

Table 3.1: 2017-18 receipts, spending and net borrowing forecasts

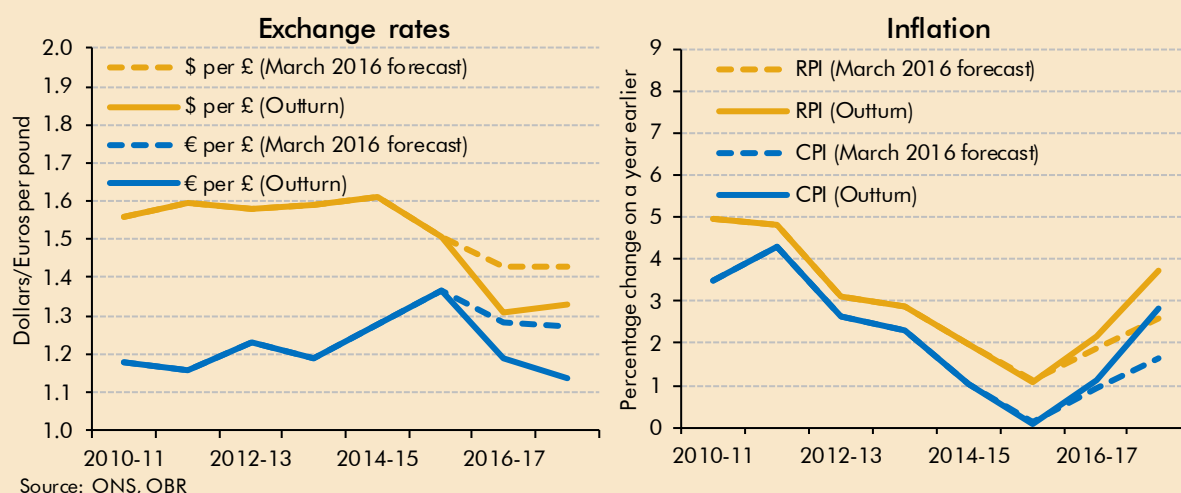
	Forecast ¹	Outturn	Difference	£ billion				
				of which:				Memo: Like-for-like difference
				Classification changes	Policy changes	Economic factors	Fiscal forecasting difference	
Borrowing (PSNB)								
March 2016	38.4	40.1	1.7	-2.8	1.4	2.2	0.9	4.5
November 2016	57.5	40.1	-17.5	-3.0	0.7	-3.2	-12.0	-14.4
March 2017	57.0	40.1	-16.9	-1.7	-2.4	-5.6	-7.3	-15.2
Receipts (PSCR)								
March 2016	744.0	753.8	9.7	3.6	1.2	3.1	1.9	6.1
November 2016	735.6	753.8	18.2	2.7	-0.2	5.2	10.5	15.6
March 2017	741.7	753.8	12.1	2.4	-0.1	3.9	5.9	9.7
Spending (TME)								
March 2016	782.4	793.8	11.4	0.9	2.5	5.3	2.7	10.6
November 2016	793.1	793.8	0.7	-0.4	0.6	2.0	-1.4	1.1
March 2017	798.6	793.8	-4.8	0.7	-2.5	-1.7	-1.4	-5.5

¹Forecasts have been restated to reflect changes to the classification of housing associations.

Box 3.1: Impact of post-referendum rise in inflation on the public finances

As set out in Chapter 2, the post-referendum fall in sterling helped push inflation higher than our pre-referendum forecast. Chart A shows that in 2017-18 RPI and CPI inflation were both 1.2 percentage points higher than in our March 2016 forecast.

Chart A: Exchange rates and inflation relative to our pre-referendum forecasts



As set out in our 2017 *Fiscal risks report*, the direct impact of an inflation shock on the public finances depends on many factors, including the extent to which it has the same effects on CPI and RPI inflation and whether any policy settings dampen pass-through to receipts or spending.

The direct effect of higher-than-expected RPI and CPI inflation would have increased borrowing in 2017-18 by around £3.9 billion relative to our March 2016 forecast on the policy settings that underpinned that forecast. That is more than explained by £4.9 billion higher debt interest spending. Index-linked gilts made up around a quarter of gilts in 2017-18 and since changes in RPI inflation feed through to accrued spending rapidly, the cost of servicing index-linked gilts increased to around a third of central government debt interest spending in 2017-18, up from a quarter in 2016-17. The direct effects of unexpectedly high inflation on welfare spending through uprating were much smaller. The continued freeze to most working-age benefits significantly dampens the effect of inflation surprises on welfare spending (with the effect feeding through instead to the real value of recipients' benefit income). And most of the remaining benefit rates that are still linked to inflation were raised in line with September 2016 CPI inflation, which was only marginally higher than forecast.

Partly offsetting its effect in increasing spending, higher inflation would also have boosted public sector receipts by around £1.2 billion relative to our March 2016 forecast. This largely reflects higher excise duty uprating (adding £0.7 billion to receipts). However, as is traditional, the Government decided in the November 2016 Autumn Statement to freeze fuel duty in 2017-18. After accounting for this policy change, the direct effect of higher inflation boosted borrowing by £4.5 billion in 2017-18 relative to our March 2016 forecast.

Receipts

- 3.6 Receipts were around £10 billion higher in 2017-18 than in our March 2016 forecast, with almost all this upside surprise explained by onshore corporation tax (CT). On a like-for-like basis (excluding the effect of subsequent changes to the basis of the public finances data, such as the 2017 change in the ONS accounting treatment for corporate taxes and the recent expanded coverage of VAT refunds) the overall receipts surplus against forecast was around £6 billion. The sources of this difference – which also include stronger-than-expected business rates and UK oil and gas revenues – are detailed below. They were partly offset by pay-as-you-earn (PAYE) income tax and stamp duties falling short of our forecasts.
- 3.7 The upside surprise was larger still against our November 2016 forecast, with overall receipts coming in around £18 billion higher than expected (or £15.6 billion on a like-for-like basis). This reflects broad-based strength across several taxes in the starting year of this forecast (2016-17), where all the major taxes performed better than we anticipated in the second half of that year. The onshore CT accounting treatment change was announced in October 2016, but only fully factored into our forecasts in March 2017. More information is available in Box 4.2 of our November 2016 *Economic and fiscal outlook (EFO)*.
- 3.8 Receipts were around £12 billion higher than our March 2017 forecast (£9.7 billion on a like-for-like basis). Around two-thirds of this reflects strength in income tax and NICs.

Table 3.2: 2017-18 receipts forecast differences

	£ billion						
	Forecast		March 2017	Outturn	Difference		
	March 2016	November 2016			March 2016	November 2016	March 2017
Income tax (gross of tax credits)	186.6	175.4	174.9	180.7	-5.9	5.3	5.8
of which:							
Pay as you earn (PAYE)	161.1	151.0	153.3	154.9	-6.2	3.9	1.6
Self assessment (SA)	28.0	27.3	24.8	28.3	0.3	1.0	3.5
National insurance contributions	133.4	129.1	130.3	132.5	-0.9	3.4	2.2
Value added tax	124.8	124.7	125.4	125.3	0.5	0.6	-0.1
Business rates	27.7	29.3	29.6	30.2	2.5	0.8	0.5
Council tax	31.4	31.8	32.1	32.1	0.7	0.3	0.1
Onshore corporation tax	45.9	48.9	52.7	53.9	8.0	5.0	1.2
UK oil and gas revenues	-1.0	0.9	0.9	1.2	2.2	0.4	0.3
Capital gains tax and inheritance tax	11.8	12.3	14.2	13.0	1.2	0.7	-1.2
Stamp duties ¹	17.4	15.5	16.4	16.5	-0.8	1.0	0.1
Fuel, alcohol and tobacco duties	48.5	48.2	48.1	48.2	-0.3	0.0	0.1
Interest and dividends ²	6.2	5.8	6.0	7.1	0.8	1.3	1.1
Other taxes	61.8	64.3	63.2	66.7	4.9	2.4	3.5
Other receipts ²	49.3	49.3	47.8	46.2	-3.1	-3.0	-1.6
Current receipts²	744.0	735.6	741.7	753.8	9.7	18.2	12.1
Effect of classification and methodological changes ³	3.6	2.7	2.4	-	-3.6	-2.7	-2.4
Like-for-like current receipts³	747.7	738.2	744.1	753.8	6.1	15.6	9.7

¹ Excludes Scottish LBTT.

² Restated for classification changes to housing associations.

³ Includes a number of classification and methodological changes that have been made by the ONS since the forecast was generated, including changes in the accounting treatment of corporate taxes and changes to VAT refunds.

Income tax and NICs

3.9 PAYE income tax and NICs receipts in 2017-18 fell short of our March 2016 forecast by £7.1 billion. Offsetting developments in the labour market explain £2.0 billion of the shortfall – growth in average earnings was weaker than expected (particularly in 2017-18), reducing receipts by around £5 billion, but unexpectedly strong employment growth partly offset this. Overall, growth in wages and salaries was only 0.1 percentage points weaker than forecast. Subsequent policy changes explain just £0.3 billion of the shortfall, largely thanks to the Autumn Statement 2016 measure to align the primary and secondary NICs thresholds. Of the £5.4 billion remaining fiscal forecasting difference, £1.3 billion reflects a weaker 2015-16 starting point than we anticipated (related to weaker growth in tax on bonuses than we had assumed). That leaves around £4 billion of the fiscal forecasting difference unaccounted for. This is likely to reflect changes in the income distribution. Analysis of HMRC's real-time information on total taxpayer earnings indicates that (excluding the top percentile) earnings in the tax-rich top half of the income distribution grew more slowly than the bottom half in both 2016-17 and 2017-18.

- 3.10** Receipts exceeded our November 2016 forecast by £7.3 billion. Labour market developments explain around half of this, with stronger-than-expected employment growth the main driver. The remaining surplus reflects the starting point – we underestimated PAYE and NICs receipts in 2016-17 by £4.5 billion. This in-year underestimate partly reflected stronger-than-expected bonuses in the second half of 2016-17.²
- 3.11** Relative to our March 2017 forecast, receipts outperformed by £3.8 billion, which is largely explained by economic factors. Employment and earnings growth were both stronger than expected, boosting receipts, but inflation was a little higher than expected, which reduces receipts as it is used to index PAYE and NICs thresholds and therefore reduces the proportion of incomes that are taxed at higher rates.
- 3.12** **Self-assessment (SA) income tax receipts** in 2017-18 exceeded our March 2016, November 2016 and March 2017 forecasts by progressively larger amounts. Both previous policy changes with uncertain effects and the assumptions factored into our underlying forecast model appear to explain the majority of the fiscal forecasting differences.
- 3.13** On the policy side, changes in our estimate of the effect of dividend taxation reforms announced in the July 2015 Budget explain some of the receipts surplus relative to forecast in 2017-18. This reform raised the basic, higher and additional dividend tax rates by 7.5 percentage points from April 2016 and brought in a tax-free dividend allowance of £5,000 from that point. As with other measures announced ahead of their implementation, we expected taxpayers to bring forward dividend income to before April 2016 to have it taxed at the lower existing rates. Since the tax is paid through SA with a lag, that boosted receipts in 2016-17 at the expense of those in 2017-18 and beyond.
- 3.14** It appears that we overestimated the drag on receipts from these reforms in 2017-18. This reflects several partly offsetting factors. First, although we subsequently revised up the level of dividend income that was brought forward to avoid the tax rise, the latest HMRC analysis suggests that taxpayers are unwinding this forestalling more slowly than we expected. This reduces the assumed drag on receipts in 2017-18 but increases it in subsequent years. Second, it appears that we underestimated the extent to which taxpayers shifting dividend income would apply for their next year's payments of tax on account (POA) to be reduced since they knew their dividend incomes would fall. This means that we assumed too much of the shortfall in 2016-17 was underlying weakness rather than a timing effect. We plan to review this component of the modelling further over the coming year.

² See Taylor, J., and Sutton, A., *Working paper No.13: In-year fiscal forecasting and monitoring*, September 2018, which provides more on the forecasting challenge associated with end-year bonus payments and the PAYE income tax and NICs receipts associated with them.

Table 3.3: 2017-18 income tax and NICs forecasts

	£ billion					
	Forecast	Outturn	Difference	of which:		
				Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast						
Income tax (gross of tax credits)	186.6	180.7	-5.9	0.2	-0.5	-5.6
of which:						
Pay as you earn (PAYE)	161.1	154.9	-6.2	0.1	-1.3	-5.0
Self assessment (SA)	28.0	28.3	0.3	0.0	0.9	-0.6
National insurance contributions	133.4	132.5	-0.9	0.2	-0.8	-0.4
November 2016 forecast						
Income tax (gross of tax credits)	175.4	180.7	5.3	0.1	1.7	3.6
of which:						
Pay as you earn (PAYE)	151.0	154.9	3.9	0.0	2.0	2.0
Self assessment (SA)	27.3	28.3	1.0	0.0	-0.3	1.2
National insurance contributions	129.1	132.5	3.4	0.0	1.7	1.7
March 2017 forecast						
Income tax (gross of tax credits)	174.9	180.7	5.8	0.0	1.8	4.1
of which:						
Pay as you earn (PAYE)	153.3	154.9	1.6	0.0	1.9	-0.3
Self assessment (SA)	24.8	28.3	3.5	0.0	-0.2	3.7
National insurance contributions	130.3	132.5	2.2	0.0	1.5	0.7

VAT

3.15 VAT receipts exceeded our March 2016 and November 2016 forecasts by £0.5 billion and £0.6 billion respectively, but fell short of our March 2017 forecast by £0.1 billion. This reflects several offsetting factors:

- Relative to our March 2016 forecast, **growth in household spending** was a little stronger than expected, reflecting a steeper drop in the saving ratio in 2016 and 2017 than anticipated at the time.
- The **composition of household spending** has been more favourable for VAT receipts than anticipated, increasing receipts by £0.5 billion relative to our March 2016 forecast. HMRC analysis suggests the 'standard-rated share' (SRS) of household spending has risen over the past two years, compared with our assumption at the time that it would be flat over that period. This mainly reflects strength in spending on durable goods. In our March 2017 forecast, we moved to a new SRS model that places more weight on trends in spending on durable goods.
- **VAT receipts were higher than expected in both 2015-16 and 2016-17**, the base years to which our forecasts for receipts growth were applied. Judgements are made in each forecast whether any unexplained shortfall or surplus in receipts should be pushed into future years. Any forecast-outturn differences from this starting point can be compounded across the forecast because we forecast growth from that base. In particular, the monthly pattern of receipts was more end-loaded in 2016-17 than in an average year.

- **Policy changes** also contributed to the March 2016 surplus, including the boost to receipts due to the new VAT flat rate scheme. This introduced a 16.5 per cent flat rate for registered businesses with smaller taxable turnovers.

3.16 Much of the remaining fiscal forecasting difference is explained by an increase in the implied VAT gap in 2017-18. HMRC analysis suggests that part of this rise reflects an increase in the stock of VAT debt, but the reasons for this are unclear.

Table 3.4: 2017-18 VAT forecasts

	£ billion					
	Forecast	Outturn	Difference	of which:		
				Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast	124.8	125.3	0.5	0.3	1.0	-0.9
November 2016 forecast	124.7	125.3	0.6	0.0	-0.8	1.4
March 2017 forecast	125.4	125.3	-0.1	0.0	0.5	-0.7

Onshore corporation tax

3.17 A simple comparison of the three forecasts being assessed in this *FER* with the latest outturns shows onshore corporation tax (CT) receipts exceeding our March 2016, November 2016 and March 2017 forecasts by £8.0, £5.0 and £1.2 billion respectively. On a like-for-like basis, the differences fall to £6.7, £3.7 and £1.2 billion, reflecting the change in how the ONS records CT receipts in the public finances, which was implemented between our November 2016 and March 2017 forecasts. Previously, receipts were recorded on a cash basis (when the tax is received by HMRC). Now they are 'time-shifted' back so that they are recorded closer to when the original activity creating the CT liability took place. This gives a better proxy for a true accruals basis. This change was fully factored into our forecasts from March 2017. More information was provided in Box 4.2 of our November 2016 *EFO*.

3.18 In order to compare our forecasts and the latest outturn data on a like-for-like basis, we have focused on our cash receipts forecasts and have presented this accounting treatment change separately from the other components of the fiscal forecasting difference. Several factors contributed to the unexpected strength in receipts:

- If we had known the outturns for the **economic determinants** affecting onshore CT receipts, these would have increased both our March 2016 and November 2016 forecasts by £0.7 billion and our March 2017 forecast by £0.3 billion. In particular, this reflects unexpected strength in both financial and non-financial profits growth.
- **Payment timing assumptions.** The pace at which companies pay off their liabilities for any given tax year is an important forecast assumption. Companies appear to have paid a higher proportion of their liabilities earlier than we expected, boosting cash receipts by £1.7 and £2.8 billion relative to our March 2016 and March 2017 forecasts respectively.

- **Capital allowances modelling.** Subsequent outturn data indicate that the value of capital allowances used by firms to reduce their tax liabilities has risen more slowly than we assumed, boosting receipts by over £1.5 billion relative to our March 2016 forecast and by a smaller amount relative to our March 2017 forecast. This has been a consistent source of fiscal forecasting difference in recent forecasts, so we plan to review this model over the coming year.
- A higher **2016-17 starting point** relative to our November 2016 forecast, when we had access to outturn data up to October 2016 and some administrative data for November 2016. By the time of our March 2017 forecast, our estimate for 2016-17 cash receipts had already been revised up £2.8 billion relative to the November 2016 forecast. On the latest estimates, it is £3.3 billion higher. Adjusting for that would have boosted our forecast for 2017-18 receipts by around £3.5 billion.³

3.19 These factors together explain most of the like-for-like surplus against the three forecasts being assessed. The remainder reflects several offsetting factors, such as a smaller effect from tax-motivated incorporations than we originally anticipated (reducing receipts) and movements in taxable income and deductions in 2017-18. HMRC will only publish data on these in autumn 2019, so we will not have a full picture of the 2017-18 tax year until then.

Table 3.5: 2017-18 Onshore corporation tax forecasts

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Accounting treatment change	Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast	45.9	53.9	8.0	1.3	0.1	0.7	5.9
November 2016 forecast	48.9	53.9	5.0	1.3	0.1	0.7	2.9
March 2017 forecast	52.7	53.9	1.2	0.0	0.0	0.3	0.8

3.20 The repeated upside surprises in onshore CT receipts have led some to ask whether cutting the main rate in recent years has had a less negative – or perhaps even a positive – effect on the overall tax take than the estimated costs factored into our forecasts. As Box 3.2 explains, this does not seem the most likely explanation. The buoyancy of CT receipts in part reflects other policy changes that have restricted the use of reliefs and deductions (thereby offsetting some of the impact of the main rate cuts on the *effective* rate of CT), as well as the partly tax-motivated growth in the number of people choosing to incorporate, which has boosted CT receipts at the expense of income tax and NICs. We continue to assume that receipts would be higher in a world in which the main rate of CT had not been cut.

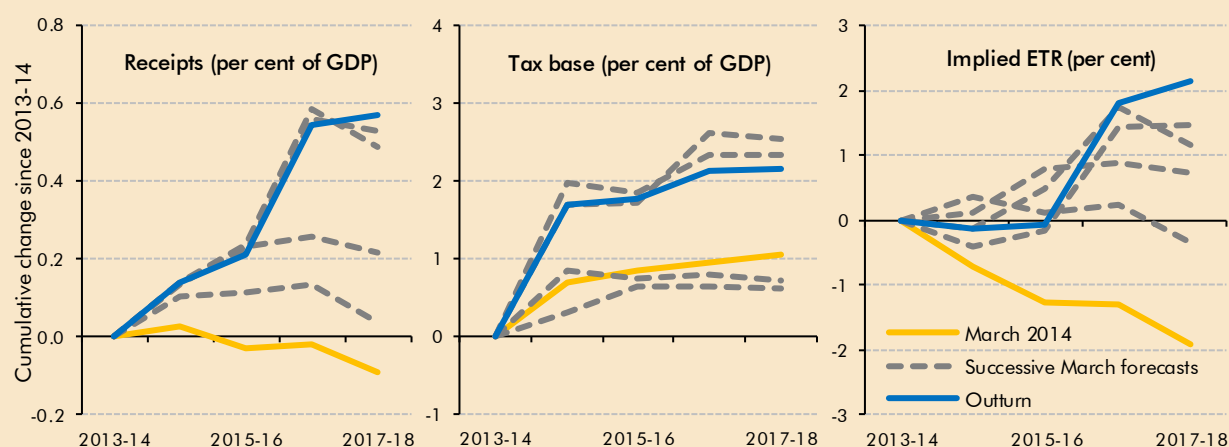
³ See Taylor, J., and Sutton, A., *Working paper No.13: In-year fiscal forecasting and monitoring*, September 2018 which discusses this more fully.

Box 3.2: Why have onshore CT receipts performed so well since 2013-14?

Onshore CT receipts have consistently outperformed our forecasts in recent years. Having grown by an average of 2.8 per cent a year over the four years to 2013-14, they have increased by a much stronger 10.1 per cent a year on average over the past four years (including the effect of the 8 percentage point surcharge on banking companies' profits from 2016-17 onwards). Our forecasts consistently missed the pace of this growth, particularly in 2016-17.

Receipts increased by almost 0.6 per cent of GDP between 2013-14 and 2017-18 (left-hand panel of Chart A), rather than falling slightly as we anticipated in our March 2014 forecast. This is attributable to stronger growth in the tax base (middle panel) and, particularly in recent years, a rising effective tax rate (ETR) (right-hand panel), despite the headline CT rate being cut from 23 per cent to 19 per cent over the period.^a

Chart B: Cumulative growth in onshore corporation tax since 2013-14



Source: HMRC, ONS, OBR

Note: Includes bank surcharge receipts from 2016-17 onwards. Forecasts prior to March 2017 have been restated to be consistent with the current ONS accounting treatment for corporate taxes (see Box 4.2 of our November 2016 EFO for more detail). The tax base is defined as the National Accounts measure of non-oil, non-financial gross trading profits plus the HMRC measure of financial company gross trading profits (excluding life assurance companies).

Why has the effective tax rate risen?

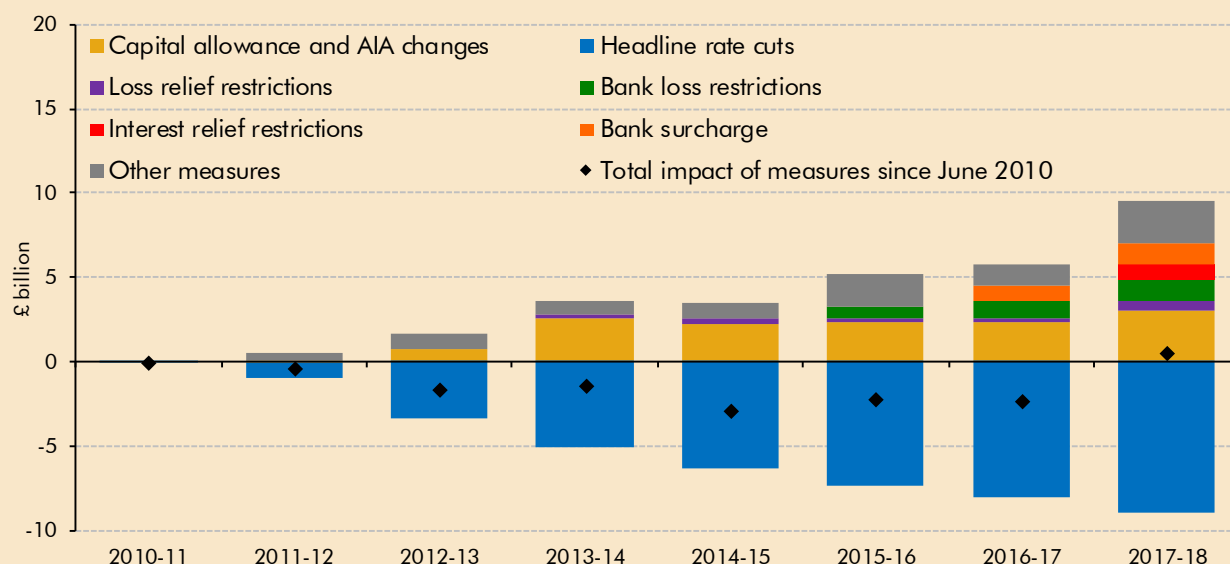
The effective tax rate (ETR) on total corporate income is much lower than the headline rate, because of the many deductions and reliefs firms can apply to their taxable income. From 2013-14 to 2017-18, a smaller proportion of income was offset through use of deductions and reliefs, causing the ETR to rise despite the four percentage point cut in the headline rate.

The largest driver of this change has been a smaller proportion of income offset by the use of loss reliefs – these allow firms to offset trading and other losses against their taxable income. (In some cases, losses can be offset against income in previous or future periods.) Group relief allows firms to share losses within a 'qualifying group' (e.g. across subsidiaries) in some circumstances. In 2013-14 around 33 per cent of gross taxable corporate income was offset for tax purposes via the use of loss reliefs – by 2016-17 this had fallen to 29 per cent.^b

The declining use of deductions as a share of corporate income partly reflects the continued strength of profit growth over the past six years, which is likely to have limited the stock of losses available to offset against income while also boosting income itself. It also partly reflects policy

measures announced since June 2010 that have restricted firms' ability to claim reliefs and deductions. Chart B shows that since June 2010, the Government has chosen to offset the bulk of the effect of headline CT rate cuts by restricting the use of reliefs and deductions, and by introducing the 8 percentage point bank surcharge. These estimates reflect the costings that were estimated at the time and so have not been updated to reflect new information.^c

Chart C: Cumulative impact of measures on onshore CT receipts since June 2010



Note: Excludes the July 2015 and March 2016 measures to bring forward payment dates for large companies. Includes bank surcharge receipts from 2016-17 onwards.

Source: OBR

Why has the tax base risen?

Growth in the tax base (gross taxable corporate income) has also boosted receipts. This partly reflects a roughly 30 per cent increase in the number of companies paying CT between 2013-14 and 2016-17. The vast majority of these new firms are paying between £1,000 and £50,000 in tax, which suggests that individuals incorporating (in many cases to reduce their personal tax liability) is a key driver – this boosts CT receipts at the expense of taxes on labour income.

Reductions in the *marginal* tax rate faced by firms can still be expected to be partially self-financing, thanks to firms' behavioural response to them, even if the direct impact on the average tax rate is offset by lower exemptions. HMRC and HM Treasury analysis in 2013 suggested that 45 to 60 per cent of the static effect of CT rate cuts would be recovered in the long term through the dynamic response of the economy.^d But this estimated response comes primarily from higher employment and wages, and therefore boosts income tax and NICs, rather than CT receipts directly. Our forecast does not account directly for these dynamic responses, in part because the effects are very long-run, and certainly beyond the horizon considered here.

^a Defined as the sum of the National Accounts measure of non-North Sea, non-financial gross trading profits plus the HMRC measure of financial company gross trading profits (excluding life assurance companies). This definition reflects the forecasts we publish in Table 4.1 of each *Economic and fiscal outlook*.

^b Excludes life assurance companies.

^c Given that the accounting treatment for corporate taxes changed in 2017, some of these estimates are on the previous accounting basis. We have removed the effect of measures that merely changed payment timing dates, which have no effect on the current accounting basis. It would not be possible to estimate the net impact of these changes more firmly without a full evaluation.

^d Analysis of the dynamic effects of Corporation Tax, HMRC and HM Treasury, 2013.

Capital taxes

- 3.21 Capital gains tax (CGT)** receipts in 2017-18 exceeded our March 2016 and November 2016 forecasts, but fell short of our March 2017 one. Since CGT is paid in the financial year following that in which disposals generating a liability take place, economic developments in 2016-17 (namely faster-than-expected growth in the FTSE all-share stock market index) explain much of this difference. Provisional HMRC analysis suggests that around two-thirds of CGT receipts in 2017-18 related to the sale of shares and equity. In previous years, around two-thirds of gains from equity disposals have come from unlisted shares, rather than the listed companies that comprise the FTSE index.
- 3.22 Inheritance tax** receipts were higher than each of our March 2016, November 2016 and March 2017 forecasts, by between £0.2 and £0.3 billion. This partly reflects rises in equity prices in 2017-18, as well as more deaths than expected in 2017-18 (592,000 versus the 566,000 assumed in each of the forecasts on the basis of ONS population projections).

Stamp taxes

- 3.23 Stamp duty land tax (SDLT)** receipts forecast differences were uneven across the three forecasts being assessed. Receipts fell short of our March 2016 forecast by £1.2 billion, reflecting a cooling in the property market as prices and transactions across both the residential and commercial sectors were weaker than expected. Receipts exceeded our November 2016 forecast by £0.8 billion. This mostly reflected the unexpected strength of SDLT receipts in 2016-17, the base year from which we forecast receipts growth in this forecast, although this was partly offset by the effect of subsequent policy measures (namely the delay in the reduction to the payment window and the introduction of first-time buyer's relief). Receipts were broadly in line with our March 2017 forecast.
- 3.24 Stamp duty on shares** receipts have exceeded our recent forecasts. This is mainly due to the higher-than-expected yield from the 'schemes of arrangement' policy measure announced in Autumn Statement 2014. This removed the option for companies to cancel and reissue shares during a takeover, rather than simply transferring the shares, thus avoiding a stamp duty liability. Several large takeovers have been affected. The remaining forecast differences across these forecasts reflect economic factors, including higher-than-expected equity prices.

Table 3.6: 2017-18 capital and stamp taxes forecasts

	£ billion					
	Forecast	Outturn	Difference	of which:		
				Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast						
Capital gains tax	6.9	7.8	0.9	0.0	1.0	-0.2
Inheritance tax	4.9	5.2	0.3	0.0	0.4	-0.1
Stamp duty land tax ¹	14.2	13.0	-1.2	-0.2	-1.2	0.3
Stamp duty on shares	3.2	3.5	0.4	0.0	0.5	-0.1
November 2016 forecast						
Capital gains tax	7.4	7.8	0.4	0.0	1.8	-1.4
Inheritance tax	4.9	5.2	0.3	0.0	0.1	0.2
Stamp duty land tax ¹	12.2	13.0	0.8	-0.2	-0.1	1.1
Stamp duty on shares	3.3	3.5	0.2	0.0	0.1	0.1
March 2017 forecast						
Capital gains tax	9.1	7.8	-1.3	0.0	0.5	-1.9
Inheritance tax	5.0	5.2	0.2	0.0	0.0	0.2
Stamp duty land tax ¹	13.1	13.0	0.0	-0.1	-0.8	0.9
Stamp duty on shares	3.4	3.5	0.2	0.0	0.0	0.1
¹ Excludes Scottish LBTT.						

¹ Excludes Scottish LBTT.

Fuel, alcohol and tobacco duties

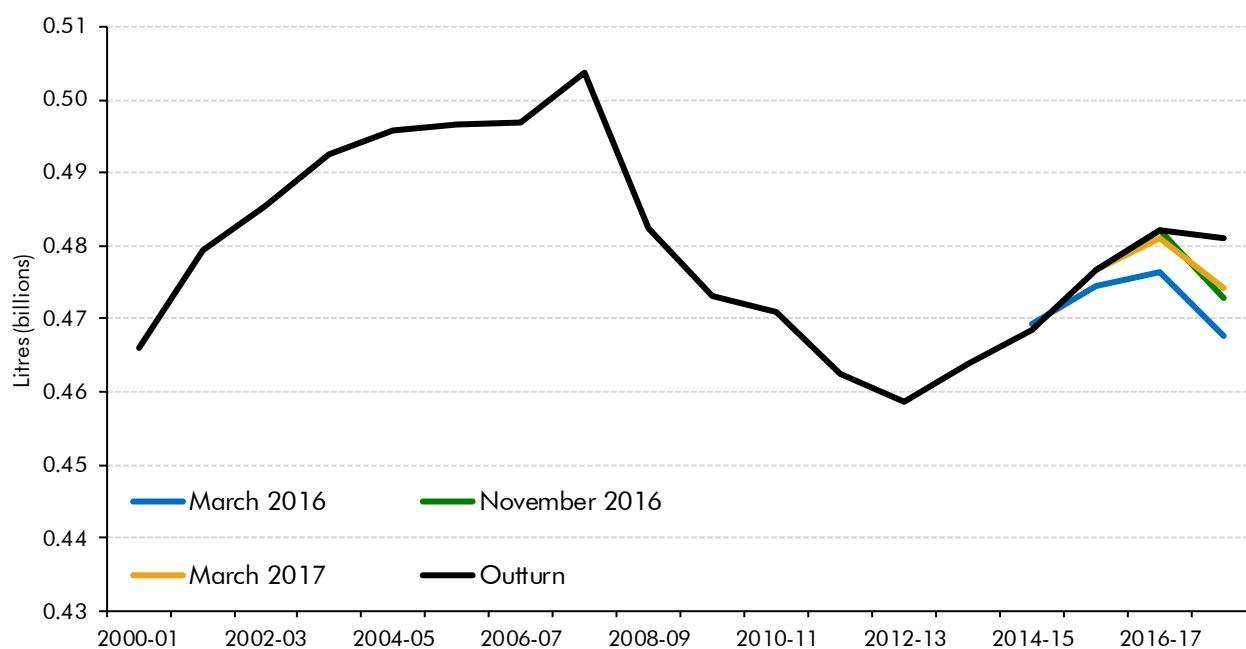
3.25 Fuel duty receipts exceeded all three forecasts, despite the traditional cancellation of the planned RPI-linked duty rise in April 2017, which was announced in Autumn Statement 2016. The outperformance of receipts is due to higher-than-expected demand for fuel – reflected in ‘clearances’ – as Chart 3.1 shows. This seems to be due to two main factors:

- **An increase in the distances travelled by light commercial vehicles (LCVs).** These have increased sharply in recent years, potentially reflecting deliveries of goods purchased online. The proportion of retail sales made online has almost doubled between 2011-12 and 2017-18.⁴ LCV distances travelled have risen by just under 23 per cent over this period, whereas the distances travelled by cars have risen by just 4.8 per cent.⁵
- **Reductions in the aggregate fuel economy of the vehicle stock.** Compositional changes in the vehicle stock have been a key driver of the overall improvement in aggregate fuel economy in recent decades. In particular, the trend away from petrol and towards diesel cars has boosted overall fuel economy. Given the reversal of that trend in recent new car sales, improvements in aggregate fuel economy are likely to have slowed in 2017-18. Indeed, based on the volume of fuel cleared with HMRC relative to the Department for Transport’s provisional estimate of distances travelled, aggregate fuel economy may actually have worsened in 2017-18.

⁴ ONS, *Retail Sales Index*, November 2018.

⁵ Department for Transport, *Provisional Road Traffic Estimates, Great Britain: April 2017 – March 2018*, July 2018.

Chart 3.2: Forecast and outturn fuel clearances



Source: HMRC, OBR

- 3.26** We have worked with analysts in HMRC and the Department for Transport in recent months to create a new model that better reflects the trends described above. We began using the new model to forecast receipts in our October 2018 *EFO*.
- 3.27** **Tobacco duties** were weaker than expected in 2017-18 relative to all three forecasts, as taxable consumption fell faster than expected. This downward trend has been driven in recent years by above-RPI inflation increases in the duty rate (making smoking costlier), increasingly negative public attitudes towards smoking, policy measures (such as the display ban) and the growing popularity of e-cigarettes – all of which reduce the tax base. The shortfall in 2017-18 may reflect a faster decline in underlying consumption as well as one-off effects relating to the introduction of several new regulations (such as restrictions on minimum pack sizes and the introduction of plain packaging). Given these trends, we revised our assumption regarding underlying falls in taxable tobacco consumption from 3 to 4 per cent a year in our November 2016 forecast. This reduced receipts by increasing amounts relative to our March 2016 forecast, reaching £0.5 billion a year by 2020-21.
- 3.28** **Alcohol duties** in 2017-18 came in relatively close to all three forecasts. After accounting for economic factors and the duty rate freeze announced in the 2017 Autumn Budget (which had a small in-year effect), much of the remaining difference is explained by weaker-than-assumed beer strength, which lowers the average duty paid. (Our forecasts assume that average beer strength remains constant, leaving the average duty paid broadly flat in real terms, excluding the impact of policy changes.)

Table 3.7: 2017-18 fuel, tobacco and alcohol duties forecasts

	£ billion					
	Forecast	Outturn	Difference	of which:		
				Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast						
Fuel duties	27.8	27.9	0.1	-0.8	0.0	1.0
Tobacco duties	9.3	8.8	-0.5	0.0	0.3	-0.9
Alcohol duties	11.5	11.6	0.1	0.0	0.2	-0.1
November 2016 forecast						
Fuel duties	27.4	27.9	0.5	0.0	0.1	0.4
Tobacco duties	9.2	8.8	-0.4	0.0	0.0	-0.5
Alcohol duties	11.6	11.6	0.0	0.0	0.0	0.0
March 2017 forecast						
Fuel duties	27.5	27.9	0.4	0.0	0.1	0.3
Tobacco duties	8.9	8.8	-0.1	0.0	0.0	-0.2
Alcohol duties	11.7	11.6	-0.1	0.0	0.0	-0.1

Other receipts

3.29 Other notable receipts forecast differences in 2017-18 include:

- **UK oil and gas revenues** picked up in 2017-18 after being close to zero in 2016-17, as net corporation tax payments exceeded repayments of petroleum revenue tax (PRT). This outperformed our March 2016 forecast in particular, where we expected repayments to exceed payments across corporation tax and PRT. The revenue forecast differences largely reflect higher oil and gas production and prices. The differences between expected and actual oil prices reflect the gyrations in the futures curves that we use to provide conditioning assumptions for the first two years of each forecast.
- Our forecasts for **VAT refunds** were far exceeded in outturn (by £2.1, £3.0 and £3.3 billion relative to our March 2016, November 2016 and March 2017 forecasts respectively). These refunds exist so that approved public sector organisations can recover the VAT incurred on some types of expenditure. In September 2018, the ONS revised the outturn data to include refunds to several public sector organisations that had previously been omitted, such as the BBC, the NHS, Police and Crime Commissioners and academies. This was worth £3.4 billion in 2017-18, explaining virtually all the differences between our forecasts and latest outturns.
- **Business rates** receipts were higher than expected (by £2.5, £0.8 and £0.5 billion versus our March 2016, November 2016 and March 2017 forecasts respectively). In October 2016, the ONS revised the outturn data higher for recent years. In addition, our March 2016 forecast assumed that the transitional relief scheme for the 2017 revaluation would have a net cost to the Exchequer as the previous two schemes had been. In our November 2016 forecast, with full details of the scheme, we assumed that it would be fiscally neutral (adding around £0.8 billion to receipts relative to our March 2016 assumption). Initial evidence suggests that the scheme will actually produce a net

gain to the Exchequer. These factors help to explain the significantly larger difference relative to our March 2016 forecast than to the subsequent forecasts.

- **Council tax** receipts were £0.7 billion higher than our March 2016 forecast, but only £0.3 and £0.1 billion above our November 2016 and March 2017 forecasts respectively.⁶ The sources of these forecast differences are discussed in the locally financed current spending section below.
- Relative to our March 2016 forecast, **insurance premium tax** receipts were boosted by £0.7 billion in 2017-18 by the Government's decision to raise the standard rate from 10 to 12 per cent in June 2017 (based on the yield estimated at the time).
- We include all **environmental levies** in our forecast where the ONS has announced classification decisions, but some are yet to appear in ONS outturn data. We treat these differences between forecast and outturn as classification effects in the summary tables shown in Annex A. The levies (such as feed-in tariffs) not yet included in the ONS data have a neutral effect on the public finances, increasing receipts and spending by the same amounts.
- **Scottish taxes** cover receipts from the land and buildings transaction tax (LBTT) and Scottish landfill tax that were introduced by the Scottish Parliament in April 2015. These came in close to forecast, with the tables in Annex A showing only a few differences large enough to round to £0.1 billion. We discuss our forecasts for Scottish taxes in detail in our *Devolved tax and spending forecasts* publication alongside each EFO. The Scottish Fiscal Commission – our equivalent in Scotland – is responsible for forecasting these taxes for the Scottish Government. It has published its own detailed evaluation of the Scottish Government's forecasts of these taxes for 2017-18.⁷
- **Interest and dividend receipts** exceeded our March 2016, November 2016 and March 2017 forecasts by £0.8, £1.3 and £1.1 billion respectively. Only a small proportion of these positive surprises reflects economic factors, particularly higher RPI inflation, which boosted the accrued interest on student loans. We plan to review the non-student loans elements of this model over the coming year.

Spending

3.30 In cash terms, our spending forecasts have been far more stable than our receipts forecasts – and the aggregate forecast differences have tended to be smaller. That in part reflects the fact that much of public spending is insulated from short-run economic fluctuations. Notable exceptions include:

⁶ Differences between council tax forecasts and outturns do not fully reconcile to differences in local authority council tax receipts because they are measured on a different basis.

⁷ *Forecast evaluation report: September 2018*, Scottish Fiscal Commission, 2018.

- **debt interest payments**, which are sensitive to changes in inflation, interest rates and the amount of gilts held in the Bank of England's Asset Purchase Facility (APF), which returns much of the interest received on them to the Exchequer; and
- **welfare spending**, which acts as an automatic stabiliser and is driven by the economic cycle.

3.31 Table 3.8 summarises the sources of spending forecast differences relative to our March 2016, November 2016 and March 2017 forecasts for 2017-18, restated to be consistent with the latest public sector finances treatment of housing associations. Abstracting from further classification changes:

- **Relative to our March 2016 forecast**, the £10.6 billion underestimate of spending is dominated by higher-than-forecast locally financed current expenditure and 'other capital expenditure'. The former reflected higher local authority spending financed by retained business rates (100 per cent retention pilots being the main contributor to this increase), while the latter reflected significantly higher local authority capital spending financed by prudential borrowing. Debt interest spending was also higher – largely because of higher RPI inflation – but this was mostly offset by lower current departmental spending (RDEL), reflecting more underspending than we had assumed.
- **Relative to our November 2016 forecast**, the relatively small £1.1 billion underestimate is the net result of various larger offsetting factors. The same factors affected the March 2016 forecast difference – higher-than-forecast spending on locally financed current expenditure, debt interest spending and other capital expenditure. These underestimates are partially offset by lower departmental current and capital (CDEL) spending, largely reflecting more RDEL underspending than we had assumed and policy changes that reduced CDEL limits. Welfare spending was also lower than forecast, mainly due to lower spending on tax credits (as claimants' incomes grew faster than we expected), more than offsetting higher spending on personal independence payments and employment and support allowance.
- **Relative to our March 2017 forecast**, the £5.5 billion overestimate again reflects various partly offsetting factors – many relative to the November 2016 forecast also feed through in this case. Higher spending on locally financed current expenditure (this time reflecting underestimates of several different smaller items) and other capital expenditure (again largely associated with higher spending financed by prudential borrowing) were this time more than offset by lower spending on RDEL, CDEL and welfare payments. EU transfers for 2017-18 were also significantly lower than forecast, largely as a result of the European Commission drawing forward a smaller amount of contributions into the first quarter of 2018 than the maximum permitted five months' worth that we had assumed in the forecast.

Table 3.8: 2017-18 spending forecast differences

	£ billion						
	Forecast			Outturn	Difference		
	March 2016	November 2016	March 2017		March 2016	November 2016	March 2017
PSCE in RDEL	291.0	290.4	291.8	288.6	-2.4	-1.7	-3.1
Locally financed current expenditure	43.3	44.3	46.6	48.7	5.4	4.4	2.0
Scottish Government's current expenditure	26.5	26.5	26.5	26.5	0.0	0.0	0.0
Welfare spending	219.2	221.2	221.1	218.8	-0.4	-2.4	-2.3
Net debt interest payments	38.6	38.0	41.5	41.5	2.9	3.5	0.0
Expenditure transfers to EU institutions	9.4	10.2	11.5	9.5	0.1	-0.6	-2.0
Net public service pension payments	12.1	12.1	12.1	11.8	-0.3	-0.3	-0.3
Other current expenditure	64.9	69.2	67.1	66.1	1.2	-3.1	-1.0
Current expenditure	705.1	711.8	718.3	711.5	6.4	-0.3	-6.8
PSGI in CDEL	45.0	47.2	46.6	44.3	-0.7	-2.9	-2.3
Other capital expenditure	32.2	34.1	33.7	38.0	5.8	3.9	4.2
Gross investment	77.2	81.3	80.3	82.3	5.0	1.0	1.9
Less depreciation	42.9	42.7	42.2	41.1	-1.9	-1.7	-1.1
Net investment	34.3	38.5	38.2	41.2	6.9	2.7	3.1
Total spending	782.4	793.1	798.6	793.8	11.4	0.7	-4.8
Effect of classification and methodological changes ¹	0.9	-0.4	0.7	0.0	-0.9	0.4	-0.7
Like-for-like current spending¹	783.3	792.7	799.3	793.8	10.6	1.1	-5.5

¹ Includes a number of classification and methodological changes that have been made by the ONS since the forecast was generated, including changes to VAT refunds.

Departmental expenditure limits (DELs)

- 3.32** The Government sets departmental current and capital spending budgets at Spending Reviews and adjusts them at subsequent fiscal events. These budgets are known as departmental expenditure limits (DELs) and are split between current (or resource) spending (RDEL) and capital spending (CDEL). Departments typically underspend against them, so that actual DEL spending – which is what matters for borrowing – is usually below the limits. Our main forecast judgement in relation to DEL spending is an assumption about the extent of underspending against the limits in the years for which they have been set.
- 3.33** In evaluating our DEL spending forecasts, we first remove the effect of classification changes. No such changes affected the forecasts covered here, although all forecasts have been restated for the Treasury's recent decision (discussed in our October 2018 *EFO*) to transfer devolved Scottish Government spending from DEL to AME. (This switch is reflected in outturn, but was not reflected in any of the forecasts for 2017-18 covered here.) Each forecast has also been restated to be consistent with the public sector finances treatment of housing associations in 2017-18: that is, English housing associations were classified as public sector bodies up to November 2017 and private sector ones thereafter, while housing associations in the rest of the UK were treated as public sector bodies for the entire year.

3.34 After restating the forecasts, the method for calculating differences is as follows:

- **policy changes** are calculated as the sum of the 'Effect of Government decisions' lines in successive DEL diagnostic tables published in each *EFO* after a particular forecast; and
- the remainder is treated as a **fiscal forecasting difference** – these are largely related to our underspend assumptions.

3.35 Table 3.9 shows that the Government reduced total DEL plans by comparatively small amounts relative to the totals laid out at each of the forecasts being assessed. Downward revisions to CDEL plans after our March 2016 and November 2016 forecasts more than offset the small subsequent increases to RDEL plans. Both RDEL and CDEL plans were later reduced relative to our March 2017 forecast.

3.36 The table also shows that central government departments generally underspent their DEL budgets by more than we had assumed across both current and capital spending in 2017-18 (other than the CDEL assumption in our March 2016 forecast). The underspend difference was particularly large for RDEL. We do not make department-by-department underspend assumptions, but the largest sources of underspending against RDEL plans in 2017-18 came from the Department for Education.

Table 3.9: 2017-18 DEL forecast differences

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast							
TME in DEL	336.0	332.9	-3.1	0.0	-1.1	0.0	-2.0
of which:							
PSCE in RDEL	291.0	288.6	-2.4	0.0	0.7	0.0	-3.1
PSGI in CDEL	45.0	44.3	-0.7	0.0	-1.8	0.0	1.1
November 2016 forecast							
TME in DEL	337.5	332.9	-4.6	0.0	-1.9	0.0	-2.7
of which:							
PSCE in RDEL	290.4	288.6	-1.7	0.0	0.2	0.0	-2.0
PSGI in CDEL	47.2	44.3	-2.9	0.0	-2.1	0.0	-0.8
March 2017 forecast							
TME in DEL	338.4	332.9	-5.4	0.0	-2.5	0.0	-2.9
of which:							
PSCE in RDEL	291.8	288.6	-3.1	0.0	-1.2	0.0	-2.0
PSGI in CDEL	46.6	44.3	-2.3	0.0	-1.3	0.0	-1.0

Locally financed current and capital expenditure

- 3.37** Table 3.10 shows that we underestimated local authorities' locally financed current and capital expenditure by substantial amounts in all three forecasts. This is despite English local authorities once again adding to their stock of reserves in 2017-18. The largest sources of difference are higher-than-expected retained business rates (linked to the policy change in respect of 100 per cent local retention pilots, for the March 2016 and November 2016 forecasts) on current spending and significantly higher spending financed by prudential borrowing on capital. The table breaks down the differences by the source of local finance.
- 3.38** For **local authorities' locally financed current spending**, it is important to distinguish between differences that relate to forecasting the income streams that finance this spending (such as council tax and retained business rates) and those that relate to our assumptions about how much authorities will spend relative to that income (which are embodied in our assumptions about their use of current reserves or repayment of debt). It is only spending relative to income that affects net borrowing, so, in our forecasting framework, we place particular emphasis on understanding and evaluating the evolution of reserves and debt repayments, and the underlying drivers of those changes.
- 3.39** We under estimated self financed current expenditure by diminishing amounts across the three forecasts. Within those overall differences:
- Differences in respect of English authorities' **net use of reserves** became progressively larger in more recent forecasts. This reflects the fact that our November 2016 and March 2017 forecasts assumed that English authorities would draw down from their reserves in 2017-18, a judgement based on the perceived pressure on budgets (from factors including social care costs) and the £0.4 billion drawdown (the first since 2009-10) that occurred in 2015-16. Authorities then drew down £1.5 billion from reserves in 2016-17, but surprised us in 2017-18 by adding to their reserves again, implying lower spending relative to income and thus lower public sector net borrowing.
 - Differences in respect of **debt repayments** are relatively small and reflect both under- and overestimates.
 - Spending financed by **council tax** was persistently underestimated (with no effect on public sector net borrowing), but by progressively smaller amounts. £0.1 billion of the March 2016 difference reflects policy in respect of the additional flexibility permitted as part of the council tax uprating limits for funding adult social care.⁸ The remainder largely relates to lower-than-expected costs associated with the main exemptions.
 - Spending financed by **retained business rates** exceeded all three forecasts. For the March 2016 and November 2016 forecasts, this largely reflects the policy change in respect of 100 per cent local retention pilots, which was initially forecast in March

⁸ This permitted upper-tier authorities to increase council tax by an additional 3 per cent in a given year to fund adult social care costs. The maximum permitted increase over the three years covered by the policy (2017-18 to 2019-20) remained at 6 percentage points, but the maximum rise in any given year was increased from 2 to 3 per cent.

2017 to increase locally retained business rates by £2.5 billion in 2017-18. (The effects on our forecasts and the policy's subsequent recosting were discussed in Box 4.2 of our October 2018 *EFO*.) A further £0.7 billion reflects a perpetual forecast-outturn classification difference, relating to the inclusion of spending financed by section 31 grants in outturn (which is treated as DEL in our forecast). Thereafter, fiscal forecasting differences are relatively small (£0.3, £0.3 and £0.6 billion over the successive forecasts). Some of this reflects recosting of the 100 per cent retention pilots policy, while the remainder reflects main rates forecast differences (an issue covered by this year's model review), where outturn was under-predicted in all three instances (as discussed in the receipts section above).

- Differences in respect of spending on or financed by **other items** average £1.7 billion over the three forecasts, reflecting several items that vary across the forecasts.

3.40 Table 3.10 shows that we also underestimated **local authorities' locally financed capital spending** by over £5 billion in each forecast. Within those differences:

- Spending financed by **prudential borrowing** was much higher than expected in 2017-18. This more than accounts for the overall differences between each forecast and outturn. This was flagged as a potential risk in our 2017 *Fiscal risks report*, following reports that some of this borrowing was being used for commercial property investments rather than activities directly related to local authorities' provision of public services. The significant increases in capital spending financed by borrowing in both 2016-17 and 2017-18 were discussed again in our October 2018 *EFO*.
- Partially offsetting the effect of higher spending financed by prudential borrowing was a difference related to the adjustment that we make to switch spending between sectors for the **net capital spending of local authorities' Housing Revenue Accounts (HRAs)**. HRAs are treated as public corporations in the National Accounts, and so we switch their net capital spending between the local authority and public corporation sectors in our forecast. We underestimated this spending in 2017-18 by £2.0, £1.0 and £1.2 billion respectively. This reduced our overall forecast difference on local authority self-financed capital spending, but increased it for public corporations' capital spending.

Table 3.10: 2017-18 locally financed expenditure forecast differences

	£ billion		
	Forecast	Outturn	Difference
March 2016 forecast			
Locally financed current expenditure	43.3	48.7	5.4
of which:			
Net use of current reserves (English authorities)	-0.3	-0.6	-0.3
Funds set aside to repay debt	-2.8	-2.5	0.3
Council tax	30.6	31.3	0.7
Retained business rates	15.5	18.8	3.3
Other ¹	0.3	1.6	1.3
Locally financed capital expenditure	7.3	12.4	5.2
of which:			
Prudential borrowing	5.6	12.2	6.7
Adjustment to remove HRA net capital spending	-2.6	-4.6	-2.0
Other ¹	4.3	4.8	0.5
November 2016 forecast			
Locally financed current expenditure	44.3	48.7	4.4
of which:			
Net use of current reserves (English authorities)	0.5	-0.6	-1.1
Funds set aside to repay debt	-2.4	-2.5	-0.1
Council tax	30.9	31.3	0.5
Retained business rates	15.5	18.8	3.4
Other ¹	-0.1	1.6	1.8
Locally financed capital expenditure	7.3	12.4	5.2
of which:			
Prudential borrowing	5.8	12.2	6.4
Adjustment to remove HRA net capital spending	-3.5	-4.6	-1.0
Other ¹	5.0	4.8	-0.2
March 2017 forecast			
Locally financed current expenditure	46.6	48.7	2.0
of which:			
Net use of current reserves (English authorities)	0.6	-0.6	-1.3
Funds set aside to repay debt	-2.4	-2.5	-0.1
Council tax	31.1	31.3	0.2
Retained business rates	17.6	18.8	1.3
Other ¹	-0.3	1.6	1.9
Locally financed capital expenditure	7.2	12.4	5.2
of which:			
Prudential borrowing	5.4	12.2	6.9
Adjustment to remove HRA net capital spending	-3.4	-4.6	-1.2
Other ¹	5.2	4.8	-0.5

¹ Includes capital expenditure financed from local authorities' revenue accounts, which increases local authorities' capital expenditure and reduces their current expenditure by offsetting amounts.

Welfare spending

3.41 Total welfare spending in 2017-18 was lower than forecast in all three forecasts being evaluated. Unpicking the sources of these forecast differences is made more challenging by the fact that our forecasts include estimates of the marginal effect of universal credit (UC) relative to the existing benefits and tax credits systems, whereas all spending in outturn is on a full-cost basis. This results in large classification changes to individual benefit lines, but a relatively small net impact on total welfare spending of around £0.1 billion. This is due to the relatively slow UC rollout in 2017-18 and the notion that total spending should remain the same between the marginal cost and full cost presentations of UC spending for any given year.⁹ Decomposing the net discrepancy into the different categories we use when evaluating forecast differences is not possible given the switch between the marginal and full cost presentation. This does not materially alter the explanations of forecast differences in this *FER* but is likely to become a more material concern for future evaluations.

3.42 For each forecast, the difference from outturn largely reflected spending subject to the welfare cap:

- A key driver of these differences related to **employment and support allowance (ESA) and disability living allowance (DLA)/personal independence payment (PIP)**. Higher caseloads and higher average awards contributed to fiscal forecasting differences of £1.5, £0.7 and £0.2 billion in our March 2016, November 2016 and March 2017 forecasts, respectively. In terms of ESA, a higher-than-expected support group caseload served to increase spending thanks to more claimants but also higher average awards. The effect of lower-than-forecast PIP caseloads was more than offset by higher-than-expected DLA caseloads. In some instances, this was driven by changes to the operational delivery of the benefits – for example, a slower-than-expected PIP rollout. Our March 2016 PIP forecast also incorporated a £0.4 billion saving in 2017-18 from the PIP ‘aids and appliances’ measure that was announced in Budget 2016, but then subsequently dropped before it was implemented.
- **Tax credits** spending has repeatedly fallen short of our recent forecasts – with fiscal forecasting differences of £1.9, £1.2 and £0.9 billion respectively relative to these three forecasts. Since our March 2017 forecast, we have made significant changes to our assumptions about the income growth of tax credits claimants. This follows new analysis by HMRC (as detailed in Box 4.3 our March 2018 *EFO*).
- Fiscal forecasting differences in **universal credit** spending contributed £0.4, £0.5 and £0.5 billion respectively to the overestimate of spending in the three forecasts. Given the switch between marginal and full cost representations of UC spending, as we move from forecast to outturn, unpicking these differences is complex. The slower-than-expected pace of the UC rollout in 2017-18 is likely to be one factor, as are the performance of some of our assumptions on features of the UC design. As detailed in our October 2018 *EFO*, we are now beginning to test our assumptions against newly-available UC administrative data and will continue to monitor them.

⁹ This forecasting approach and the challenges it poses were detailed in our 2018 *Welfare trends report*.

- The largest proportional differences in welfare spending relate to **tax-free childcare (TFC)**, where outturns were lower than expected by £0.4, £0.6 and £0.4 billion in each forecast respectively. This is mainly due to lower-than-expected take-up rather than further delays to the rollout (which also had a small effect on spending). Abstracting from operational difficulties in the initial stages of the rollout, and the absence of the awareness-raising marketing campaign that we had expected to boost take-up, we overestimated the extent to which families would take up the new support worth up to £2,000 per child. Given the difficulty in quantifying these interactions, we have classified all the non-rollout-delay differences as fiscal forecasting ones.

3.43 Spending outside the welfare cap was also subject to relatively large fiscal forecasting differences. Spending on jobseeker's allowance and the related housing benefit was lower than forecast as caseloads continued to surprise on the downside, linked to lower unemployment and to our assumptions on how changes in the Labour Force Survey measure of unemployment would translate into jobseeker's allowance and associated housing benefit caseloads. Higher-than-expected pensioner deaths also contributed to an over-forecast of state pension spending of between £0.2 and £0.3 billion.

Table 3.11: 2017-18 welfare spending forecast differences

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast							
Welfare spending	219.2	218.8	-0.4	0.1	1.2	0.8	-2.4
of which:							
Welfare cap	118.0	118.2	0.3	0.1	1.2	0.5	-1.5
Non-welfare cap	101.3	100.6	-0.7	0.0	0.0	0.3	-1.0
November 2016 forecast							
Welfare spending	221.3	218.8	-2.4	0.1	0.0	-0.1	-2.5
of which:							
Welfare cap	119.6	118.2	-1.4	0.1	0.0	0.0	-1.5
Non-welfare cap	101.6	100.6	-1.1	0.0	0.0	-0.1	-1.0
March 2017 forecast							
Welfare spending	221.1	218.8	-2.3	0.1	0.0	-0.1	-2.4
of which:							
Welfare cap	119.6	118.2	-1.4	0.1	0.0	0.0	-1.6
Non-welfare cap	101.5	100.6	-0.9	0.0	0.0	-0.2	-0.8

Central government debt interest (net of the APF)

3.44 Gross debt interest spending was significantly higher than we expected in our March 2016 and November 2016 forecasts, but was lower than we forecast in March 2017. Differences between the expected and actual path of RPI inflation (higher than we expected in March 2016 and November 2016, but lower than we expected in March 2017) largely explain this.

- 3.45 Our pre-referendum March 2016 forecast did not anticipate the post-referendum August 2016 package of monetary policy measures that significantly increased the APF's gilt holdings. A larger APF means more debt in effect being financed at Bank Rate rather than at gilt rates, reducing overall debt interest costs. We treat differences relating to the size of the APF as fiscal forecasting differences, since it is a judgement that we feed into our debt interest models rather than one we derive from market expectations. Bank Rate was higher than assumed in all three forecasts leading to modestly higher interest payments.

Table 3.12: 2017-18 debt interest forecast differences

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast	38.6	41.5	2.9	0.0	0.0	4.9	-2.0
November 2016 forecast	38.0	41.5	3.5	0.0	0.0	2.1	1.4
March 2017 forecast	41.5	41.5	0.0	0.0	0.0	-1.2	1.2

Expenditure transfers to EU institutions

- 3.46 Of the forecasts covered in this *FER*, only March 2016 pre-dates the EU referendum. Expenditure transfers to EU institutions have not yet been directly affected by our pending departure from the EU, but transfers in 2017-18 were affected by the drop in the pound associated with the referendum result. Forecasting EU contributions has always been challenging, due to uncertainties around EU budgets and the associated negotiations, as well as the implicit need to forecast gross national incomes for 27 other member states (in addition to the UK) and, relatedly, the sterling-euro exchange rate.
- 3.47 EU contributions in 2017-18 were slightly higher than we forecast in March 2016, but significantly lower than our November 2016 and March 2017 forecasts (by £0.6 billion and £2.0 billion respectively). The upside surprise relative to our March 2016 forecast reflects the European Commission's unexpected decision not to draw forward as much of the budget in the first quarter of the 2017 calendar year as it had in most previous years (requesting only three months' contributions, rather than the five months' worth it had typically requested). This meant that a greater proportion of calendar year 2017 contributions would be made during the UK's 2017-18 fiscal year. Partly offsetting that, the Commission also drew forward less than five months' contributions in 2018, although slightly more than the three months' worth it did in 2017. This meant that less of the 2018 contributions were made in 2017-18. As we knew the 2017 draw-forward when making our March 2017 forecast, but assumed the full five months' contributions would be requested in respect of 2018, this led to us overestimating 2017-18 contributions in our March 2017 forecast significantly, accounting for approximately three quarters of the overestimate.
- 3.48 Implementation of the EU budget – a key driver of the amount that the UK must contribute each year – was slower than we expected, which led to a large surplus from the 2016 budget being returned to member states. This reduced UK contributions in 2017-18 by £0.5 and £0.7 billion relative to our March 2016 and March 2017 forecasts respectively. It also

reduced the UK's subsequent rebate, which is paid a year later, increasing transfers in 2017-18 by £0.7 billion relative to our March 2017 forecast. Taken together, these effects of lower-than-expected EU expenditure in 2016 left contributions in 2017-18 broadly in line with our March 2017 forecast, thanks to the significant differences broadly offsetting.

- 3.49 Unexpectedly slow implementation of the EU budget continued in 2017, which contributed £1.4 and £0.5 billion to the overall forecast differences relative to our March 2016 and March 2017 forecasts, respectively.

Table 3.13: 2017-18 EU expenditure transfers forecast differences

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecasting difference
March 2016 forecast	9.4	9.5	0.1	0.0	0.0	0.0	0.1
November 2016 forecast	10.2	9.5	-0.6	0.0	0.0	0.1	-0.7
March 2017 forecast	11.5	9.5	-2.0	0.0	0.0	-0.1	-1.9

Other spending

- 3.50 Other spending forecast differences of note in 2017-18 include:

- **Public service pensions** forecast differences were relatively small, although there have been offsetting movements across individual pension schemes. Gross pension expenditure was overestimated in all forecasts. The main drivers were more deaths than expected and fewer early retirements. The latter reduced lump sum payments across several schemes. (Lump sum payments are a particularly volatile part of the forecast, due to the difficulty of predicting retirement behaviour and the large sums involved.) Across all schemes, pensionable paybills were over-forecast slightly in March 2016 and under-forecast slightly in November 2016 and March 2017.
- **Public corporations' capital spending** was underestimated by large amounts in each forecast. The three forecasts have been restated to be consistent with the public sector finances treatment of housing associations in 2017-18 (discussed in the DELs section above). Relative to these, actual spending in 2017-18 was £4.0, £2.7 and £1.8 billion higher than we had predicted respectively. The forecast differences were largely explained by higher-than-expected HRA capital spending (discussed in the locally financed capital spending section above) and more capital spending by housing associations (even once the forecasts had been restated to be consistent with classification in outturn).
- **Local authority imputed pensions** spending was overestimated by an average of £1.6 billion in each forecast. This reflects methodological changes introduced by the ONS in September 2017, which we incorporated in subsequent forecasts: estimates in relation to local government funded pension scheme deficits were revised down substantially, prompting us to reduce our subsequent forecasts.

- **Tax litigation** costs were lower than expected, by an average of £1.4 billion across the three forecasts. This mainly reflects developments in two significant cases and the way that payments in litigation cases made before the case is settled are treated in the National Accounts. When litigation is ongoing, HMRC may be required by the court to make a payment on an adverse judgement while the case is still under appeal – this affects the cash debt measure (PSND), but not the accrued borrowing measure (PSNB). Borrowing is only affected when a final settlement in a case is reached. HMRC made over £3 billion of such payments across 2015-16 and 2016-17 – largely relating to the same two cases – and our previous forecasts allowed for some of those payments to crystallise and affect borrowing in 2017-18. In November 2017, one of the cases – a landmark case involving Littlewoods – did reach the final settlement stage, but the Supreme Court ruled in favour of HMRC, leading us to remove further payments relating to that case. The second large case did not reach the final settlement stage in 2017-18. In July 2018, a Supreme Court ruling, on a claim in restitution for compound interest in respect of past payments in another case, led us to lower our October 2018 forecast for spending related to that second large case. Forecasting tax litigation spending remains highly uncertain with the amount of tax at risk often difficult to estimate and the precise timing of a settlement payment – affecting a small number of large cases – is very hard to predict.
- General government **depreciation** was lower than we forecast in each case. Methodological changes were implemented following last year's *FER* and modelling review exercise to address this forecast bias, and the new model and associated inputs will be kept under review. Depreciation affects spending, receipts and the current budget deficit but is neutral for net borrowing, so forecast differences do not have implications for the Government's fiscal targets.
- On the latest data there are large negative differences between forecast and outturn for **accounting adjustments**. The largest difference is against our November 2016 forecast (£4.0 billion), with the March 2016 and March 2017 differences standing at £0.9 and £2.2 billion respectively. Thanks to ongoing work since last year's *FER*, these differences are, on average, smaller than those reported in recent *FERs*. But a significant amount remains unexplained, reflecting unallocated differences between the outturn estimates we are using for the various detailed components of spending and the latest total spending outturns included in the November ONS public finances release. These could reflect temporary timing differences when comparing the latest OSCAR and other source data with the data underlying the ONS estimates, but there could also be genuine underlying factors that would affect our future forecasts. As detailed in this year's model review, understanding and working to reduce these differences remains a high priority. After undertaking a review of the associated data and inputs, we intend to continue working with the Treasury and ONS to improve this part of the forecast, and will report on progress in next year's *FER*.

Public sector net debt

- 3.51** In this section we focus on the year-on-year change in debt, rather than its level at the end of the year. This allows us to abstract from differences between forecast and outturn that result from the starting level assumed in each forecast.
- 3.52** Adjusting for the reclassification of English housing associations to the private sector and differences in net borrowing, the increase in the cash level of PSND in 2017-18 was larger than anticipated in our March 2016, November 2016 and March 2017 forecasts. The largest differences arise from the introduction of the Bank of England's Term Funding Scheme (TFS) and Corporate Bond Purchase Scheme, which happened after our March 2016 forecast. The TFS was considerably larger than assumed in either our November 2016 or March 2017 forecasts, thanks in part to an extension to the maximum size of the scheme to £140 billion announced in November 2017.
- 3.53** Estimates of the proceeds from asset sales were too high in all three forecasts. This largely reflected Government decisions about the timing of sales, rather than us overestimating the proceeds of sales that went ahead. Notably our March 2016 forecast included sales of RBS shares in the post-referendum period that did not take place, while the November 2016 and March 2017 forecasts anticipated sales of student loans and by UKAR that were considerably larger than those that actually took place. Partially offsetting these differences, none of our forecasts anticipated the sale of the Green Investment Bank, due to uncertainty over its timing. Valuation changes produced small net differences, due to the largely offsetting effects of decreases in the sterling value of assets in the reserves (raising net debt) and higher-than-expected gilt premia (reducing it).

Table 3.14: The change in public sector net debt in 2017-18

	£ billion						
	Forecast ¹		Estimates	Difference			
	March 2016	November 2016		March 2016	November 2016	March 2017	
Net borrowing	38.1	58.0	57.0	39.8	1.7	-18.2	-17.1
Financial transactions	9.3	64.9	50.6	88.6	79.3	23.7	38.0
<i>of which:</i>							
Net lending	20.8	20.9	21.1	21.2	0.4	0.3	0.1
Sales or purchases of financial assets	-21.2	-26.1	-25.0	-18.6	2.6	7.5	6.4
Bank of England schemes	0.0	58.6	42.5	74.7	74.7	16.1	32.2
Other factors	9.7	11.5	12.1	11.3	1.6	-0.2	-0.8
Valuation	-9.6	-8.7	-9.1	-10.1	-0.5	-1.3	-1.0
<i>of which:</i>							
Gilt premia	-9.4	-8.9	-9.2	-12.4	-3.0	-3.5	-3.2
Reserves	-0.2	0.2	0.1	2.3	2.5	2.1	2.2
Classification	-63.4	-63.4	-63.4	-63.4	0.0	0.0	0.0
Change in net debt	-25.6	50.7	35.0	52.2	77.8	1.5	17.2

¹ Forecasts have been restated to reflect the reclassification of housing associations to the public sector.

4 Refining our forecasts

Introduction

- 4.1 We strive to provide the greatest possible transparency around our forecasts, both to facilitate understanding and to ensure that we can be held to account for our judgements. Transparency also permits us to scrutinise our own forecasts in detail, examining and explaining the inevitable differences from outturns. We hope that this will reassure users that our forecasts are based on impartial professional judgement, rather than politically motivated wishful thinking, even if they disagree with our conclusions. The process also affords an opportunity to learn lessons that can be applied in future forecasts.
- 4.2 In this chapter we:
- **Identify the lessons that have emerged from this year's forecast evaluation exercise** described in Chapters 2 and 3.
 - **Report on progress against last year's modelling recommendations** following our first systematic review of fiscal forecasting models.
 - Based on the modelling principles documented last year, we **set out our main modelling priorities for the coming year**.

Lessons learnt

- 4.3 Lessons highlighted in our *Forecast evaluation reports (FERs)* have often already been acted upon, because they had been previously identified during the preparation of our *Economic and fiscal outlook (EFO)* forecasts.
- 4.4 One lesson that we identified in last year's *FER* was the importance of the in-year estimates for receipts and spending that form the basis of our fiscal forecasts. This theme has continued in our evaluation of fiscal forecasts for 2017-18. For the November 2016 forecast, the large year-ahead overestimate for 2017-18 borrowing is more than explained by the large in-year overestimate for 2016-17 borrowing that provided the starting point for that forecast. In a recent working paper, we reviewed the performance of our in-year forecasts and the challenges that we face in producing them.¹ Our main conclusion was that our in-year fiscal forecasts had tended to over-predict the budget deficit on average, but were somewhat more accurate and less biased than the average external forecast. We identified three specific areas for development:

¹ Taylor, J., and Sutton, A., *Working paper No.13: In-year fiscal forecasting and monitoring*, September 2018.

- The **bonus assumptions in our income tax and NICs forecasts** had on average caused us to underestimate receipts. In our October 2018 *EFO*, we raised our forecast for growth in bonus payments and we intend to work with HMRC over the next year to make greater use of real-time PAYE data to inform these assumptions.
- Our **onshore corporation tax** forecasts have exhibited consistent in-year pessimism in recent years. We continue to work with HMRC to develop a new in-year forecasting tool that uses the range of approaches that we set out in the working paper.
- Revisions to ONS estimates for **gross operating surplus** have exhibited a significant upward bias that has fed through to our borrowing forecast differences. We will work with the ONS to gain a fuller understanding of whether this historical bias is likely to persist or represents one-off factors that coincidentally pushed in the same direction.

4.5 Other lessons identified in previous *FERs* that have also been a source of forecast difference this year include:

- The importance of the **composition of labour income**, in particular the continued strength in employment and historical weakness in average earnings growth. In recent forecasts we have interpreted this pattern as a structural feature of the labour market and consequently revised down our estimate of the sustainable unemployment rate in both March 2017 and October 2018.
- The importance of **tax payment timing assumptions**, particularly for corporation tax. The speed at which companies pay off the liabilities arising from a particular year's profits can have a marked effect on receipts. Over the past year, we have worked with HMRC to improve the transparency of modelling in this area. Our payment timing assumptions for self-assessment income tax have also emerged as a source of fiscal forecasting difference in 2017-18, and are a modelling priority for the coming year.
- The unexpectedly strong **downward trend in tax credits caseloads**. Since our March 2017 forecast, we have changed our assumptions about the income growth of tax credits claimants, as detailed in Box 4.3 of our March 2018 *EFO*. This appears to explain a substantial proportion of the forecast differences in recent years.
- Savings associated with **major reforms of the incapacity and disability benefits** systems had fallen short of expectations, due largely to challenges in delivering the reforms. This has been a theme of recent *FERs* and is an issue that we have explored in depth across several *EFOs*. Our forthcoming *Welfare trends report* will look again at the effect of reforms to disability benefits and their effects on welfare spending.
- The use of **borrowing to finance local authority capital expenditure** has continued to increase much more strongly than we assumed. This was flagged as a potential risk in our 2017 *Fiscal risks report*, reflecting the increased incidence of authorities' borrowing for commercial property investments and which indeed explains part of the unexpected strength.

4.6 While most of the major issues that we have identified in this year's report have featured in previous editions, we have also identified some new issues, including:

- The challenges in **anticipating how quickly shocks will affect the economy and the public finances**. Cumulative growth in business investment since the EU referendum, has been slightly below our post-referendum forecasts, but investment spending held up better than expected initially, before falling away more sharply recently. This may have been due to our imperfect understanding of the impact of heightened uncertainty or to not factoring in sufficiently the lead times involved in larger projects.
- The difficulties in **predicting how households will respond to real income shocks**. Real household consumption has consistently held up better than we expected following the referendum, as a further fall in the saving rate partially offset the adverse effect on real household incomes as a result of the drop in the pound at the time of the referendum. Moreover, consumer confidence surveys show that households' expectations for their personal financial situation have held up better than expectations for the general economic situation.²
- The importance of trends in the **use of corporation tax deductions and reliefs**. As Box 3.2 in this report sets out, a substantial proportion of the rise in onshore corporation tax receipts over the past few years appears to reflect a fall in the use of deductions (particularly loss and group relief). Our detailed analysis for 2017-18 also indicates that changes in the use of capital allowances helps to explain recent receipts under-forecasts. We have prioritised the development of modelling in this area.

Review of fiscal forecasting models

4.7 In line with the recommendations of the Treasury's September 2015 review of the OBR, we have now introduced a more systematic approach to following up our analysis of fiscal forecasting differences and issues raised in *EFO* forecasting rounds.³ We have been working closely with our partners across government in doing so. We described the criteria and analysis we deploy when reviewing fiscal forecast models in Chapter 4 of our 2016 *FER*.

4.8 Last year we identified 19 separate tax and spending models to look at in greater detail. We codified a set of questions that allowed us to benchmark fiscal forecasting models against our ideal requirements for them. We then assessed each model against these requirements and identified priorities for modelling work in 2018. These were based on the importance of each issue in relation to the tax or spending stream itself and of each issue to our overall fiscal forecast.

² For example, see GfK, *UK Consumer Confidence drops one point in October to -10*, October 2018.

³ *HM Treasury review of the Office for Budget Responsibility*, HM Treasury, September 2015.

Progress against last year's recommendations

- 4.9 Last year's *FER* set out 38 recommendations for model development work across the 19 models. Half of these have been fully resolved and 12 partly resolved. We have published a full update in the 'model assessment database' on our website, but the key steps include:
- In our October 2018 *EFO*, we used a **new fuel duty model** to prepare our forecast. The new model captures compositional changes in the vehicle stock more effectively. We have also worked with HMRC to refresh both the 'distances travelled' and 'pump price' components of this model so that they better reflect recent trends.
 - We used a new **self-assessment income tax effective tax rate (ETR) modelling approach** to produce our October 2018 *EFO* forecast. The ETR is now derived from HMRC's 'personal tax model' (PTM) – a microsimulation of tax liabilities at a taxpayer level that is already the basis for our PAYE income tax and NICs forecasts. This approach allows a greater degree of disaggregation across SA income streams, meaning we now have more scope to analyse trends and incorporate them into our forecast.
 - We **improved our ability to understand the drivers of differences between forecasts and outturns** by developing new analytical approaches. For example, in respect of onshore corporation tax receipts, where it was not previously possible to decompose fully the effects on receipts from changes in payment patterns versus developments in the detailed income and deductions data. This allowed us to conduct the analysis reported in earlier in this report.
 - We updated and reviewed the **structure and assumptions underpinning several smaller models**, including the baseline customs duties model, the general government depreciation model, the conventional gilts component of the central government debt interest model and the tobacco duties model.

Modelling priorities for the coming year

- 4.10 The process of refining our models and the judgements underpinning our fiscal forecasts is a continuous one that draws on analysis prepared in *EFO* forecasting rounds and for our *FERs*. This review builds on existing processes and helps to ensure they are more consistent and followed up in a more systematic way. In carrying out the model review this year:
- **We selected 12 new separate tax and spending forecast models** to look at in greater detail. Our choices were based on the amount of tax or spending that they cover, their performance against the forecast accuracy analysis that we generate as part of the *FER* each year, and a review of issues raised during past challenge and scrutiny processes.
 - **Using the codified set of questions that we set out in last year's *FER***, we generated 26 new priorities for model development.
 - **We have carried forward 13 recommendations that were not fully resolved from last year's review**, related to seven individual fiscal forecasting models.

4.11 The assessment of models added to the review this year has identified some overarching issues that we plan to work on over the coming year:

- **Understanding and fully exploiting outturn data sources.** In several areas, new data sources are being developed that we can use to inform our forecasting assumptions. One example is HMRC's 'real-time information' (RTI) system, which is a relatively new tax collection system that can provide more detailed and timely information on personal tax revenues and the labour market. Employers have been legally required to use the RTI system since April 2014 and HMRC has recently used this data in a new experimental statistics publication on developments in the labour market. We plan to step up our use of RTI data over the coming year. Similarly, we will continue to prioritise further development of new universal credit administrative data. This will enable us to test more of our forecast assumptions against real-world outcomes now that more than a million cases are on UC, and should ultimately provide the foundation for moving to a bottom-up forecast of UC spending.
- **Aligning our models with ONS accounting treatment.** The ONS applies several methodologies and adjustments to the raw cash revenue and spending data in order to ensure that the published public finances data align with accounting practices set out in international guidelines. Replicating this in our forecast models can be challenging. For example, in Box 4.1 of our recent in-year fiscal forecasting and monitoring paper, we set out how the ONS time-shifts cash tax receipts in order to proxy the underlying economic activity.⁴ We plan to review further how this process is currently incorporated into our onshore corporation tax model over the coming year. Similarly, we have prioritised further work into understanding how the Treasury converts the raw central government spending data into the National Accounts aggregates that are published by the ONS via the 'accounting adjustments' process. We will also prioritise any work needed to take on board any changes to the ONS accounting treatment of student loans in our own modelling.⁵
- **The challenges of building and developing models to forecast devolved tax revenue and spending.** An increasing number of tax and spending streams are being devolved, posing new modelling challenges. First, estimating the starting points for these forecasts is not always straightforward. When administered at the UK level, precise sub-national breakdowns for many were not recorded and estimating them from available sources can be subject to wider margins of error. Second, it is difficult to know the extent to which trends in the underlying economic activity in the devolved countries will diverge from the whole UK trend. Third, devolution allows for greater variance in policy and administration. Estimating the effect of policy changes in only one part of the UK can be challenging, particularly if new policies cause behavioural responses, as might be expected with different income tax rates in Scotland and the rest of the UK. Finally, there is also variance in the degree to which policy and

⁴ Taylor, J., and Sutton, A., *Working paper No.13: In-year fiscal forecasting and monitoring*, September 2018.

⁵ See Ebdon, J., and Waite, R., *Working paper No.12: Student loans and fiscal illusions*, July 2018 and ONS, *Looking ahead: developments in public sector finance statistics*, July 2018.

administrative powers are being devolved. For example, stamp duty land tax was fully devolved and new replacement taxes are collected by new Scottish and Welsh revenue authorities. By contrast not all income tax has been devolved, with many policy parameters reserved to the UK Government, and the tax is still collected by HMRC. We have prioritised the development of the devolved income tax and carer's allowance models.

- 4.12 The results of this review do not capture every potential issue that may arise and the appropriate conclusions may evolve over time. In our next *FER*, we will review progress against these updated priorities and will set out new recommendations for work in 2020.

A Detailed tables

A.1 This annex contains further details of our March 2016, November 2016 and March 2017 forecast differences for the economy and public finances, including:

- our **calendar year GDP growth and deflator** forecast differences (Tables A.1 to A.4);
- forecasting differences for the key **economic determinants** that underpin the fiscal forecast (Tables A.5 to A.7);
- forecast differences for **total receipts** (Tables A.8 to A.10), **overall spending** (Tables A.11 to A.13) and **welfare spending** (Tables A.14 to A.16). These forecast differences are broken down into components that are due to ONS methodological or classification changes, subsequent policy changes, economy forecast differences and the residual 'fiscal forecasting difference'; and
- restated forecasts and the adjustments required within the fiscal forecast to account for the **ESA10, public sector finances (PSF) review and housing associations classification changes** (Tables A.17 to A.20).

Economy forecasts

Table A.1: Contributions to real GDP growth

	Percentage points						GDP
	Private consumption	Business investment	Other private investment	Total Government	Net trade	Stocks and statistical discrepancy	
Forecasts							
March 2016							
2016	1.6	0.2	0.3	0.0	-0.4	0.3	2.0
2017	1.4	0.6	0.1	0.2	-0.1	0.0	2.2
November 2016							
2016	1.8	-0.2	0.1	0.3	-0.2	0.3	2.1
2017	0.8	0.0	0.1	0.2	0.3	0.0	1.4
March 2017							
2017	1.2	0.0	0.1	0.2	0.3	0.2	2.0
Latest data							
2016	2.0	0.0	0.4	0.2	-0.7	-0.1	1.8
2017	1.2	0.2	0.4	0.0	0.7	-0.6	1.7
Difference ¹							
March 2016							
2016	0.4	-0.3	0.1	0.1	-0.3	-0.4	-0.2
2017	-0.3	-0.4	0.2	-0.2	0.8	-0.6	-0.5
November 2016							
2016	0.2	0.2	0.3	-0.1	-0.4	-0.4	-0.3
2017	0.4	0.2	0.2	-0.2	0.4	-0.7	0.3
March 2017							
2017	0.0	0.2	0.2	-0.2	0.3	-0.8	-0.3

¹ Difference in unrounded numbers.

¹ Difference in unrounded numbers.

Table A.2: Contributions to nominal GDP growth

	Percentage points						Statistical discrepancy
	Private consumption	Private investment	Total Government	Net trade	Stocks	GDP	
Forecasts							
March 2016							
2016	2.4	0.7	0.1	-0.5	0.3	3.1	0.1
2017	2.7	0.9	0.5	-0.1	0.2	4.1	0.0
November 2016							
2016	2.6	0.2	0.3	-0.9	0.8	3.3	0.3
2017	2.3	0.4	0.5	-0.4	0.0	2.8	0.0
March 2017							
2017	2.8	0.5	0.5	0.1	-0.1	3.8	0.1
Latest data							
2016	3.0	0.6	0.4	-0.2	0.1	3.9	0.0
2017	2.6	0.9	0.3	0.4	-0.3	3.8	-0.2
Difference ¹							
March 2016							
2016	0.7	-0.2	0.3	0.3	-0.2	0.8	-0.1
2017	-0.1	0.0	-0.1	0.5	-0.4	-0.3	-0.2
November 2016							
2016	0.4	0.4	0.1	0.6	-0.7	0.5	-0.3
2017	0.3	0.5	-0.1	0.9	-0.3	1.1	-0.2
March 2017							
2017	-0.2	0.4	-0.1	0.3	-0.2	0.0	-0.3
¹ Difference in unrounded numbers.							

¹ Difference in unrounded numbers.

Table A.3: Growth in National Accounts deflators

	Per cent					
	Private consumption	Private investment	Total Government	Exports	Imports	GDP
Forecasts						
March 2016						
2016	1.2	1.5	0.3	1.2	1.6	1.1
2017	1.9	1.2	1.4	2.0	2.0	1.9
November 2016						
2016	1.2	1.9	0.1	3.2	5.1	1.3
2017	2.3	1.7	1.3	6.1	7.8	1.3
March 2017						
2017	2.5	2.4	1.1	5.2	5.7	1.8
Latest data						
2016	1.4	1.4	1.2	6.0	4.1	2.1
2017	2.1	2.5	1.5	5.0	5.6	2.0
Difference¹						
March 2016						
2016	0.3	-0.2	0.9	4.8	2.5	1.0
2017	0.3	1.3	0.1	2.9	3.7	0.2
November 2016						
2016	0.3	-0.5	1.1	2.8	-1.1	0.8
2017	-0.2	0.8	0.2	-1.1	-2.2	0.7
March 2017						
2017	-0.3	0.2	0.4	-0.2	-0.1	0.2

¹ Difference in unrounded numbers.

Table A.4: Contributions to nominal GDP (income) growth

	Percentage points					
	Compensation of employees	Corporations' gross operating surplus	Other income	Taxes on products and production	GDP	Statistical discrepancy
Forecasts						
March 2016						
2016	1.6	-0.2	-0.1	0.6	3.1	1.2
2017	2.2	0.9	0.7	0.3	4.1	0.0
November 2016						
2016	1.5	0.7	1.5	0.2	3.3	-0.6
2017	1.3	0.3	0.2	0.3	2.8	0.6
November 2016						
2017	1.6	0.9	-0.7	0.2	3.8	1.9
Latest data						
2016	1.8	1.0	1.0	0.5	3.9	-0.4
2017	2.1	0.7	0.7	0.4	3.8	0.0
Difference ¹						
March 2016						
2016	0.2	1.2	1.1	-0.1	0.8	-1.6
2017	-0.1	-0.2	0.0	0.0	-0.3	0.0
November 2016						
2016	0.3	0.3	-0.5	0.3	0.5	0.2
2017	0.8	0.4	0.5	0.0	1.1	-0.6
March 2017						
2017	0.4	-0.2	1.4	0.2	0.0	-1.9
¹ Difference in unrounded numbers.						

¹ Difference in unrounded numbers.

Table A.5: March 2016 fiscal determinant forecast differences for 2017-18

	Percentage change on a year earlier, unless otherwise stated		
	Forecast	Outturn	Difference
GDP and its components			
Real GDP	2.2	1.6	-0.7
Nominal GDP (£ billion) ¹	2021	2060	40
Nominal GDP ¹	4.0	3.6	-0.4
Wages and salaries ²	4.1	4.0	-0.1
Non-oil PNFC profits ^{2,3}	3.5	3.1	-0.4
Consumer spending ^{2,3}	4.1	4.0	-0.1
Prices and earnings			
GDP deflator	1.8	1.9	0.1
RPI (September)	2.6	3.9	1.3
CPI (September)	1.6	3.0	1.4
Whole economy earnings growth	3.5	2.7	-0.8
Other key fiscal determinants			
Claimant count (millions) ⁴	0.80	0.82	0.0
Employment (millions)	31.8	32.2	0.4
Implied VAT gap (per cent) ⁵	11.2	9.6	-1.6
Financial and property sectors			
Equity prices (FTSE All-share index)	3471	4059	588
HMRC financial sector profits ^{1,3,5,6}	4.0	10.0	6.0
Residential property prices ⁷	4.5	4.5	0.1
Residential property transactions (000s)	1282	1208	-74
Commercial property prices ⁸	1.8	-7.0	-8.8
Commercial property transactions ⁸	2.3	-0.8	-3.0
Oil and gas			
Oil prices (\$ per barrel) ³	41.9	54.6	12.7
Oil prices (£ per barrel) ³	29.3	42.4	13.1
Gas prices (p/therm) ³	32.3	44.9	12.6
Oil production (million tonnes) ³	43.3	46.6	3.3
Gas production (billion therms) ³	12.4	14.2	1.8
Interest rates			
Market short-term interest rates (per cent) ⁹	0.6	0.4	-0.2
Market gilt rates (per cent) ¹⁰	1.9	1.3	-0.6
Euro/Sterling exchange rate	1.27	1.13	-0.14

¹ Not seasonally adjusted.

² Nominal.

³ Calendar year.

⁴ UK seasonally-adjusted claimant count.

⁵ No outturn available, latest forecast from October 2018

⁶ HMRC Gross Case 1 trading profits

⁷ Outturn data from ONS House Price Index.

⁸ Outturn data (ex. Scotland) from HMRC *Annual stamp tax statistics*.

⁹ 3-month sterling interbank rate (LIBOR).

¹⁰ Weighted average interest rate on conventional gilts.

Table A.6: November 2016 fiscal determinant forecast differences for 2017-18

	Percentage change on a year earlier, unless otherwise stated		
	Forecast	Outturn	Difference
GDP and its components			
Real GDP	1.3	1.6	0.3
Nominal GDP (£ billion) ¹	2001	2060	59
Nominal GDP ¹	2.6	3.6	1.0
Wages and salaries ²	2.5	4.0	1.5
Non-oil PNFC profits ^{2,3}	0.8	3.1	2.3
Consumer spending ^{2,3}	3.5	4.0	0.4
Prices and earnings			
GDP deflator	1.5	1.9	0.4
RPI (September)	3.2	3.9	0.7
CPI (September)	2.5	3.0	0.5
Whole economy earnings growth	2.4	2.7	0.3
Other key fiscal determinants			
Claimant count (millions) ⁴	0.84	0.82	0.0
Employment (millions)	31.8	32.2	0.3
Implied VAT gap (per cent) ⁵	10.7	9.6	-1.2
Financial and property sectors			
Equity prices (FTSE All-share index)	3894	4059	165
HMRC financial sector profits ^{1,3,5,6}	1.2	10.0	8.8
Residential property prices ⁷	3.6	4.5	0.9
Residential property transactions (000s)	1201	1208	7
Commercial property prices ⁸	-3.2	-7.0	-3.8
Commercial property transactions ⁸	1.3	-0.8	-2.1
Oil and gas			
Oil prices (\$ per barrel) ³	54.1	54.6	0.6
Oil prices (£ per barrel) ³	44.0	42.4	-1.7
Gas prices (p/therm) ³	46.4	44.9	-1.5
Oil production (million tonnes) ³	47.1	46.6	-0.5
Gas production (billion therms) ³	13.3	14.2	0.9
Interest rates			
Market short-term interest rates (per cent) ⁹	0.3	0.4	0.1
Market gilt rates (per cent) ¹⁰	1.3	1.3	0.0
Euro/Sterling exchange rate	1.11	1.13	0.02
¹ Not seasonally adjusted. ⁶ HMRC Gross Case 1 trading profits ² Nominal. ⁷ Outturn data from ONS House Price Index. ³ Calendar year. ⁸ Outturn data (ex. Scotland) from HMRC <i>Annual stamp tax statistics</i> . ⁴ UK seasonally-adjusted claimant count. ⁹ 3-month sterling interbank rate (LIBOR). ⁵ No outturn available, latest forecast from October 2018 ¹⁰ Weighted average interest rate on conventional gilts.			

Table A.7: March 2017 fiscal determinant forecast differences for 2017-18

	Percentage change on a year earlier, unless otherwise stated		
	Forecast	Outturn	Difference
GDP and its components			
Real GDP	1.8	1.6	-0.2
Nominal GDP (£ billion) ¹	2029	2060	32
Nominal GDP ¹	3.3	3.6	0.3
Wages and salaries ²	2.9	4.0	1.1
Non-oil PNFC profits ^{2,3}	3.2	3.1	-0.1
Consumer spending ^{2,3}	4.3	4.0	-0.3
Prices and earnings			
GDP deflator	1.6	1.9	0.3
RPI (September)	3.9	3.9	0.0
CPI (September)	2.6	3.0	0.4
Whole economy earnings growth	2.6	2.7	0.2
Other key fiscal determinants			
Claimant count (millions) ⁴	0.85	0.82	0.0
Employment (millions)	31.9	32.2	0.2
Implied VAT gap (per cent) ⁵	9.4	9.6	0.2
Financial and property sectors			
Equity prices (FTSE All-share index)	4009	4059	49
HMRC financial sector profits ^{1,3,5,6}	1.7	10.0	8.3
Residential property prices ⁷	5.8	4.5	-1.2
Residential property transactions (000s)	1280	1208	-73
Commercial property prices ⁸	-2.8	-7.0	-4.2
Commercial property transactions ⁸	1.7	-0.8	-2.5
Oil and gas			
Oil prices (\$ per barrel) ³	56.3	54.6	-1.7
Oil prices (£ per barrel) ³	45.1	42.4	-2.7
Gas prices (p/therm) ³	48.1	44.9	-3.2
Oil production (million tonnes) ³	47.4	46.6	-0.8
Gas production (billion therms) ³	13.8	14.2	0.4
Interest rates			
Market short-term interest rates (per cent) ⁹	0.4	0.4	0.0
Market gilt rates (per cent) ¹⁰	1.5	1.3	-0.1
Euro/Sterling exchange rate	1.16	1.13	-0.03

¹ Not seasonally adjusted.

² Nominal.

³ Calendar year.

⁴ UK seasonally-adjusted claimant count.

⁵ No outturn available, latest forecast from October 2018

⁶ HMRC Gross Case 1 trading profits

⁷ Outturn data from ONS House Price Index.

⁸ Outturn data (ex. Scotland) from HMRC *Annual stamp tax statistics*.

⁹ 3-month sterling interbank rate (LIBOR).

¹⁰ Weighted average interest rate on conventional gilts.

Fiscal forecasts

A.2 The Office for National Statistics (ONS) has implemented some significant changes in the definition of key public finance statistics in recent years. These include:

- In September 2014, the ONS aligned the public sector finance statistics with the **2010 European System of Accounts (ESA10)**, as well as implementing other changes following its own review of the statistics.¹ The ONS's headline measure is now 'public sector net borrowing excluding public sector banks'. Our forecasts for government borrowing have been produced on that basis since then, but some we are reviewing in this section were for 'public sector net borrowing excluding financial sector interventions' under the 1995 European System of Accounts.
- A Government policy change announced in July 2015 prompted the ONS to review the classification of **English housing associations** and to decide that they should be considered public rather than private corporations from a statistical perspective because of the degree of control over them exerted by Government.² The ONS also reclassified private registered providers of social housing in Scotland, Wales and Northern Ireland into the public sector in 2016.
- In 2017, the ONS announced that **English housing associations** would be reclassified back to the private sector from November 2017 onwards. But they remain classified as public sector bodies between July 2008 and November 2017.

A.3 To ease comparability across forecasts and outturns, we have restated our earlier forecasts to bring them in line with these current definitions. Tables A.17 to A.20 provide details on those restated forecasts. We set out this methodology in more detail in a briefing paper.³ We have not restated our forecasts for every classification change given the time that would take and because the effects of most other changes are relatively small. These effects are separated out in our analysis of forecast differences.

¹ Chapter 4 of our December 2014 *Economic and fiscal outlook* detailed the effect of these changes on our fiscal forecasts.

² Annex B of our November 2015 *Economic and fiscal outlook* detailed the effect of this change on our fiscal forecasts.

³ See Briefing paper No.7: *Evaluating forecast accuracy* on our website.

Table A.8: Breakdown of March 2016 receipts forecast differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Income tax (gross of tax credits)	186.6	180.7	-5.9	0.0	0.2	-0.5	-5.6
of which:							
Pay as you earn (PAYE)	161.1	154.9	-6.2	0.0	0.1	-1.3	-5.0
Self assessment (SA)	28.0	28.3	0.3	0.0	0.0	0.9	-0.6
National insurance contributions	133.4	132.5	-0.9	0.0	0.2	-0.8	-0.4
Value added tax	124.8	125.3	0.5	0.0	0.3	1.0	-0.9
Corporation tax	46.0	55.7	9.7	1.3	0.1	2.7	5.5
of which:							
Onshore	45.9	53.9	8.0	1.3	0.1	0.7	5.9
Offshore	0.1	1.8	1.7	0.0	0.0	2.0	-0.3
Petroleum revenue tax	-1.1	-0.6	0.5	0.0	0.0	0.2	0.3
Fuel duties	27.8	27.9	0.1	0.0	-0.8	0.0	1.0
Business rates	27.7	30.2	2.5	0.0	0.5	0.1	1.9
Council tax	31.4	32.1	0.7	0.0	0.1	0.0	0.6
VAT refunds	15.0	17.1	2.1	3.4	0.0	-0.8	-0.5
Capital gains tax	6.9	7.8	0.9	0.0	0.0	1.0	-0.2
Inheritance tax	4.9	5.2	0.3	0.0	0.0	0.4	-0.1
Stamp duties ¹	17.4	16.5	-0.8	0.0	-0.2	-0.7	0.1
of which:							
Stamp duty land tax ¹	14.2	13.0	-1.2	0.0	-0.2	-1.2	0.3
Stamp duty on shares	3.2	3.5	0.4	0.0	0.0	0.5	-0.1
Tobacco duties	9.3	8.8	-0.5	0.0	0.0	0.3	-0.9
Alcohol duties	11.5	11.6	0.1	0.0	0.0	0.2	-0.1
Air passenger duty	3.3	3.4	0.0	0.0	0.0	0.0	0.0
Insurance premium tax	4.8	5.9	1.1	0.0	0.7	-0.3	0.8
Climate change levy	2.2	1.9	-0.3	0.0	0.0	0.0	-0.3
Other HMRC taxes ²	7.1	7.5	0.4	0.0	0.0	0.2	0.2
of which:							
Landfill tax ²	0.8	0.7	-0.1	0.0	0.0	0.0	-0.1
Aggregates levy	0.4	0.4	0.0	0.0	0.0	0.0	0.0
Betting and gaming duty	2.8	3.0	0.2	0.0	0.0	0.0	0.2
Customs duties	3.2	3.4	0.2	0.0	0.0	0.1	0.1
Vehicle excise duties	5.7	6.2	0.5	0.0	0.0	0.0	0.5
Bank levy	2.7	2.6	0.0	0.0	0.0	0.0	0.0
Bank surcharge	1.1	1.9	0.8	0.0	0.0	0.0	0.8
BBC licence fee receipts	3.2	3.2	0.0	0.0	0.0	0.0	0.0
Environmental levies	8.6	6.5	-2.1	-2.0	0.0	0.0	-0.1
EU ETS auction receipts	0.4	0.4	-0.1	0.0	0.0	0.1	-0.1
Scottish taxes ³	0.7	0.7	0.0	0.0	0.0	-0.1	0.1
Other taxes	10.8	9.6	-1.2	0.2	0.0	-0.1	-1.3
National accounts taxes	692.1	700.5	8.4	2.9	1.1	2.9	1.5
less own resources EU contributions	-3.2	-3.4	-0.2	0.0	0.0	0.0	-0.2
Interest and dividends	6.2	7.1	0.8	0.0	0.0	0.2	0.6
Gross operating surplus	46.8	46.4	-0.4	0.0	0.1	0.0	-0.5
Other receipts	2.0	3.2	1.1	0.7	0.0	0.0	0.4
Current receipts	744.0	753.8	9.7	3.6	1.2	3.1	1.9

¹ Excludes Scottish LBTT.² Excludes Scottish LFT.³ Consists of Scottish LBTT and LFT but not the Scottish rate of income tax or aggregates levy.

Table A.9: Breakdown of November 2016 receipts forecast differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Income tax (gross of tax credits)	175.4	180.7	5.3	0.0	0.1	1.7	3.6
of which:							
Pay as you earn (PAYE)	151.0	154.9	3.9	0.0	0.0	2.0	2.0
Self assessment (SA)	27.3	28.3	1.0	0.0	0.0	-0.3	1.2
National insurance contributions	129.1	132.5	3.4	0.0	0.0	1.7	1.7
Value added tax	124.7	125.3	0.6	0.0	0.0	-0.8	1.4
Corporation tax	50.6	55.7	5.1	1.3	0.1	0.7	3.0
of which:							
Onshore	48.9	53.9	5.0	1.3	0.1	0.7	2.9
Offshore	1.7	1.8	0.1	0.0	0.0	-0.1	0.1
Petroleum revenue tax	-0.8	-0.6	0.2	0.0	0.0	0.1	0.2
Fuel duties	27.4	27.9	0.5	0.0	0.0	0.1	0.4
Business rates	29.3	30.2	0.8	0.0	-0.3	0.0	1.1
Council tax	31.8	32.1	0.3	0.0	0.1	0.0	0.2
VAT refunds	14.1	17.1	3.0	3.4	0.0	-0.6	0.2
Capital gains tax	7.4	7.8	0.4	0.0	0.0	1.8	-1.4
Inheritance tax	4.9	5.2	0.3	0.0	0.0	0.1	0.2
Stamp duties ¹	15.5	16.5	1.0	0.0	-0.2	0.0	1.2
of which:							
Stamp duty land tax ¹	12.2	13.0	0.8	0.0	-0.2	-0.1	1.1
Stamp duty on shares	3.3	3.5	0.2	0.0	0.0	0.1	0.1
Tobacco duties	9.2	8.8	-0.4	0.0	0.0	0.0	-0.5
Alcohol duties	11.6	11.6	0.0	0.0	0.0	0.0	0.0
Air passenger duty	3.4	3.4	0.0	0.0	0.0	0.0	0.0
Insurance premium tax	5.8	5.9	0.1	0.0	0.0	0.1	-0.1
Climate change levy	1.9	1.9	-0.1	0.0	0.0	0.0	-0.1
Other HMRC taxes ²	7.4	7.5	0.1	0.0	0.0	-0.1	0.3
of which:							
Landfill tax ²	0.8	0.7	-0.1	0.0	0.0	0.0	-0.1
Aggregates levy	0.3	0.4	0.0	0.0	0.0	0.0	0.0
Betting and gaming duty	2.9	3.0	0.1	0.0	0.0	0.0	0.1
Customs duties	3.4	3.4	0.0	0.0	0.0	-0.2	0.2
Vehicle excise duties	6.0	6.2	0.2	0.0	0.0	0.0	0.2
Bank levy	2.7	2.6	-0.1	0.0	0.0	0.0	-0.1
Bank surcharge	1.3	1.9	0.6	0.1	0.0	0.0	0.6
BBC licence fee receipts	3.2	3.2	0.0	0.0	0.0	0.0	0.0
Environmental levies	9.7	6.5	-3.2	-3.0	0.0	0.0	-0.2
EU ETS auction receipts	0.4	0.4	-0.1	0.0	0.0	0.0	-0.1
Scottish taxes ³	0.7	0.7	0.0	0.0	0.0	0.0	0.1
Other taxes	10.4	9.6	-0.8	0.2	0.0	0.2	-1.2
National accounts taxes	683.2	700.5	17.3	2.0	-0.2	5.0	10.6
less own resources EU contributions	-3.4	-3.4	0.0	0.0	0.0	0.0	0.0
Interest and dividends	5.8	7.1	1.3	0.0	0.0	0.2	1.1
Gross operating surplus	48.0	46.4	-1.6	0.0	0.0	0.0	-1.6
Other receipts	2.0	3.2	1.2	0.7	0.0	0.0	0.5
Current receipts	735.6	753.8	18.2	2.7	-0.2	5.2	10.5

¹ Excludes Scottish LBTT.² Excludes Scottish LFT.³ Consists of Scottish LBTT and LFT but not the Scottish rate of income tax or aggregates levy.

Table A.10: Breakdown of March 2017 receipts forecast differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Income tax (gross of tax credits)	174.9	180.7	5.8	0.0	0.0	1.8	4.1
of which:							
Pay as you earn (PAYE)	153.3	154.9	1.6	0.0	0.0	1.9	-0.3
Self assessment (SA)	24.8	28.3	3.5	0.0	0.0	-0.2	3.7
National insurance contributions	130.3	132.5	2.2	0.0	0.0	1.5	0.7
Value added tax	125.4	125.3	-0.1	0.0	0.0	0.5	-0.7
Corporation tax	54.1	55.7	1.6	0.0	0.0	0.3	1.2
of which:							
Onshore	52.7	53.9	1.2	0.0	0.0	0.3	0.8
Offshore	1.4	1.8	0.4	0.0	0.0	0.0	0.4
Petroleum revenue tax	-0.5	-0.6	-0.1	0.0	0.0	0.1	-0.1
Fuel duties	27.5	27.9	0.4	0.0	0.0	0.1	0.3
Business rates	29.6	30.2	0.5	0.0	0.0	0.0	0.6
Council tax	32.1	32.1	0.1	0.0	0.0	0.0	0.1
VAT refunds	13.8	17.1	3.3	3.4	0.0	-0.5	0.4
Capital gains tax	9.1	7.8	-1.3	0.0	0.0	0.5	-1.9
Inheritance tax	5.0	5.2	0.2	0.0	0.0	0.0	0.2
Stamp duties ¹	16.4	16.5	0.1	0.0	-0.1	-0.8	1.0
of which:							
Stamp duty land tax ¹	13.1	13.0	0.0	0.0	-0.1	-0.8	0.9
Stamp duty on shares	3.4	3.5	0.2	0.0	0.0	0.0	0.1
Tobacco duties	8.9	8.8	-0.1	0.0	0.0	0.0	-0.2
Alcohol duties	11.7	11.6	-0.1	0.0	0.0	0.0	-0.1
Air passenger duty	3.4	3.4	0.0	0.0	0.0	0.0	0.0
Insurance premium tax	5.7	5.9	0.2	0.0	0.0	0.1	0.1
Climate change levy	1.8	1.9	0.0	0.0	0.0	0.0	0.0
Other HMRC taxes ²	7.3	7.5	0.2	0.0	0.0	0.0	0.2
of which:							
Landfill tax ²	0.7	0.7	0.0	0.0	0.0	0.0	0.0
Aggregates levy	0.4	0.4	0.0	0.0	0.0	0.0	0.0
Betting and gaming duty	2.8	3.0	0.2	0.0	0.0	0.0	0.2
Customs duties	3.4	3.4	0.0	0.0	0.0	0.0	0.0
Vehicle excise duties	6.0	6.2	0.1	0.0	0.0	0.0	0.2
Bank levy	2.9	2.6	-0.3	0.0	0.0	0.0	-0.3
Bank surcharge	1.4	1.9	0.5	0.0	0.0	0.0	0.5
BBC licence fee receipts	3.2	3.2	-0.1	0.0	0.0	0.0	-0.1
Environmental levies	8.6	6.5	-2.1	-1.9	0.0	0.0	-0.2
EU ETS auction receipts	0.4	0.4	-0.1	0.0	0.0	0.0	-0.1
Scottish taxes ³	0.7	0.7	0.0	0.0	0.0	0.0	0.1
Other taxes	10.3	9.6	-0.7	0.2	0.0	0.0	-0.9
National accounts taxes	690.3	700.5	10.2	1.7	-0.1	3.7	4.9
less own resources EU contributions	-3.5	-3.4	0.1	0.0	0.0	0.0	0.1
Interest and dividends	6.0	7.1	1.1	0.0	0.0	0.2	0.9
Gross operating surplus	47.0	46.4	-0.5	0.0	0.0	0.0	-0.5
Other receipts	2.0	3.2	1.2	0.7	0.0	0.0	0.5
Current receipts	741.7	753.8	12.1	2.4	-0.1	3.9	5.9

¹ Excludes Scottish LBTT.² Excludes Scottish LFT.³ Consists of Scottish LBTT and LFT but not the Scottish rate of income tax or aggregates levy.

Table A.11: Breakdown of March 2016 spending forecast differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Public sector current expenditure (PSCE)							
PSCE in RDEL	291.0	288.6	-2.4	0.0	0.7	0.0	-3.1
PSCE in AME, of which:	414.1	422.9	8.8	2.1	2.6	5.4	-1.3
Welfare spending, of which:	219.2	218.8	-0.4	0.1	1.2	0.8	-2.4
Inside welfare cap	118.0	118.2	0.3	0.1	1.2	0.5	-1.5
Outside welfare cap	101.3	100.6	-0.7	0.0	0.0	0.3	-1.0
Scottish Government's current expenditure	26.5	26.5	0.0	0.0	0.0	0.0	0.0
Company and other tax credits	2.7	3.6	0.9	0.0	0.0	0.0	0.9
Net public service pension payments	12.1	11.8	-0.3	0.0	0.0	0.0	-0.3
of which:							
CG unfunded pension schemes	9.8	9.3	-0.5	0.0	0.0	0.0	-0.5
LG police and fire pension schemes	2.3	2.5	0.2	0.0	0.0	0.0	0.2
National lottery current grants	1.4	1.2	-0.2	0.0	0.0	0.0	-0.2
BBC current expenditure	3.8	3.7	-0.1	0.0	0.0	0.0	-0.1
Network Rail other current expenditure	0.3	1.1	0.8	-0.2	0.0	0.0	0.9
Other PSCE items in departmental AME	0.9	1.5	0.5	0.0	0.0	0.0	0.5
Expenditure transfers to EU institutions	9.4	9.5	0.1	0.0	0.0	0.0	0.1
Locally financed current expenditure	43.3	48.7	5.4	0.7	1.4	0.0	3.3
CG net debt interest, of which:	38.6	41.5	2.9	0.0	0.0	4.9	-2.0
CG gross debt interest	51.0	55.0	4.0	0.0	0.0	4.9	-0.9
less APF holdings of CG debt	-12.4	-13.5	-1.1	0.0	0.0	0.0	-1.1
General government depreciation	32.8	30.5	-2.2	0.0	0.0	0.4	-2.6
Current VAT refunds	12.5	15.3	2.7	3.2	0.0	-0.7	0.2
Public corporations' debt interest	2.6	2.6	0.0	0.0	0.0	0.0	0.0
Environmental levies	8.7	6.8	-1.9	-2.0	0.0	0.0	0.1
Central government imputed pensions	0.0	0.9	0.9	0.9	0.0	0.0	0.0
Local authority imputed pensions	2.0	0.5	-1.5	0.0	0.0	0.0	-1.5
Other National Accounts adjustments	-2.9	-1.6	1.3	-0.7	0.0	0.0	2.0
Total public sector current expenditure	705.1	711.5	6.4	2.1	3.3	5.4	-4.4
Public sector gross investment (PSGI)							
PSGI in CDEL	45.0	44.3	-0.7	0.0	-1.8	0.0	1.1
PSGI in AME, of which:	32.2	38.0	5.8	-1.3	1.1	-0.1	6.0
Scottish Government's capital expenditure	3.0	3.0	0.0	0.0	0.0	0.0	0.0
National lottery capital grants	0.5	0.4	-0.1	0.0	0.0	0.0	-0.1
Network Rail capital expenditure	6.1	6.7	0.6	0.0	0.0	0.0	0.6
Other PSGI items in departmental AME	1.0	0.3	-0.6	-0.2	0.0	0.0	-0.4
Locally financed capital expenditure	7.3	12.4	5.2	0.0	1.1	0.0	4.1
Public corporations' capital expenditure	13.2	17.2	4.0	0.0	0.0	0.0	4.0
Tax litigation	1.2	0.0	-1.2	-1.2	0.0	0.0	0.0
Other National Accounts adjustments	0.1	-2.1	-2.2	0.1	0.0	-0.1	-2.2
Total public sector gross investment	77.2	82.3	5.0	-1.3	-0.8	-0.1	7.1
Less public sector depreciation	-42.9	-41.1	1.9	0.0	0.0	-0.6	2.4
Public sector net investment	34.3	41.2	6.9	-1.3	-0.8	-0.6	9.6
Total managed expenditure¹	782.4	793.8	11.4	0.9	2.5	5.3	2.7

¹ All spending outturns are provisional and subject to change.

Table A.12: Breakdown of November 2016 spending forecast differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Public sector current expenditure (PSCE)							
PSCE in RDEL	290.4	288.6	-1.7	0.0	0.2	0.0	-2.0
PSCE in AME, of which:	421.4	422.9	1.5	1.3	1.4	2.5	-3.7
Welfare spending, of which:	221.2	218.8	-2.4	0.1	0.0	-0.1	-2.5
Inside welfare cap	119.6	118.2	-1.4	0.1	0.0	0.0	-1.5
Outside welfare cap	101.6	100.6	-1.1	0.0	0.0	-0.1	-1.0
Scottish Government's current expenditure	26.5	26.5	0.0	0.0	0.0	0.0	0.0
Company and other tax credits	3.3	3.6	0.2	0.0	0.0	0.0	0.2
Net public service pension payments	12.1	11.8	-0.3	0.0	0.0	0.1	-0.4
of which:							
CG unfunded pension schemes	9.7	9.3	-0.4	0.0	0.0	0.1	-0.5
LG police and fire pension schemes	2.4	2.5	0.1	0.0	0.0	0.0	0.1
National lottery current grants	1.4	1.2	-0.2	0.0	0.0	0.0	-0.2
BBC current expenditure	3.8	3.7	-0.1	0.0	0.0	0.0	-0.1
Network Rail other current expenditure	0.6	1.1	0.6	-0.2	0.0	0.0	0.7
Other PSCE items in departmental AME	0.7	1.5	0.8	0.2	0.0	0.0	0.6
Expenditure transfers to EU institutions	10.2	9.5	-0.6	0.0	0.0	0.1	-0.7
Locally financed current expenditure	44.3	48.7	4.4	0.7	1.4	0.0	2.3
CG net debt interest, of which:	38.0	41.5	3.5	0.0	0.0	2.1	1.4
CG gross debt interest	52.2	55.0	2.8	0.0	0.0	2.1	0.7
less APF holdings of CG debt	-14.3	-13.5	0.7	0.0	0.0	0.0	0.7
General government depreciation	32.7	30.5	-2.1	0.0	0.0	0.4	-2.5
Current VAT refunds	12.0	15.3	3.2	3.2	0.0	-0.1	0.1
Public corporations' debt interest	2.8	2.6	-0.2	0.0	0.0	0.0	-0.2
Environmental levies	9.9	6.8	-3.1	-3.0	0.0	0.0	0.0
Central government imputed pensions	0.0	0.9	0.9	0.9	0.0	0.0	0.0
Local authority imputed pensions	2.1	0.5	-1.6	0.0	0.0	0.0	-1.6
Other National Accounts adjustments	0.0	-1.6	-1.6	-0.7	0.0	0.0	-0.9
Total public sector current expenditure	711.8	711.5	-0.3	1.3	1.6	2.5	-5.6
Public sector gross investment (PSGI)							
PSGI in CDEL	47.2	44.3	-2.9	0.0	-2.1	0.0	-0.8
PSGI in AME, of which:	34.1	38.0	3.9	-1.6	1.1	-0.5	5.0
Scottish Government's capital expenditure	3.0	3.0	0.0	0.0	0.0	0.0	0.0
National lottery capital grants	0.6	0.4	-0.1	0.0	0.0	0.0	-0.1
Network Rail capital expenditure	6.1	6.7	0.6	0.0	0.0	0.0	0.6
Other PSGI items in departmental AME	0.8	0.3	-0.5	-0.3	0.0	0.0	-0.2
Locally financed capital expenditure	7.3	12.4	5.2	0.0	1.1	0.0	4.1
Public corporations' capital expenditure	14.5	17.2	2.7	0.0	0.0	0.0	2.7
Tax litigation	1.5	0.0	-1.5	-1.5	0.0	0.0	0.0
Other National Accounts adjustments	0.3	-2.1	-2.4	0.1	0.0	-0.5	-2.0
Total public sector gross investment	81.3	82.3	1.0	-1.6	-1.0	-0.5	4.2
Less public sector depreciation	-42.7	-41.1	1.7	0.0	0.0	-0.6	2.3
Public sector net investment	38.5	41.2	2.7	-1.6	-1.0	-1.1	6.5
Total managed expenditure¹	793.1	793.8	0.7	-0.4	0.6	2.0	-1.4

¹ All spending outturns are provisional and subject to change.

Table A.13: Breakdown of March 2017 spending forecast differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Public sector current expenditure (PSCE)							
PSCE in RDEL	291.8	288.6	-3.1	0.0	-1.2	0.0	-2.0
PSCE in AME, of which:	426.5	422.9	-3.6	2.4	0.0	-1.7	-4.3
Welfare spending, of which:	221.1	218.8	-2.3	0.1	0.0	-0.1	-2.4
Inside welfare cap	119.6	118.2	-1.4	0.1	0.0	0.0	-1.6
Outside welfare cap	101.5	100.6	-0.9	0.0	0.0	-0.2	-0.8
Scottish Government's current expenditure	26.5	26.5	0.0	0.0	0.0	0.0	0.0
Company and other tax credits	3.5	3.6	0.1	0.0	0.0	0.0	0.1
Net public service pension payments	12.1	11.8	-0.3	0.0	0.0	0.0	-0.3
of which:							
CG unfunded pension schemes	9.7	9.3	-0.4	0.0	0.0	0.0	-0.4
LG police and fire pension schemes	2.4	2.5	0.1	0.0	0.0	0.0	0.1
National lottery current grants	1.3	1.2	-0.1	0.0	0.0	0.0	-0.1
BBC current expenditure	4.0	3.7	-0.3	0.0	0.0	0.0	-0.3
Network Rail other current expenditure	0.7	1.1	0.4	-0.2	0.0	0.0	0.6
Other PSCE items in departmental AME	0.7	1.5	0.7	0.2	0.0	0.0	0.5
Expenditure transfers to EU institutions	11.5	9.5	-2.0	0.0	0.0	-0.1	-1.9
Locally financed current expenditure	46.6	48.7	2.0	0.7	0.0	0.0	1.3
CG net debt interest, of which:	41.5	41.5	0.0	0.0	0.0	-1.2	1.2
CG gross debt interest	55.8	55.0	-0.8	0.0	0.0	-1.2	0.4
less APF holdings of CG debt	-14.3	-13.5	0.7	0.0	0.0	0.0	0.7
General government depreciation	32.0	30.5	-1.4	0.0	0.0	0.2	-1.6
Current VAT refunds	12.2	15.3	3.1	3.2	0.0	-0.5	0.3
Public corporations' debt interest	2.7	2.6	-0.1	0.0	0.0	0.0	-0.1
Environmental levies	8.8	6.8	-2.0	-1.9	0.0	0.0	-0.1
Central government imputed pensions	0.0	0.9	0.9	0.9	0.0	0.0	0.0
Local authority imputed pensions	2.2	0.5	-1.7	0.0	0.0	0.0	-1.7
Other National Accounts adjustments	-1.0	-1.6	-0.6	-0.7	0.0	0.0	0.1
Total public sector current expenditure	718.3	711.5	-6.8	2.4	-1.2	-1.7	-6.3
Public sector gross investment (PSGI)							
PSGI in CDEL	46.6	44.3	-2.3	0.0	-1.3	0.0	-1.0
PSGI in AME, of which:	33.7	38.0	4.2	-1.7	0.0	0.0	5.9
Scottish Government's capital expenditure	3.0	3.0	0.0	0.0	0.0	0.0	0.0
National lottery capital grants	0.5	0.4	-0.1	0.0	0.0	0.0	-0.1
Network Rail capital expenditure	5.8	6.7	0.9	0.0	0.0	0.0	0.9
Other PSGI items in departmental AME	0.8	0.3	-0.5	-0.3	0.0	0.0	-0.2
Locally financed capital expenditure	7.2	12.4	5.2	0.0	0.0	0.0	5.2
Public corporations' capital expenditure	15.4	17.2	1.8	0.0	0.0	0.0	1.8
Tax litigation	1.6	0.0	-1.6	-1.6	0.0	0.0	0.0
Other National Accounts adjustments	-0.5	-2.1	-1.6	0.1	0.0	0.0	-1.7
Total public sector gross investment	80.3	82.3	1.9	-1.7	-1.3	0.0	4.9
Less public sector depreciation	-42.2	-41.1	1.1	0.0	0.0	-0.2	1.4
Public sector net investment	38.2	41.2	3.1	-1.7	-1.3	-0.3	6.3
Total managed expenditure¹	798.6	793.8	-4.8	0.7	-2.5	-1.7	-1.4

¹ All spending outturns are provisional and subject to change.

Table A.14: Breakdown of March 2016 welfare spending differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Welfare cap							
DWP social security	74.3	77.0	2.8	0.9	1.0	0.2	0.7
of which:							
Housing benefit (not on JSA)	21.0	20.3	-0.7	-1.1	0.0	0.1	0.2
Disability living allowance and personal independence payments	16.2	17.5	1.3	0.0	0.4	0.1	0.8
Incapacity benefits ¹	14.6	15.0	0.4	-0.4	0.1	0.0	0.8
Attendance allowance	5.6	5.5	-0.1	0.0	0.0	0.0	-0.1
Pension credit	5.5	5.4	-0.1	0.0	0.0	0.0	-0.1
Carer's allowance	2.9	2.8	0.0	0.0	0.1	0.0	-0.1
Statutory maternity pay	2.4	2.4	-0.1	0.0	0.0	0.0	-0.1
Income support (non-incapacity)	2.1	2.1	0.0	0.0	0.0	0.0	0.1
Winter fuel payments	2.0	2.0	0.0	0.0	0.0	0.0	0.0
Universal credit ²	-0.5	1.9	2.4	2.4	0.4	0.0	-0.4
Other DWP in welfare cap ³	2.4	2.0	-0.4	0.0	0.0	0.0	-0.4
Personal tax credits	28.1	25.9	-2.2	-0.8	0.2	0.3	-1.9
Child benefit	11.6	11.7	0.1	0.0	0.0	0.0	0.1
Tax free childcare	0.4	0.0	-0.4	0.0	0.0	0.0	-0.4
NI social security in welfare cap ⁴	3.4	3.5	0.0	0.0	0.0	0.0	0.0
Paternity pay	0.1	0.1	-0.1	0.0	0.0	0.0	-0.1
Total welfare cap	118.0	118.2	0.3	0.1	1.2	0.5	-1.5
Welfare spending outside the welfare cap							
DWP social security	98.8	98.2	-0.6	0.0	0.0	0.3	-0.8
of which:							
State pension	94.1	93.8	-0.3	0.0	0.0	0.1	-0.4
Jobseeker's allowance	2.7	1.7	-1.0	-0.9	0.0	0.0	-0.2
Housing benefit (on JSA)	2.0	1.4	-0.6	-0.6	0.0	0.1	-0.1
Universal credit	0.0	1.3	1.3	1.5	0.0	0.0	-0.2
Other DWP outside welfare cap ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NI social security outside welfare cap	2.5	2.4	-0.1	0.0	0.0	0.0	-0.1
Total welfare spending outside the welfare cap	101.3	100.6	-0.7	0.0	0.0	0.3	-1.0
Total welfare	219.2	218.8	-0.4	0.1	1.2	0.8	-2.4

¹ Incapacity benefits includes incapacity benefit, employment and support allowance, severe disablement allowance and income support (incapacity part).

² Universal credit additional costs not already included against other benefits (i.e. UC payments that don't exist under current benefit structure).

³ Includes various definitional differences between the accounting bases used to measure forecast and outturn.

⁴ An allocation of error between categories is not available, so we assume all errors are fiscal forecasting errors.

Table A.15: Breakdown of November 2016 welfare spending differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Welfare cap							
DWP social security	75.8	77.0	1.2	0.9	0.0	0.1	0.3
of which:							
Housing benefit (not on JSA)	21.0	20.3	-0.8	-1.1	0.0	0.0	0.3
Disability living allowance and personal independence payments	17.1	17.5	0.4	0.0	0.0	0.0	0.4
Incapacity benefits ¹	15.1	15.0	-0.1	-0.5	0.0	0.0	0.3
Attendance allowance	5.5	5.5	0.0	0.0	0.0	0.0	0.0
Pension credit	5.4	5.4	0.1	0.0	0.0	0.0	0.1
Carer's allowance	2.9	2.8	-0.1	0.0	0.0	0.0	-0.1
Statutory maternity pay	2.4	2.4	0.0	0.0	0.0	0.0	0.0
Income support (non-incapacity)	2.0	2.1	0.1	0.0	0.0	0.0	0.1
Winter fuel payments	2.0	2.0	0.0	0.0	0.0	0.0	0.0
Universal credit ²	-0.1	1.9	2.0	2.4	0.0	0.0	-0.5
Other DWP in welfare cap ³	2.4	2.0	-0.4	0.0	0.0	0.0	-0.4
Personal tax credits	28.0	25.9	-2.0	-0.8	0.0	0.0	-1.2
Child benefit	11.6	11.7	0.1	0.0	0.0	0.0	0.1
Tax free childcare	0.6	0.0	-0.6	0.0	0.0	0.0	-0.6
NI social security in welfare cap ⁴	3.5	3.5	-0.1	0.0	0.0	0.0	-0.1
Paternity pay	0.1	0.1	-0.1	0.0	0.0	0.0	-0.1
Total welfare cap	119.6	118.2	-1.4	0.1	0.0	0.0	-1.5
Welfare spending outside the welfare cap							
DWP social security	99.1	98.2	-0.9	0.0	0.0	-0.1	-0.8
of which:							
State pension	94.1	93.8	-0.3	0.0	0.0	0.0	-0.3
Jobseeker's allowance	2.8	1.7	-1.1	-0.9	0.0	-0.1	-0.2
Housing benefit (on JSA)	2.2	1.4	-0.8	-0.7	0.0	0.0	-0.1
Universal credit	0.0	1.3	1.3	1.6	0.0	0.0	-0.2
Other DWP outside welfare cap ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NI social security outside welfare cap	2.5	2.4	-0.1	0.0	0.0	0.0	-0.1
Total welfare spending outside the welfare cap	101.6	100.6	-1.1	0.0	0.0	-0.1	-1.0
Total welfare	221.3	218.8	-2.4	0.1	0.0	-0.1	-2.5

¹ Incapacity benefits includes incapacity benefit, employment and support allowance, severe disablement allowance and income support (incapacity part).

² Universal credit additional costs not already included against other benefits (i.e. UC payments that don't exist under current benefit structure).

³ Includes various definitional differences between the accounting bases used to measure forecast and outturn.

⁴ An allocation of error between categories is not available, so we assume all errors are fiscal forecasting errors.

Table A.16: Breakdown of March 2017 welfare spending differences for 2017-18

	£ billion						
	Forecast	Outturn	Difference	of which:			
				Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Welfare cap							
DWP social security	76.4	77.0	0.7	0.9	0.0	0.0	-0.3
of which:							
Housing benefit (not on JSA)	21.1	20.3	-0.9	-1.1	0.0	0.0	0.2
Disability living allowance and personal independence payments	17.3	17.5	0.2	0.0	0.0	0.0	0.2
Incapacity benefits ¹	15.4	15.0	-0.4	-0.5	0.0	0.0	0.0
Attendance allowance	5.5	5.5	0.0	0.0	0.0	0.0	0.0
Pension credit	5.4	5.4	0.1	0.0	0.0	0.0	0.1
Carer's allowance	2.9	2.8	-0.1	0.0	0.0	0.0	-0.1
Statutory maternity pay	2.4	2.4	0.0	0.0	0.0	0.0	0.0
Income support (non-incapacity)	2.0	2.1	0.1	0.0	0.0	0.0	0.1
Winter fuel payments	2.0	2.0	0.0	0.0	0.0	0.0	0.0
Universal credit ²	-0.1	1.9	2.0	2.5	0.0	0.0	-0.4
Other DWP in welfare cap ³	2.4	2.0	-0.4	0.0	0.0	0.0	-0.4
Personal tax credits	27.6	25.9	-1.7	-0.8	0.0	0.0	-0.9
Child benefit	11.6	11.7	0.1	0.0	0.0	0.0	0.1
Tax free childcare	0.4	0.0	-0.4	0.0	0.0	0.0	-0.4
NI social security in welfare cap ⁴	3.5	3.5	0.0	0.0	0.0	0.0	0.0
Paternity pay	0.1	0.1	-0.1	0.0	0.0	0.0	-0.1
Total welfare cap	119.6	118.2	-1.4	0.1	0.0	0.0	-1.6
Welfare spending outside the welfare cap							
DWP social security	99.0	98.2	-0.8	0.0	0.0	-0.2	-0.7
of which:							
State pension	94.0	93.8	-0.2	0.0	0.0	0.0	-0.2
Jobseeker's allowance	2.8	1.7	-1.1	-0.9	0.0	-0.1	-0.1
Housing benefit (on JSA)	2.2	1.4	-0.8	-0.7	0.0	0.0	-0.2
Universal credit	0.0	1.3	1.3	1.6	0.0	0.0	-0.2
Other DWP outside welfare cap ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NI social security outside welfare cap	2.5	2.4	-0.1	0.0	0.0	0.0	-0.1
Total welfare spending outside the welfare cap	101.5	100.6	-0.9	0.0	0.0	-0.2	-0.8
Total welfare	221.1	218.8	-2.3	0.1	0.0	-0.1	-2.4

¹ Incapacity benefits includes incapacity benefit, employment and support allowance, severe disablement allowance and income support (incapacity part).

² Universal credit additional costs not already included against other benefits (i.e. UC payments that don't exist under current benefit structure).

³ Includes various definitional differences between the accounting bases used to measure forecast and outturn.

⁴ An allocation of error between categories is not available, so we assume all errors are fiscal forecasting errors.

Table A.17: Adjustments to receipts and spending forecasts for ESA10, PSF review and housing associations classification decisions

	£ billion											
	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22
Receipts												
June 2010	20.5	21.8	23.9	25.0	26.4	27.6						
November 2010	20.4	20.4	22.2	23.4	24.9	26.2						
March 2011	20.3	20.5	22.2	23.4	24.8	25.9						
November 2011		20.5	22.0	23.3	24.7	25.9	26.3					
March 2012		21.5	23.0	24.4	25.8	27.0	27.4					
December 2012			22.9	23.9	24.7	24.5	23.8	21.0				
March 2013			22.0	22.9	23.9	24.0	23.7	21.4				
December 2013				22.9	23.9	25.1	24.6	21.3	17.4			
March 2014				22.7	24.3	25.2	24.7	21.4	17.5			
December 2014					7.7	8.1	7.9	5.1	0.8	0.8		
March 2015					7.7	8.1	7.9	5.1	0.8	0.8		
July 2015					7.7	8.1	7.9	5.1	0.8	0.8	0.9	
November 2015						0.9	0.8	-1.7	-5.5	-5.3	-5.6	
March 2016						0.9	0.8	-1.8	-5.7	-5.6	-6.0	
November 2016								-2.5	-6.4	-6.3	-6.6	-7.0
March 2017								-2.5	-6.5	-6.4	-6.8	-7.2
Spending												
June 2010	20.4	21.0	29.4	18.8	22.3	21.6						
November 2010	20.3	19.7	27.7	17.2	20.8	20.2						
March 2011	20.2	19.8	27.7	17.2	20.7	20.0						
November 2011		19.7	27.5	17.1	20.7	20.0	21.0					
March 2012		19.7	27.4	17.0	20.6	19.9	21.0					
December 2012			27.3	16.5	19.5	17.4	17.4	13.8				
March 2013			26.5	15.5	18.7	16.9	17.3	14.2				
December 2013				15.6	18.7	18.0	18.2	14.0	9.8			
March 2014				15.3	19.1	18.1	18.3	14.1	9.9			
December 2014					11.4	9.2	11.2	8.0	1.3	1.2		
March 2015					11.4	9.2	11.2	8.0	1.3	1.2		
July 2015					11.4	9.2	11.2	8.0	1.3	1.2	1.3	
November 2015						0.9	1.2	-2.2	-7.4	-6.9	-8.1	
March 2016						0.9	1.2	-2.2	-7.5	-6.8	-7.9	
November 2016								-3.9	-10.0	-9.2	-10.1	-10.8
March 2017								-3.8	-10.4	-9.9	-10.2	-11.3

Our forecasts from June 2010 to March 2014 have been restated for ESA10 and PSF review classification changes.

Our forecasts from June 2010 to July 2015 have been restated for the reclassification of English 'private registered providers' of social housing from the private to the public corporations sector until November 2017.

Our forecasts from June 2010 to March 2016 have been restated for the reclassification of Scottish, Welsh and Northern Irish 'private registered providers' of social housing from the private to the public corporations sector.

Our forecasts from November 2015 to March 2017 have been restated for the reclassification of English 'private registered providers' of social housing from the public corporations sector to the private sector from November 2017 onwards.

Table A.18: Restated receipts and spending forecasts for ESA10, PSF review and housing associations classification decisions

	£ billion											
	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22
Receipts												
June 2010	568.2	606.0	645.8	686.8	726.4	764.6						
November 2010	570.0	606.6	642.5	682.6	722.8	760.7						
March 2011	568.8	609.1	641.9	683.7	722.2	760.4						
November 2011		596.0	616.4	646.9	682.2	719.4	761.4					
March 2012		591.9	614.5	646.9	684.2	719.0	762.6					
December 2012			605.3	632.2	657.1	687.9	723.3	755.3				
March 2013			602.4	623.1	645.8	673.1	711.7	743.0				
December 2013				629.5	658.4	690.4	729.8	761.6	794.2			
March 2014				630.4	660.9	693.4	732.7	764.3	795.1			
December 2014					653.5	678.4	713.7	741.8	770.2	803.9		
March 2015					654.6	675.5	708.8	736.3	765.3	805.1		
July 2015					654.0	681.0	719.1	748.9	778.8	815.2	857.0	
November 2015						683.1	724.2	761.0	791.1	825.8	866.3	
March 2016						682.7	717.3	744.0	773.8	815.3	846.2	
November 2016							710.6	735.6	761.5	795.5	828.2	862.1
March 2017							721.1	741.7	769.8	800.2	828.0	862.4
Spending												
June 2010	717.2	720.9	740.4	740.7	759.9	779.1						
November 2010	718.5	723.3	739.0	736.6	753.9	773.1						
March 2011	714.6	730.1	748.0	747.3	764.4	783.8						
November 2011		722.3	742.1	740.2	757.1	766.6	779.7					
March 2012		716.1	738.8	737.0	754.1	763.9	777.3					
December 2012			729.6	736.4	750.5	762.0	772.5	779.0				
March 2013			727.7	735.5	749.1	761.6	772.2	778.4				
December 2013				733.4	749.2	762.1	774.4	777.8	784.4			
March 2014				730.8	751.1	761.5	770.8	773.6	782.7			
December 2014					748.5	755.4	757.9	759.2	766.6	781.2		
March 2015					748.5	751.9	751.5	751.9	760.5	798.6		
July 2015					747.0	751.6	765.5	776.0	785.6	805.6	845.8	
November 2015						756.6	774.5	785.3	793.7	814.1	849.2	
March 2016						754.8	773.2	782.4	793.5	803.6	833.2	
November 2016							778.8	793.1	804.4	814.5	845.4	875.6
March 2017							772.8	798.6	806.8	818.1	845.1	875.1

Our forecasts from June 2010 to March 2014 have been restated for ESA10 and PSF review classification changes.

Our forecasts from June 2010 to July 2015 have been restated for the reclassification of English 'private registered providers' of social housing from the private to the public corporations sector until November 2017.

Our forecasts from June 2010 to March 2016 have been restated for the reclassification of Scottish, Welsh and Northern Irish 'private registered providers' of social housing from the private to the public corporations sector.

Our forecasts from November 2015 to March 2017 have been restated for the reclassification of English 'private registered providers' of social housing from the public corporations sector to the private sector from November 2017 onwards.

Table A.19: Adjustments to PSNB forecasts for ESA10, PSF review and housing associations classification decisions

	£ billion											
	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22
Public sector net borrowing												
June 2010	0.0	-0.8	5.5	-6.3	-4.0	-5.9						
November 2010	0.0	-0.8	5.5	-6.3	-4.0	-5.9						
March 2011	0.0	-0.8	5.5	-6.3	-4.0	-5.9						
November 2011		-0.8	5.5	-6.3	-4.0	-5.9	-5.3					
March 2012		-1.8	4.5	-7.5	-5.2	-7.1	-6.4					
December 2012			4.5	-7.5	-5.2	-7.1	-6.4	-7.2				
March 2013			4.5	-7.5	-5.2	-7.1	-6.4	-7.2				
December 2013				-7.5	-5.2	-7.1	-6.4	-7.2	-7.6			
March 2014				-7.5	-5.2	-7.1	-6.4	-7.2	-7.6			
December 2014					3.7	1.1	3.3	2.8	0.4	0.4		
March 2015					3.7	1.1	3.3	2.8	0.4	0.4		
July 2015					3.7	1.1	3.3	2.8	0.4	0.4	0.4	
November 2015						-0.1	0.4	-0.5	-2.0	-1.6	-2.4	
March 2016						-0.1	0.4	-0.4	-1.8	-1.2	-2.0	
November 2016							0.0	-1.5	-3.6	-2.9	-3.5	-3.7
March 2017							0.0	-1.3	-3.9	-3.5	-3.4	-4.1

Our forecasts from June 2010 to March 2014 have been restated for ESA10 and PSF review classification changes.

Our forecasts from June 2010 to July 2015 have been restated for the reclassification of English 'private registered providers' of social housing from the private to the public corporations sector until November 2017.

Our forecasts from June 2010 to March 2016 have been restated for the reclassification of Scottish, Welsh and Northern Irish 'private registered providers' of social housing from the private to the public corporations sector.

Our forecasts from November 2015 to March 2017 have been restated for the reclassification of English 'private registered providers' of social housing from the public corporations sector to the private sector from November 2017 onwards.

Table A.20: Restated PSNB forecasts for ESA10, PSF review and housing associations classification decisions

	£ billion											
	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22
Public sector net borrowing												
June 2010	149.1	114.9	94.6	53.8	33.4	14.5						
November 2010	148.5	116.7	96.5	53.9	31.0	12.3						
March 2011	145.9	121.0	106.1	63.5	42.2	23.3						
November 2011		126.4	125.7	93.2	74.9	47.2	18.3					
March 2012		124.2	124.4	90.0	69.8	44.9	14.7					
December 2012			124.4	104.1	93.4	74.1	49.2	23.7				
March 2013			125.4	112.4	103.2	88.4	60.6	35.5				
December 2013				103.8	90.8	71.6	44.7	16.2	-9.8			
March 2014				100.4	90.3	68.1	38.1	9.3	-12.4			
December 2014					95.0	77.0	44.2	17.4	-3.6	-22.7		
March 2015					93.9	76.4	42.7	15.6	-4.8	-6.6		
July 2015					92.9	70.6	46.4	27.1	6.8	-9.5	-11.2	
November 2015						73.4	50.3	24.3	2.6	-11.7	-17.1	
March 2016						72.1	55.9	38.4	19.7	-11.6	-13.0	
November 2016							68.2	57.5	42.9	19.0	17.2	13.5
March 2017							51.7	57.0	36.9	17.9	17.2	12.7

Our forecasts from June 2010 to March 2014 have been restated for ESA10 and PSF review classification changes.

Our forecasts from June 2010 to July 2015 have been restated for the reclassification of English 'private registered providers' of social housing from the private to the public corporations sector until November 2017.

Our forecasts from June 2010 to March 2016 have been restated for the reclassification of Scottish, Welsh and Northern Irish 'private registered providers' of social housing from the private to the public corporations sector.

Our forecasts from November 2015 to March 2017 have been restated for the reclassification of English 'private registered providers' of social housing from the public corporations sector to the private sector from November 2017 onwards.

B Comparison with past forecasts

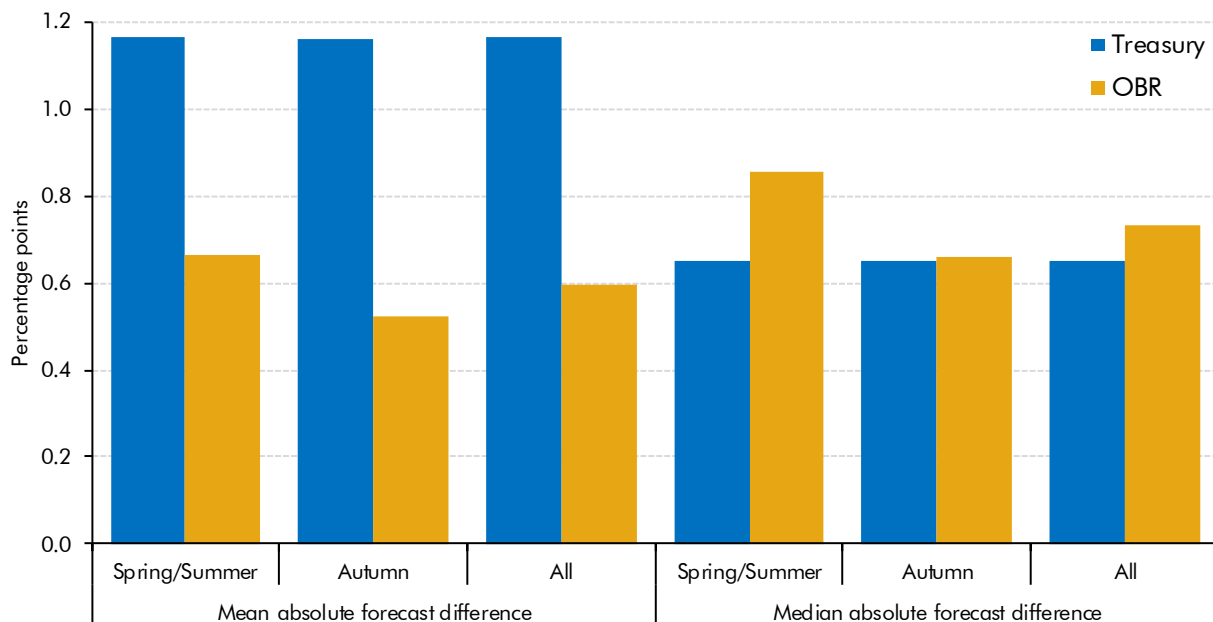
Introduction

- B.1** This annex compares the differences between the OBR's fiscal forecasts since 2010 and the latest outturns with those between Treasury forecasts and outturns over the previous 20 years. In previous reports, we focused on the mean absolute average of forecast differences prior to and since the creation of the OBR, while warning that any conclusions drawn from this comparison needed to bear in mind that we have not yet forecast through a recession. (This is often when the largest forecast differences arise, because the timing and depth of economic downturns are so hard to predict.) In this report we also compare median absolute forecast differences under the two regimes, which largely removes this recession-related distortion.
- B.2** Since the creation of the OBR in 2010, we have so far produced 18 forecasts. This provides a reasonably large sample for comparison at shorter horizons, but the number of forecasts that we can compare against outturns at longer time horizons is still relatively small. For example, we can compare only nine of our forecasts to outturns at a 4-year horizon and seven at a 5-year horizon.
- B.3** In addition to our forecasts for the public finances, we also undertake this comparison for our forecasts for real GDP growth. As we have emphasised throughout this report, real GDP is not the most important economic determinant of the public finances, but it is the measure that most commentators focus on when judging the performance of economic forecasts.

Headline comparisons

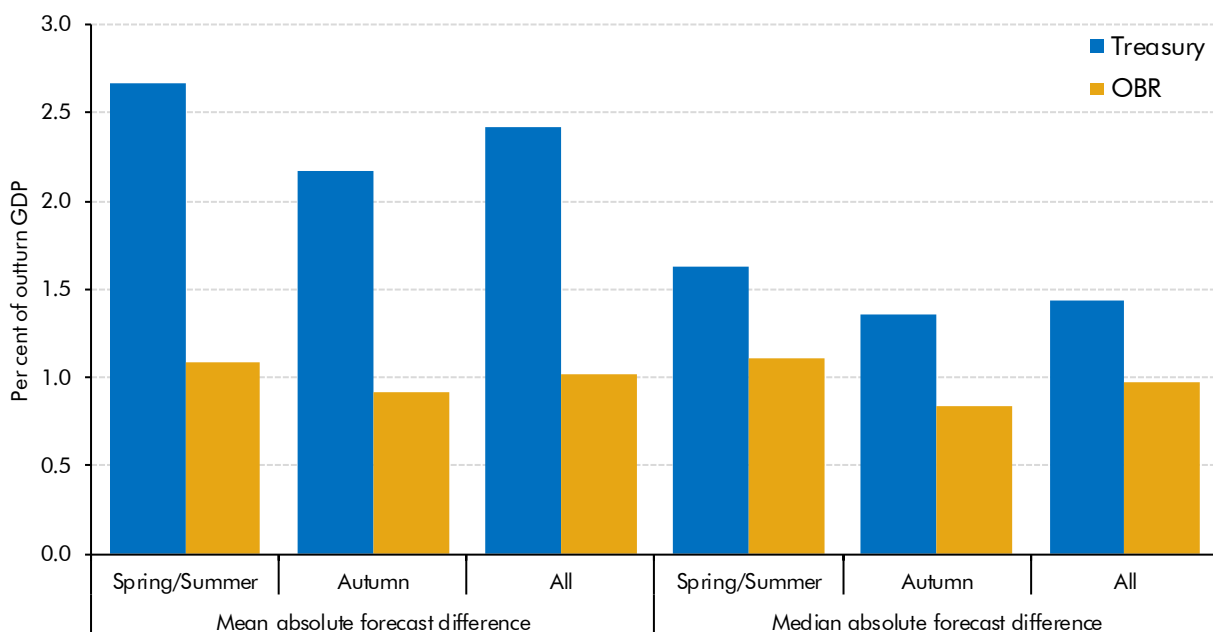
- B.4** Chart B.1 shows the mean and median absolute real GDP growth differences between OBR and Treasury forecasts and outturns at a 3-year horizon. Chart B.2 shows the same comparison for public sector net borrowing (PSNB).
- B.5** Our economy forecasts have been significantly more accurate on average than those of the previous 20 years, based on the mean absolute forecast difference. But comparing the median absolute forecast differences shows that this is almost entirely down to recession years that represent outliers in the distribution of forecast differences. By contrast, our fiscal forecasts outperform the previous 20 years both on the mean and median absolute difference comparison. But the outperformance is greater for the mean absolute difference, showing that the recession effect flatters this comparison just as it does for real GDP growth.

Chart B.1: 3-year-ahead real GDP growth forecast differences



Source: HM Treasury, OBR

Chart B.2: 3-year-ahead public sector net borrowing forecast differences



Source: HM Treasury, OBR

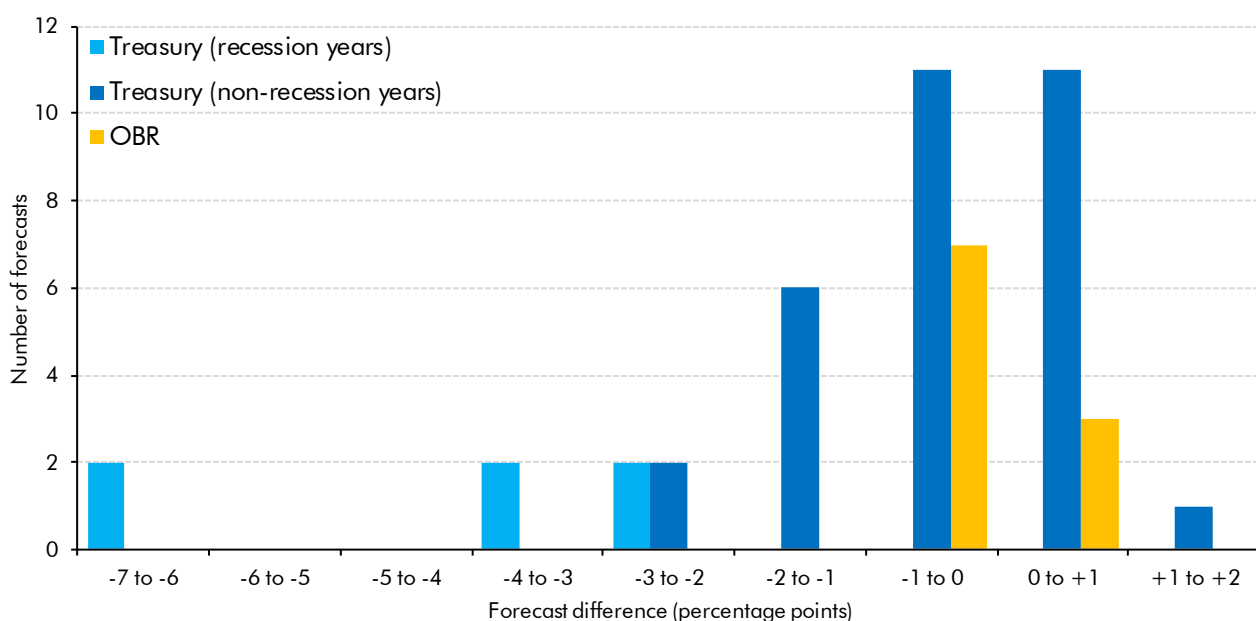
Real GDP growth

B.6 Comparing the performance of our real GDP growth forecasts against the Treasury's official forecasts is complicated by the large negative forecast differences associated with recessions. The 1990 to 2010 period covered by the Treasury forecasts includes a very large one in the late 2000s, whereas the 2010 to 2017 period covered by our forecasts does not include any. This is illustrated in Chart B.3, which shows the number of 3-year-ahead

forecast differences that fall into different percentage point buckets. In this chart we have also extended the dataset back to the Treasury's March 1988 forecast for 1991 to show the impact of the early 1990s recession on the distribution. It shows that:

- **Most forecasts were within 1 percentage point of the estimated outturn** – two-thirds of the total, which includes all the OBR forecasts made since 2010 and three-fifths of the Treasury's forecasts over the preceding 22 years.
- **Forecasts have been over-optimistic more often than over-pessimistic.** The median forecast difference at this horizon is minus 0.3 percentage points across all forecasts (minus 0.2 percentage points for Treasury forecasts and minus 0.7 for OBR forecasts).
- **Recessions generate very large negative forecast differences.** Six of the Treasury's 3-year ahead forecasts were for what turned out to be recession years (1991, 1992, 2008 and 2009). Forecast differences ranged from a 2.4 percentage point over-prediction of growth in 1992 in the March 1989 Budget to a 7.0 percentage point over-prediction of growth in 2009 in the December 2006 *Pre-Budget Report*. This largely explains the difference between the mean and median forecast accuracy shown in Chart B.1 above.
- **Large positive forecast differences are very rare.** Only one forecast – the Treasury's November 1994 Budget forecast for 1997 – saw outturn GDP growth exceed it by more than 1 percentage point. The overall distribution of forecast differences is therefore very heavily skewed to the downside.

Chart B.3: Distribution of 3-year-ahead real GDP forecast differences



Note: Includes HM Treasury forecasts back to March 1988.

Source: HM Treasury, ONS, OBR

- B.7** Table B.1 shows our forecast differences for real GDP growth, with the top panel comparing them against the mean absolute average of the previous 20 years' forecasts and the bottom panel comparing them against the median absolute average, which excludes the large forecast differences associated with the recession in the late 2000s. When comparing with the mean absolute average of historical forecasts, we assign red shading to forecast differences that exceed the absolute average and green to those that are less than it. When comparing with the median absolute average, red denotes forecast differences that are more than half a standard deviation greater than the absolute median, orange denotes forecast differences that are less than half a standard deviation greater than the absolute median and green denotes those that are less than it.
- B.8** Not surprisingly, the further into the future we forecast, the larger the gap between our forecasts and the subsequent outturns. One would expect forecasts to be more accurate at short horizons than long ones – the closer the forecaster is to the event, the more data are available and the easier it should be to forecast. However, this information advantage can be complicated by data revisions, which are often substantial, multiple, and continue long after the event.
- B.9** When measured in percentage point terms, as in Table B.1, the accuracy of real GDP growth forecasts will also be affected by the path of GDP itself. In periods of relatively stable growth, forecast differences are likely to be smaller. For example, GDP growth was roughly in line with the final years of our June 2010 forecast despite the long horizon, because growth in those years (2014 and 2015) was relatively stable and close to the potential growth rate we assumed at the time.
- B.10** Relatively few years in the 17 forecasts evaluated in Table B.1 show large differences between our real GDP growth forecasts and outturn – receiving a red light on either of the metrics in Table B.1. Those that do include:
- Our **June 2010 and November 2010 forecasts** were both over-optimistic regarding GDP growth in 2012, failing to foresee the intensification of the euro crisis. Only by late 2011 did we (and most other forecasters) significantly revise down our expectations for GDP growth in 2012. Thanks to subsequent upward data revisions, our November 2011 forecast now appears to have been too pessimistic about growth in 2012.
 - Our **November 2011 and March 2012 forecasts** proved particularly optimistic regarding GDP growth in 2016. We assumed that growth would be higher as spare capacity would be brought back into productive use, on top of an assumed potential growth rate of 2.3 per cent. In the event, 2016 saw GDP growth slow to 1.8 per cent. On our latest view of potential output and the output gap, this can be attributed to both potential growth and cyclical factors being weaker than assumed in that forecast.
 - Our **December 2012 forecast** was too pessimistic relative to the latest estimate of growth in 2012, despite the fact that initial estimates of GDP growth were available for

the first three quarters of 2012 at the time. Much of the in-year forecast difference reflects data revisions – Box 2.2 sets this out in more detail.

- Our **March 2013 forecast** was too pessimistic regarding growth in 2013. The revised data show more momentum in the economy in 2012 than the initial estimates did, and there were several policy developments that may have supported output growth by more than we had assumed – including, for example, the President of the European Central Bank’s confidence-boosting commitment to ‘do whatever it takes’ to preserve the euro and the launch of the Bank of England’s Funding for Lending Scheme in the UK.

Table B.1: Forecast differences for real GDP growth

	Per cent ¹					
	Calendar years ahead					
	In-year	One	Two	Three	Four	Five
June 2010	0.5	-0.7	-1.4	-0.9	0.2	-0.4
November 2010	-0.1	-0.5	-1.2	-0.9	0.1	-0.4
March 2011	-0.1	-1.1	-0.9	0.0	-0.5	
November 2011	0.7	0.7	-0.1	0.2	-0.7	-1.2
March 2012	0.6	0.0	0.2	-0.7	-1.2	
December 2012	1.5	0.8	0.9	0.0	-0.9	-1.1
March 2013	1.4	1.1	0.0	-0.9	-1.1	
December 2013	0.6	0.5	0.1	-0.8	-1.0	
March 2014	0.2	0.0	-0.8	-0.9		
December 2014	-0.1	-0.1	-0.4	-0.7		
March 2015	-0.2	-0.5	-0.6			
July 2015	-0.1	-0.5	-0.7			
November 2015	-0.1	-0.6	-0.8			
March 2016	-0.2	-0.5				
November 2016	-0.3	0.3				
March 2017	-0.3					
November 2017	0.2					
Mean absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.8	1.2	1.3	1.2	1.2	n/a
Autumn	0.8	1.0	1.1	1.2	1.2	1.1
June 2010	0.5	-0.7	-1.4	-0.9	0.2	-0.4
November 2010	-0.1	-0.5	-1.2	-0.9	0.1	-0.4
March 2011	-0.1	-1.1	-0.9	0.0	-0.5	
November 2011	0.7	0.7	-0.1	0.2	-0.7	-1.2
March 2012	0.6	0.0	0.2	-0.7	-1.2	
December 2012	1.5	0.8	0.9	0.0	-0.9	-1.1
March 2013	1.4	1.1	0.0	-0.9	-1.1	
December 2013	0.6	0.5	0.1	-0.8	-1.0	
March 2014	0.2	0.0	-0.8	-0.9		
December 2014	-0.1	-0.1	-0.4	-0.7		
March 2015	-0.2	-0.5	-0.6			
July 2015	-0.1	-0.5	-0.7			
November 2015	-0.1	-0.6	-0.8			
March 2016	-0.2	-0.5				
November 2016	-0.3	0.3				
March 2017	-0.3					
November 2017	0.2					
Median absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.6	0.8	0.7	0.6	0.8	n/a
Autumn	0.8	0.7	0.3	0.7	0.8	0.6
¹ A positive figure indicates outturn was above forecast.						

Public sector net borrowing

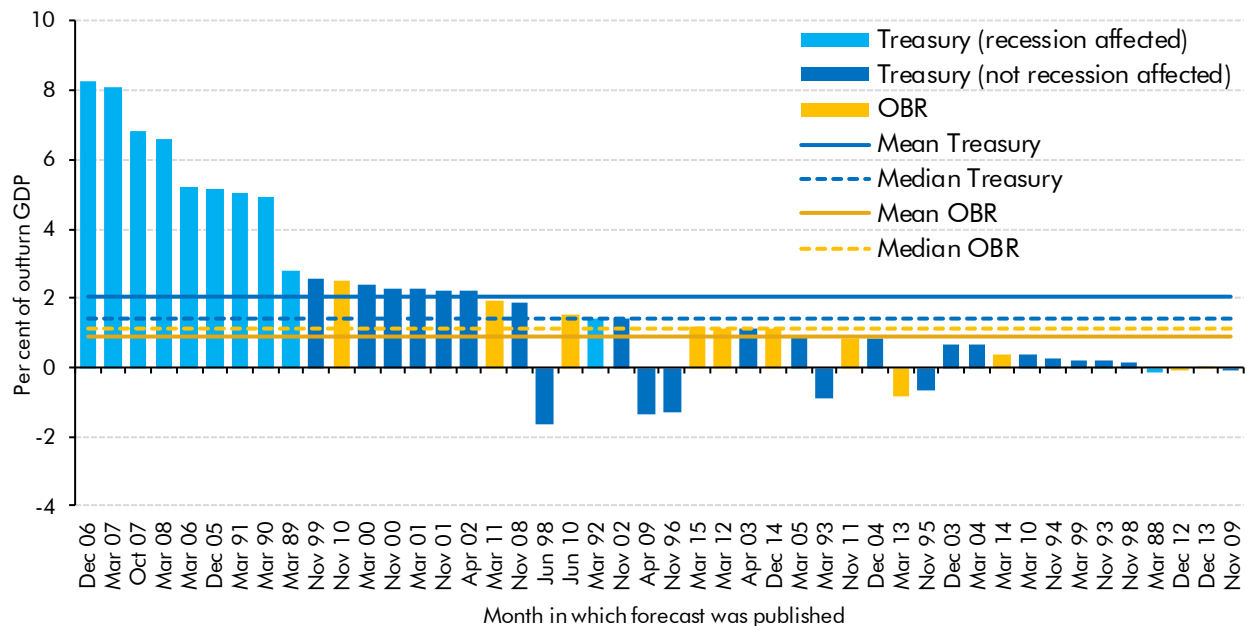
B.11 Nominal GDP has been revised up significantly in recent years, in particular in the 2014 Blue Book that brought the National Accounts into line with the 2010 European System of Accounts (ESA10). Changes to the average level of GDP do not greatly affect our interpretation of how the public finances have evolved, but the revisions have reduced the ratios of fiscal measures expressed relative to GDP. This makes comparisons of forecast differences expressed on that basis hard to interpret, so in this annex we:

- compare **cash borrowing** (Table B.2) and **cash spending** (Table B.3) forecast differences relative to outturn nominal GDP; and
- present our forecasts for the **change in receipts as a share of GDP** against outturns over time, which to a large extent abstracts from changes in the level caused by revisions to the GDP denominator (Table B.4).

B.12 In these comparisons, forecast differences have been adjusted to reflect major ONS classification changes. This includes the 2014 changes related to ESA10 and the PSF review as well as changes to the classification status of housing associations (see Annex A for more detail). As with real GDP, the distribution of fiscal forecast differences over the 20 years prior to the OBR taking over the official forecasting role is affected by the late 2000s recession. Chart B.4 illustrates that effect by plotting the 3-year ahead PSNB forecast differences in all official forecasts since 1990 that underpin the analysis in this annex, plus the March 1988 and 1989 Treasury forecasts that illustrate the impact of the early 1990s recession, ordered by their absolute size. It shows that:

- **Recession-affected forecasts account for the nine largest forecast differences.** These include all the recession-affected years for which forecasts were produced before autumn 2008 (when it became clear that GDP was falling – and sharply) and all but one of those years for which forecasts were produced before the early 1990s recession was apparent.
- **The median forecast difference is lower than the mean forecast difference** – both in terms of accuracy and bias. The mean forecast difference across all forecasts is 1.8 per cent of GDP versus a median difference of 1.1 per cent of GDP. This reflects the larger differences in the relatively small number of recession-affected years. For Treasury forecasts, the mean and median differences are 2.0 and 1.4 per cent of GDP. For OBR forecasts, those figures are lower at 0.9 and 1.1 per cent of GDP. These are more in line with the Treasury averages for years that were not affected by recessions that took place after the forecast was published – 0.7 and 0.6 per cent of GDP. The differences are larger for the OBR forecasts primarily because of the unusual and unexpected weakness of output and earnings growth since the financial crisis and the revenue shortfalls against expectations that have resulted.

Chart B.4: 3-year ahead public sector net borrowing forecast differences

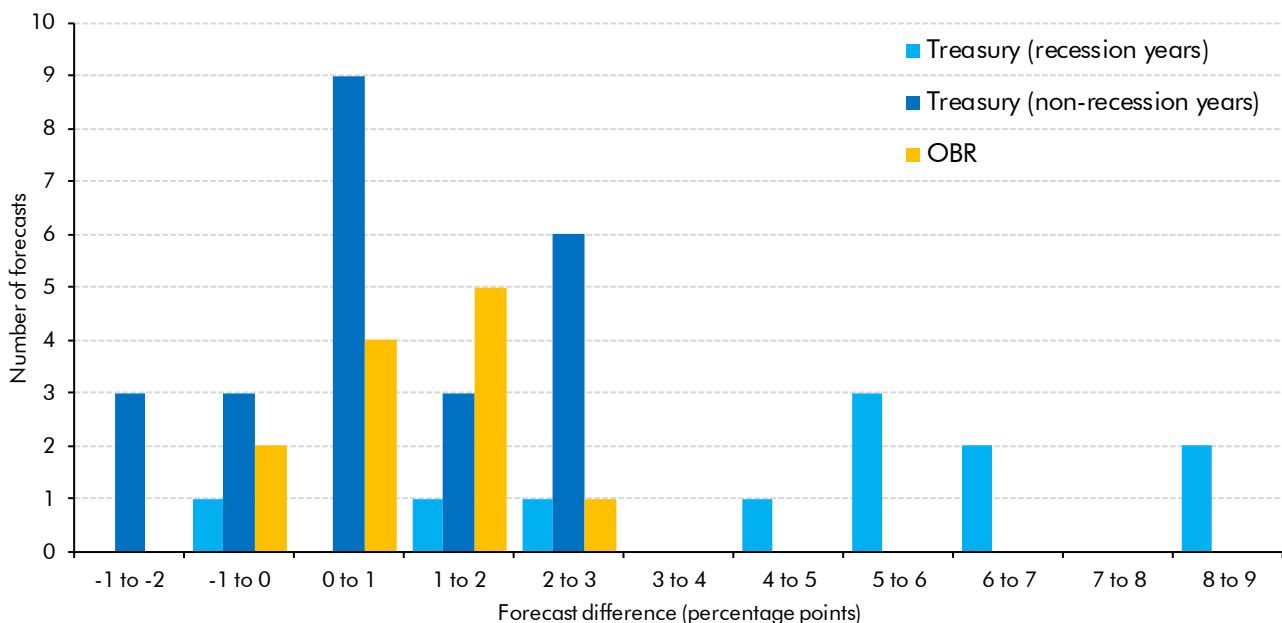


Note: Includes HM Treasury forecasts back to March 1988.

Source: HMTreasury, ONS, OBR

B.13 Chart B.5 shows how the distribution of PSNB forecast differences is skewed to the upside thanks to the recession-affected years. The effect of recessions on GDP growth dissipates fairly quickly, but their effect on the deficit persists across many years. This is reflected in the different shape of the PSNB distribution, which includes a greater spread of relatively large positive differences and much less clustering around much smaller differences.

Chart B.5: Distribution of 3-year-ahead PSNB forecast differences



Note: Includes HM Treasury forecasts back to March 1988.

Source: HMTreasury, ONS, OBR

B.14 Fewer than one in ten of our borrowing forecasts show larger forecast differences than the mean absolute average over the preceding 20 years (top panel of Table B.2) and a similarly small proportion show differences that are more than half a standard deviation above the median absolute average over that period. These larger differences include:

- Our **first three forecasts for 2012-13 to 2015-16** were too optimistic, with November 2010 particularly so. This was more than explained by unexpectedly low tax receipts. In particular, the productivity-related weakness in earnings growth, as well as policy changes to raise the income tax personal allowance faster than inflation, put downward pressure on the effective tax rate.
- Our **in-year forecasts for 2010-11 and 2011-12** were too pessimistic. This reflected several factors, in particular local authority net borrowing. Relative to our forecasts at the time, local authorities added to their reserves rather than running them down, but this only became apparent much later when reliable data became available. Quarterly data are now more timely, but this remains an area of significant uncertainty even now. We set out a full analysis of our in-year forecasting performance in *Working Paper No. 13: In-year fiscal forecasting and monitoring*.
- Our **recent forecasts for 2016-17** were too pessimistic. This was partly related to significant revisions to in-year data, as set out in Box 3.1 in Chapter 3 of our 2017 *Forecast evaluation report*.

Table B.2: Forecast differences for cash public sector net borrowing (PSNB)

	Per cent of outturn GDP					
	Fiscal years ahead					
	In-year	One	Two	Three	Four	Five
June 2010 ¹	-0.1	-0.8	0.1	1.5	2.5	3.1
November 2010	-0.7	0.0	1.4	2.5	3.2	3.1
March 2011	-0.6	-0.3	0.9	1.9	2.6	2.6
November 2011	-0.6	-0.3	0.3	0.8	1.3	1.4
March 2012	-0.5	-0.2	0.5	1.1	1.4	1.6
December 2012	-0.2	-0.3	-0.2	-0.1	-0.2	0.8
March 2013	-0.3	-0.8	-0.7	-0.8	-0.8	0.2
December 2013	-0.3	0.0	0.0	0.0	1.2	
March 2014	-0.1	0.0	0.2	0.4	1.5	
December 2014	-0.2	-0.2	0.1	1.1		
March 2015	-0.2	-0.2	0.1	1.2		
July 2015 ¹	-0.1	0.1	0.0	0.6		
November 2015	-0.1	-0.2	0.8			
March 2016	0.0	-0.5	0.1			
November 2016	-1.1	-0.8				
March 2017	-0.3	-0.8				
November 2017	-0.5					
March 2018	-0.2					
Mean absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.3	0.9	1.8	2.7	3.0	3.4
Autumn	0.5	1.3	1.9	2.2	2.7	3.1
June 2010 ¹	-0.1	-0.8	0.1	1.5	2.5	3.1
November 2010	-0.7	0.0	1.4	2.5	3.2	3.1
March 2011	-0.6	-0.3	0.9	1.9	2.6	2.6
November 2011	-0.6	-0.3	0.3	0.8	1.3	1.4
March 2012	-0.5	-0.2	0.5	1.1	1.4	1.6
December 2012	-0.2	-0.3	-0.2	-0.1	-0.2	0.8
March 2013	-0.3	-0.8	-0.7	-0.8	-0.8	0.2
December 2013	-0.3	0.0	0.0	0.0	1.2	
March 2014	-0.1	0.0	0.2	0.4	1.5	
December 2014	-0.2	-0.2	0.1	1.1		
March 2015	-0.2	-0.2	0.1	1.2		
July 2015 ¹	-0.1	0.1	0.0	0.6		
November 2015	-0.1	-0.2	0.8			
March 2016	0.0	-0.5	0.1			
November 2016	-1.1	-0.8				
March 2017	-0.3	-0.8				
November 2017	-0.5					
March 2018	-0.2					
Median absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.1	0.8	1.4	1.6	2.2	2.5
Autumn	0.4	1.2	1.4	1.4	2.1	2.5

¹ For comparability, 'in-year' is assumed to be 2009-10 and 2014-15 for the June 2010 and July 2015 forecasts respectively.

Note: A positive figure indicates outturn was above forecast.

Note: Forecast differences have been adjusted to reflect major ONS classification changes. This includes the 2014 changes related to ESA10 and the PSF review as well as changes to the classification status of housing associations.

- B.15 Cash spending forecast differences** have consistently been smaller than the mean absolute average of the previous 20 years (Table B.3). The larger under-estimates for spending in 2016-17 onwards in some forecasts – particularly the December 2014 and March 2015 forecasts for spending in 2017-18 – reflect the Conservative Government’s Summer Budget 2015 decision not to carry out the sharp cuts to departmental spending that had been pencilled in by the Coalition Government before the 2015 General Election. The larger over-estimates for 2011-12 and 2012-13 in some earlier forecasts – notably March 2011 – reflect the Treasury’s decision to clamp down on spending late in 2012-13 to ensure that borrowing fell in cash terms that year. A similarly small number of forecasts show spending differences that are more than half a standard deviation above the median absolute difference over that period.
- B.16** More of our **receipts forecast differences** have been relatively large by historical standards. Just over a tenth of the years shown in Table B.4 record above-average differences relative to the mean absolute difference and a similar proportion show differences that are more than half a standard deviation above the median absolute difference. Nearly one in four lie less than half a standard deviation above the absolute median. To a large extent these differences have reflected weakness in income tax and NICs receipts, where a less tax-rich composition of labour earnings (through higher employment but weaker average earnings) and subsequent policy changes (including successive increases in the income tax personal allowance) have reduced effective tax rates. As set out above, our more recent short-term receipts forecasts have tended to be too pessimistic.
- B.17** The fact that forecast differences on the receipts and spending side of our forecasts have often been partly offsetting, but with larger differences in receipts than spending, is consistent with the analysis of our fiscal forecast revisions presented in Annex B of our March 2016 *Economic and fiscal outlook*. On the basis of forecast revisions up to and including our most recent October 2018 forecast:
- **Revisions to receipts forecasts tend to be larger than revisions to spending forecasts.** In absolute terms, cash receipts revisions have averaged 0.5 per cent of GDP, more than twice the average cash spending revision of 0.2 per cent of GDP. That is not surprising, since most receipts are linked to the performance of the economy, whereas around half of public spending (i.e. central government departmental expenditure limits) is in effect fixed in cash terms.
 - **Revisions to receipts forecasts are typically offset to some extent by revisions to debt interest spending forecasts.** There have only been four forecasts where changes in receipts and debt interest have contributed in the same direction to the overall revision to borrowing. Receipts and debt interest forecast changes tend to offset each other since both are likely to be driven by the same underlying factors. In particular, market expectations of future interest rates, which drive our debt interest forecast, will tend to fall/rise when market participants’ expectations of future growth prospects are lowered/raised. If we share that interpretation – as will often be the case – we are likely to revise down/up our nominal GDP growth and receipts forecasts.

Table B.3: Forecast differences for cash spending

	Per cent of outturn GDP					
	Fiscal years ahead					
	In-year	One	Two	Three	Four	Five
June 2010 ¹	0.5	0.0	-0.2	-0.5	-0.4	-0.5
November 2010	-0.1	-0.4	-0.4	-0.2	-0.2	-0.9
March 2011	0.2	-0.8	-0.9	-0.8	-0.8	-1.4
November 2011	-0.3	-0.6	-0.4	-0.4	-0.5	-0.4
March 2012	0.1	-0.4	-0.2	-0.2	-0.4	-0.3
December 2012	0.1	-0.1	0.0	-0.3	0.0	0.7
March 2013	0.2	-0.1	0.1	-0.3	0.0	0.7
December 2013	0.0	0.1	-0.3	-0.1	0.8	
March 2014	0.2	0.0	-0.2	0.1	1.0	
December 2014	0.1	0.1	0.7	1.7		
March 2015	0.1	0.3	1.0	2.0		
July 2015 ¹	0.2	0.3	0.3	0.9		
November 2015	0.0	-0.1	0.4			
March 2016	0.1	-0.1	0.6			
November 2016	-0.3	0.0				
March 2017	0.0	-0.2		Smaller than mean absolute difference		
November 2017	-0.1			Mean sized difference		
March 2018	-0.2			Bigger than mean absolute difference		
Mean absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	1.1	1.0	1.1	1.5	1.8	2.0
Autumn	0.9	0.7	0.9	1.1	1.7	2.2
June 2010 ¹	0.5	0.0	-0.2	-0.5	-0.4	-0.5
November 2010	-0.1	-0.4	-0.4	-0.2	-0.2	-0.9
March 2011	0.2	-0.8	-0.9	-0.8	-0.8	-1.4
November 2011	-0.3	-0.6	-0.4	-0.4	-0.5	-0.4
March 2012	0.1	-0.4	-0.2	-0.2	-0.4	-0.3
December 2012	0.1	-0.1	0.0	-0.3	0.0	0.7
March 2013	0.2	-0.1	0.1	-0.3	0.0	0.7
December 2013	0.0	0.1	-0.3	-0.1	0.8	
March 2014	0.2	0.0	-0.2	0.1	1.0	
December 2014	0.1	0.1	0.7	1.7		
March 2015	0.1	0.3	1.0	2.0		
July 2015 ¹	0.2	0.3	0.3	0.9		
November 2015	0.0	-0.1	0.4			
March 2016	0.1	-0.1	0.6			
November 2016	-0.3	0.0		Smaller than median absolute difference		
March 2017	0.0	-0.2		Median sized difference		
November 2017	-0.1			Less than ½ std. dev. above median absolute		
March 2018	-0.2			More than ½ std. dev. above median absolute		
Median absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.7	0.8	0.8	1.2	1.7	2.0
Autumn	0.8	0.7	0.8	1.0	1.6	2.4

¹ For comparability, 'in-year' is assumed to be 2009-10 and 2014-15 for the June 2010 and July 2015 forecasts respectively.

Note: A positive figure indicates outturn was above forecast.

Note: Forecast differences have been adjusted to reflect major ONS classification changes. This includes the 2014 changes related to ESA10 and the PSF review as well as changes to the classification status of housing associations.

Table B.4: Forecast differences for changes in receipts as a share of GDP

	Per cent of GDP					
	Fiscal years ahead					
	In-year	One	Two	Three	Four	Five
June 2010 ¹	0.6	0.9	0.4	-0.8	-1.2	-1.4
November 2010	0.5	0.1	-0.9	-1.1	-1.4	-1.1
March 2011	0.3	-0.3	-1.0	-1.4	-1.5	-1.2
November 2011	-0.2	-0.8	-0.9	-1.0	-0.7	-0.1
March 2012	0.1	-0.7	-0.9	-1.2	-0.7	-0.2
December 2012	-0.7	-1.1	-1.1	-1.0	-0.4	-0.1
March 2013	-0.7	-0.8	-0.8	-0.6	-0.4	-0.2
December 2013	0.4	0.2	0.0	0.3	0.4	
March 2014	0.4	0.2	0.0	0.4	0.5	
December 2014	0.3	0.5	0.7	0.8		
March 2015	0.2	0.6	0.8	0.9		
July 2015 ¹	0.2	0.2	0.4	0.5		
November 2015	0.1	0.2	0.0			
March 2016	-0.4	-0.2	0.0			
November 2016	0.4	0.2				
March 2017	0.2	0.4				
November 2017	0.3					
March 2018	0.0					
Mean absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.5	0.9	1.0	1.1	1.0	1.3
Autumn	0.5	0.9	1.1	1.0	1.0	1.1
June 2010 ¹	0.6	0.9	0.4	-0.8	-1.2	-1.4
November 2010	0.5	0.1	-0.9	-1.1	-1.4	-1.1
March 2011	0.3	-0.3	-1.0	-1.4	-1.5	-1.2
November 2011	-0.2	-0.8	-0.9	-1.0	-0.7	-0.1
March 2012	0.1	-0.7	-0.9	-1.2	-0.7	-0.2
December 2012	-0.7	-1.1	-1.1	-1.0	-0.4	-0.1
March 2013	-0.7	-0.8	-0.8	-0.6	-0.4	-0.2
December 2013	0.4	0.2	0.0	0.3	0.4	
March 2014	0.4	0.2	0.0	0.4	0.5	
December 2014	0.3	0.5	0.7	0.8		
March 2015	0.2	0.6	0.8	0.9		
July 2015 ¹	0.2	0.2	0.4	0.5		
November 2015	0.1	0.2	0.0			
March 2016	-0.4	-0.2	0.0			
November 2016	0.4	0.2				
March 2017	0.2	0.4				
November 2017	0.3					
March 2018	0.0					
Median absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.3	0.8	1.1	0.7	0.6	1.1
Autumn	0.3	0.9	1.0	0.8	0.7	0.9

¹ For comparability, 'in-year' is assumed to be 2009-10 and 2014-15 for the June 2010 and July 2015 forecasts respectively.

Note: A positive figure indicates outturn was above forecast.

Note: Forecast differences have been adjusted to reflect major ONS classification changes. This includes the 2014 changes related to ESA10 and the PSF review as well as changes to the classification status of housing associations.

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