Office for
Budget
Responsibility

Forecast evaluation report

December 2019

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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. We prepare a fiscal stress test in each *Fiscal risks report*.

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. This process now includes 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 would 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.

This year has been unusual in terms of our forecasting and other analytical work, with considerable time devoted to preparing forecasts for a 6 November Budget that was eventually cancelled. We have therefore prepared a shorter *FER* this year that focuses on our final forecast before the EU referendum (published in March 2016) and our first one after it (published in November 2016). Respectively, these provide a pre-Brexit benchmark for how we expected the economy and public finances to perform and our initial assessment of the implications of the Brexit vote.

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 five-year forecast for the economy and the public finances, based on current government policy. 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, and government policy changes at most fiscal events, 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 to variations in 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 The backdrop to this report is:

- A **real economy** that has grown at a subdued rate since the EU referendum in 2016, with volatility in recent quarters driven by increased stockbuilding ahead of planned EU exit dates, together with the subsequent unwinding. The uncertainty over the timing and form of the UK's exit from the EU appears to have weighed on business investment in particular.

- A **labour market** in which the unemployment rate has hovered around 4 per cent for eighteen months, while nominal wage growth has picked up to around 3½ per cent a year (but remains below pre-crisis rates).

- A **budget deficit** that is set to rise after falling steadily since the crisis, and a **public debt to GDP ratio** that has broadly stabilised, once allowance is made for the impact on public sector net debt of the monetary policy actions following the EU referendum.

What questions do we seek to answer in this report?

1.4 In this year's report we return to last year's evaluation of our March 2016 and November 2016 forecasts. The significance of these two forecasts is that they are, respectively, a pre-Brexit benchmark for how we expected the economy and public finances to perform and our initial assessment of the implications of the Brexit vote.

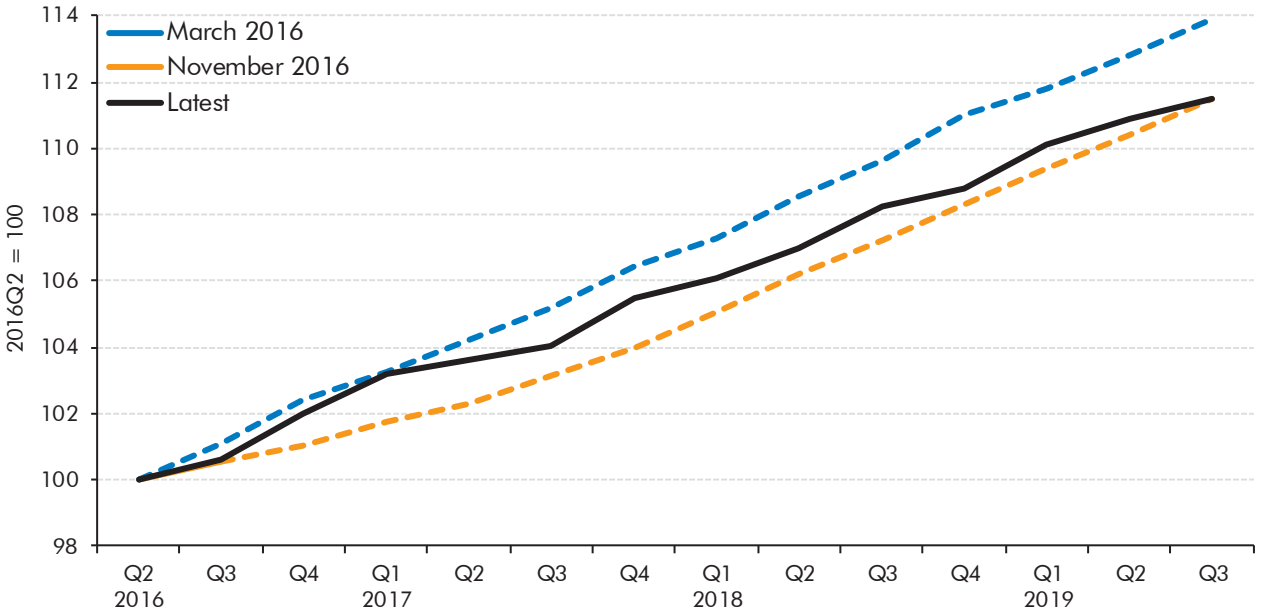
1.5 For the economy forecasts we explore why the slowdown in GDP growth following the referendum took longer to emerge than we anticipated, although it now appears to be largely as expected. We also ask why our March 2016 borrowing forecast proved accurate, despite being based on an overoptimistic economy forecast? And why our November 2016 one proved pessimistic, despite being based on an accurate economy forecast?

Assessing our Brexit-related economy forecast judgements

1.6 In November 2016, we made several forecast judgements regarding the shorter-run effects of the vote to leave the EU, which can be evaluated against the latest outturns.

1.7 Real GDP growth initially held up better than we expected in our November 2016 forecast, but more recently has been slower than we expected. Nominal GDP growth – which is more important for our public finance forecasts – also initially outperformed our November 2016 forecast and has underperformed thereafter. The result is that our forecast for cumulative nominal GDP growth over the past three years a whole has so far proven to be remarkably accurate (Chart 1.1). Overall, we expected cumulative nominal GDP growth between the second quarter of 2016 and the third quarter of 2019 of 11.5 per cent. The ONS currently estimates that growth over this period was indeed precisely 11.5 per cent.

Chart 1.1: Nominal GDP outturns and forecasts



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

1.8 Looking at the composition of growth, the big picture is one of weakness in private investment relative to our forecasts. For both forecasts, the overall shortfall in real GDP growth can be entirely explained by the shortfall in private investment. Our March 2016 forecast was understandably overoptimistic, as it assumed (reflecting government policy at the time) that the UK would not vote to leave the EU. But the downward revision to our investment forecast in November 2016 has also proved to be insufficient. Business investment has probably been even more depressed by uncertainty about the form and timing of Brexit than we expected. Indeed, it has fallen in five of the past eight quarters.

1.9 Following the referendum vote, 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. This pattern was true in last year's evaluation too. Then it appeared to be due to a fall in the household saving rate. But recent ONS revisions have reduced the strength of consumption growth and household income growth has been stronger than we expected. Further revisions are, of course, likely.

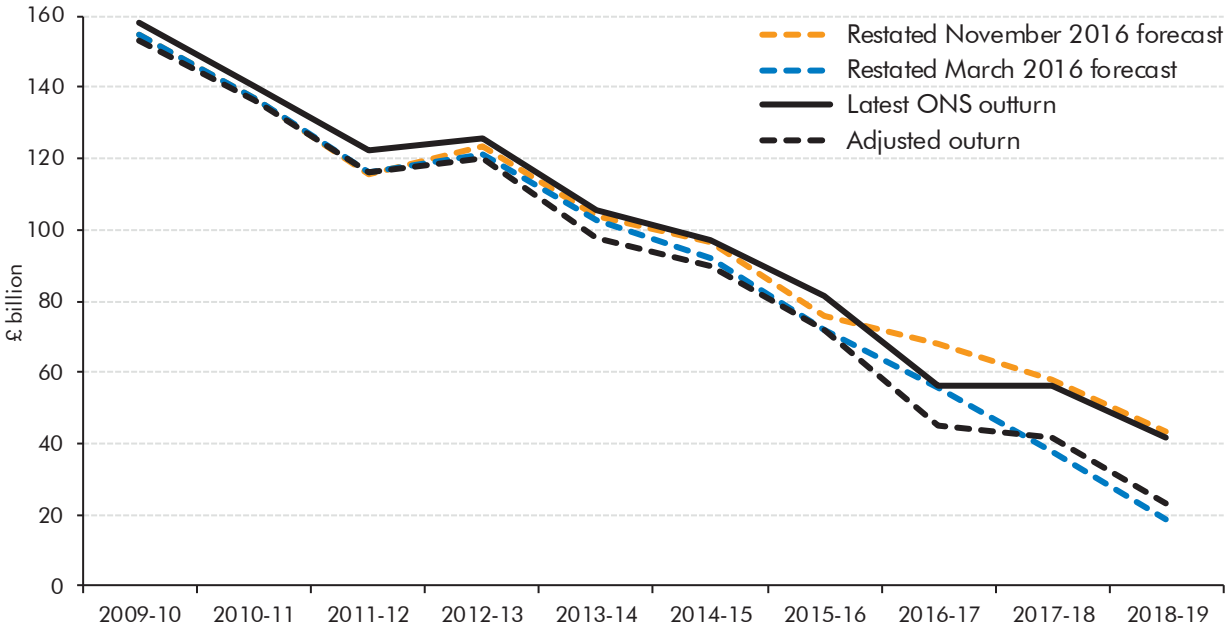
1.10 Viewed from the supply side, unexpected strength in total hours worked and unexpected weakness in productivity have largely offset each other to deliver the modest shortfall in real GDP relative to our November 2016 forecast and the more substantial one relative to our March 2016 forecast. This pattern has continued through 2018 and 2019 to date, even when compared against our November 2017 forecast when we revised down our projection of potential productivity growth materially.

Explaining 2018-19 fiscal forecast differences

1.11 In our *FERs*, we typically restate our previous forecasts to be broadly consistent with the latest statistical treatments in outturn data published by the ONS. For this report, as well as restating some parts of our forecasts, we have adjusted ONS outturn data to remove the effects of changes that have been implemented recently – some of which are quite large. A fuller discussion of these changes, and their effects on our March 2019 forecast, was presented in our recent *Restated March 2019 forecast* publication.

1.12 Chart 1.2 compares our restated March 2016 and November 2016 public sector net borrowing (PSNB) forecasts with the adjusted outturn data, which provides a like-for-like comparison. It shows that our March 2016 forecast was reasonably accurate, while our November 2016 one was too pessimistic. That contrasts with our economy forecasts, where the March forecast was too optimistic while the November forecast proved quite accurate. The chart also shows the latest actual outturns. On that basis, the November forecast looks the more accurate – but only by chance, with the like-for-like forecast difference coincidentally very close in size to the effect of the ONS statistical changes.

Chart 1.2: Comparing our restated PSNB forecasts with adjusted and actual outturns



Source: ONS, OBR

1.13 Looking at the receipts and spending components of the two forecasts in more detail (which are also presented on a restated forecast versus adjusted outturn basis):

- Our **March 2016 forecast** underestimated borrowing by just £4.4 billion, as receipts and spending exceeded our forecasts by £14.3 billion and £18.7 billion respectively. These differences were concentrated in the forecasts for growth between 2015-16 and 2018-19, with the starting point proving reasonably accurate (as one would expect when monthly data are available for most of the year). Stronger spending growth largely reflected higher departmental current spending and higher investment spending by both central and local government. Stronger receipts growth was dominated by unexpectedly buoyant onshore corporation tax receipts.

- Our **November 2016 forecast** overestimated borrowing by a larger margin of £20.3 billion, with receipts underestimated by £26.3 billion and spending underestimated by just £6.0 billion. This difference is more than explained by the fact that our in-year forecast for 2016-17 proved much too pessimistic, with the change in borrowing over the subsequent two years proving more accurate. This latter feature is not unexpected given the reasonably accurate economy forecast on which it was based, although the small borrowing difference reflected both receipts and spending rising more than expected. Our overly pessimistic receipts forecast for 2016-17 reflected several factors, including the fact that the published ONS monthly data were revised substantially during the year, as we detailed in Box 3.1 of our 2017 *FER*.

Refining our forecasts

Lessons learnt

1.14 Given the age of the forecasts assessed in this *FER*, it is unsurprising that many of the lessons to be drawn from them have already been highlighted in previous *FERs*. But evaluating them against the latest data has altered some of those lessons, while reinforcing others. For example:

- The difficulties in **predicting how households will respond to real income shocks**. In last year's *FER*, real household consumption appeared to have been supported by a fall in the saving ratio, but subsequent ONS revisions to both consumption and income growth mean that the saving ratio has held up better than previously estimated.

- The challenge of **anticipating how quickly shocks will affect the economy and the public finances**. There is now more evidence to suggest that the changes to the timing of the UK's departure from the EU has damaged investment.[1]

- The importance of the **composition of labour income**, in particular the continued strength in employment and weakness in average earnings growth.

- Trends in the **use of corporation tax deductions and reliefs**. A fall in the use of capital allowances and other deductions, such as group relief, explains some of our over-pessimism on receipts. We will review these assumptions over the coming year.

- **Local authorities' use of borrowing to finance capital expenditure** has been much greater than expected. We have since raised our forecast significantly, but information in this area is relatively poor, so the forecast is uncomfortably reliant on judgement.

1.15 This year we analysed our spending forecasts relative to the categories that the ONS uses in its monthly outturn data, rather than the more detailed ones we use in each *EFO* that derive from the Treasury's spending control framework and the National Accounts. This revealed some issues with mapping between the two that we intend to address in future forecasts. Doing so will facilitate monitoring outturn data against our most recent published forecast.

Review of fiscal forecasting models

1.16 Last year we identified 19 separate tax and spending models to look at in greater detail, making 45 recommendations for development work across them. During the year we agreed with HMRC to review alcohol duties instead of betting and gaming duties. Of the now 46 recommendations, 15 have been fully resolved and 8 partly resolved. With most of this work progressing during the summer, these have yet to be reflected in a forecast, but will feed into our next one.

[1] B. Broadbent, *Investment and uncertainty: the value of waiting for news,* speech at Imperial College Business School, May 2019.

1.17 In this year's modelling review, we have selected six new separate tax and spending forecast models to look at in greater detail, and identified 24 new priorities for model development. We have also carried forward 21 recommendations that were not fully resolved from last year's review. The model review priorities this year sit within some overarching themes identified in previous years' reviews, including:

- **Understanding and fully exploiting outturn data sources.** We hope to increase further our use of RTI and universal credit administrative data to inform our forecasts.

- **Better alignment with ONS accounting treatment, including the consequences of recent classification changes.** The major ONS changes affecting funded public service pension schemes and capital stocks and depreciation require significant model development. This work will also encompass the requirements of forecasting wider measures of the public sector balance sheet such as public sector net worth (PSNW).

- **Improving the plausibility and transparency of forecast models.** This includes stronger links with the determinants in our economy forecast, which was identified as an issue in this year's review of the capital gains tax model, as well as reviewing our incorporations modelling to ensure it reflects recent policy changes.

Comparison with past forecasts

1.18 In Annex A 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. We have so far produced 20 forecasts. This provides a reasonable 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. But it is important to note that 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.

1.19 For what it is worth, given the limitations of such comparisons, our forecasts for real GDP and borrowing have on average been more accurate than those of the previous 20 years.

2 The economy

Introduction

2.1 The focus of this year's *Forecast evaluation report (FER)* is the performance of our March 2016 and November 2016 forecasts – our final pre-referendum and first post-referendum forecasts. In this chapter, we compare our economy forecasts against the latest outturn data, 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 at the time of each forecast (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 **consumer price inflation** and the **housing market** (from paragraph 2.16); and
- consider movements in **wages, employment and productivity** (from paragraph 2.21).

Forecast conditioning assumptions

2.2 The Bank Rate assumptions on which each forecast was conditioned were based on market expectations at the time, derived from the prices of interest rate swaps. Bank Rate stood at 0.5 per cent in the spring of 2016. Rounding to the nearest quarter-point, expectations at the time of our March 2016 forecast were for it to rise to 0.75 per cent by mid-2019. The Monetary Policy Committee (MPC) cut Bank Rate to 0.25 per cent after the referendum and, at the time of our November 2016 forecast, markets expected it to rise to 0.5 per cent by mid-2019. As it turned out, the MPC raised Bank Rate back to 0.5 per cent in November 2017 and then again to 0.75 per cent in August 2018, at that point judging that there was limited economic slack and that a tightening labour market was starting to show up in heightened domestic cost pressures.[1] So Bank Rate ended up more in line with the March than the November assumption, despite the effect of the vote on the economic outlook.

2.3 Our economy forecasts were conditioned on several other market-derived assumptions, including the exchange rate, oil prices and government bond yields, while we assumed that equity prices would rise in line with nominal GDP. Table 2.1 compares our March 2016 and November 2016 assumptions with outturns for the third quarter of 2019:

[1] *Monetary Policy Summary and minutes of the Monetary Policy Committee*, Bank of England, August 2018.

- The sterling effective **exchange rate** index depreciated substantially after the vote to leave the EU in June 2016, falling 8 per cent between the second and the third quarter of 2016. Consequently, the pound has been much weaker than our conditioning assumption at the time of our March 2016 forecast, though marginally stronger than expected in November 2016.

- **Sterling oil prices** rose from £32 per barrel in mid-2016 to £50 in the third quarter of 2019. The increase was smaller in dollar terms, but was magnified in sterling terms by the fall in the pound. Recent outturns have been higher than implied by futures prices at the time of each forecast.

- **Gilt yields** were lower than those expected by market participants at the time of each forecast. While global yields fell, UK yields fell more, consistent with expectations of a loosening in monetary policy as a result of Brexit.

- UK **equity prices**, as measured by the FTSE All-share index, have risen by almost 20 per cent since the referendum. Equity prices are much higher than the assumption underpinning our March 2016 forecast, despite a shortfall in nominal GDP growth (see Chart 2.3 below), with the weaker pound boosting the sterling value of the profits of multinational corporations, which are mainly denominated in foreign currency. Equity prices are slightly below the assumption from our November 2016 forecast – nominal GDP has grown in line with that forecast over the period as a whole but sterling has risen above the conditioning assumption from that time.

Table 2.1: Conditioning assumptions for 2019Q3

	Bank Rate (per cent)	Oil price (£ per barrel)	Equity prices (FTSE All-share)	Gilt rate (per cent)	ERI exchange rate (index)
March 2016 forecast	0.73	30.5	3738	2.2	85.0
November 2016 forecast	0.45	46.7	4190	2.2	74.0
Q3 2019 average	0.75	50.1	4028	1.0	75.9
Difference[1]					
March 2016	0.0	64.0	7.8	-1.2	-10.8
November 2016	0.3	7.4	-3.9	-1.2	2.5

[1] Per cent difference except Bank Rate and 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 our forecasts for UK oil and gas revenues, while equity prices affect our forecast for capital gains tax, and interest rates affects the forecast for debt interest spending. The exchange rate and oil prices also partly determine our inflation forecast, which feeds into many parts of our fiscal forecast, including via the uprating of tax thresholds and benefits, the revalorisation of excise duties as well as the interest accruing on index-linked gilts and on student loans.

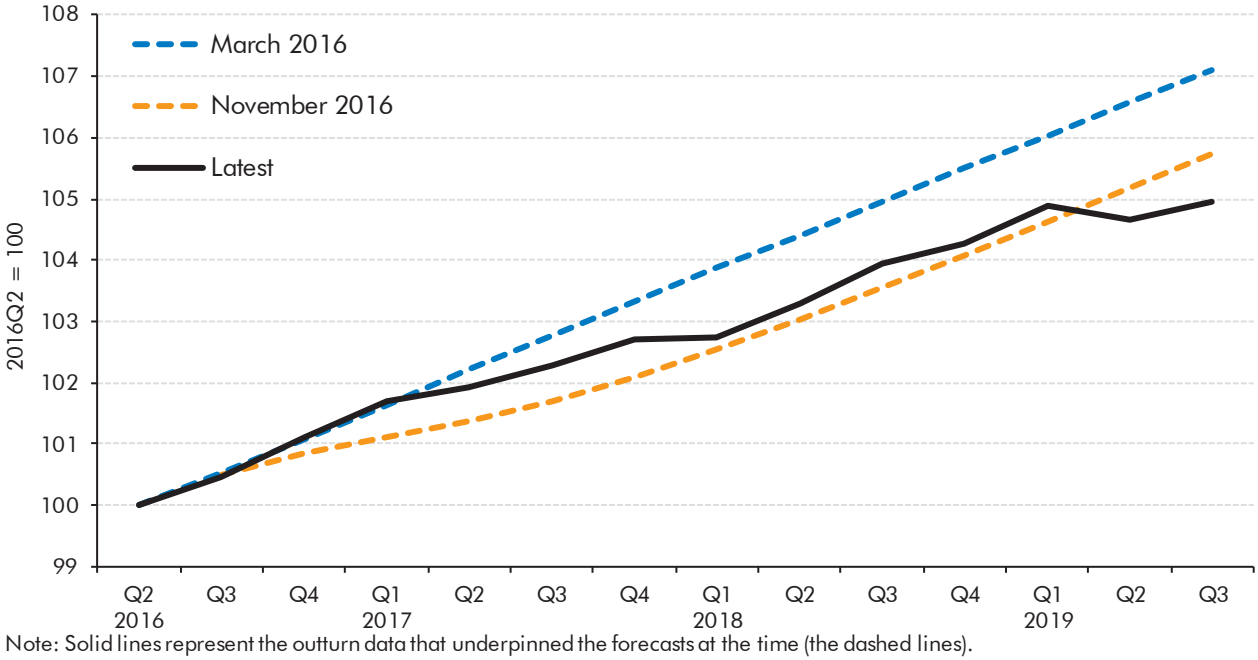
The growth and composition of GDP

Real GDP

2.5 Chart 2.1 shows the downward revision to our real GDP growth forecast between March and November 2016, reflecting our judgements about the likely effect of the referendum vote on the economy.

2.6 In our November forecast, we expected the depreciation of sterling, and the subsequent increase in import prices, to squeeze real household incomes. We also expected heightened uncertainty to weigh on business investment and believed that the boost to net trade from a weaker pound would be likely to prove modest. Initially, our assessment proved too pessimistic, as growth held up better than expected at the end of 2016 and the beginning of 2017 – partly as a result of stronger than expected global activity. However, growth slowed during the second half of 2017 as investment stagnated, bringing output back into line with our forecast through 2018 and early 2019. Subsequently output has fallen below the November forecast path, reflecting the continuing impact of Brexit-related uncertainty on domestic demand and a deteriorating global outlook. The accumulation and subsequent unwinding of stocks around the original Brexit date of 29 March has also injected additional volatility into the quarterly path of output this year.

Chart 2.1: Real GDP outturns and forecasts



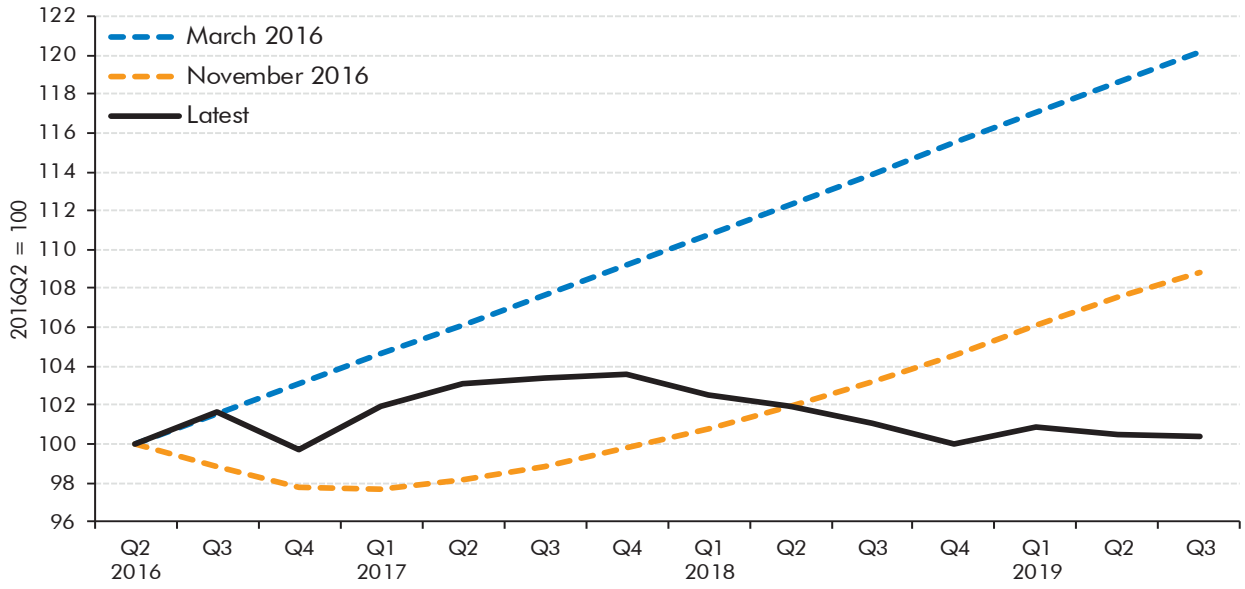
Note: Solid lines represent the outturn data that underpinned the forecasts at the time (the dashed lines).
Source: ONS, OBR

2.7 In November 2016, we forecast that the economy would expand by 5.7 per cent between the second quarter of 2016 and the third quarter of 2019; outturn data suggest that output increased by just 5.0 per cent. Our November 2016 forecast therefore proved slightly optimistic (although also relatively accurate for a forecast over this horizon). That forecast assumed that the UK would leave the EU at the end of March 2019, with a smooth

transition thereafter to an as-yet unspecified future trading relationship. The possibility that the UK would leave without such a smooth transition and the subsequent postponement of the exit date have extended the period of uncertainty facing businesses and probably further weighed on GDP growth.

2.8 Table 2.2 shows the contributions to real GDP growth from the various expenditure components and compares them with the latest outturn data. We revised down our profile for private consumption in the aftermath of the referendum. Outturns have been marginally stronger than our forecast overall, although household consumption growth has slowed recently. Chart 2.2 shows that we were too optimistic about business investment, which has probably been more depressed by uncertainty about the form and timing of Brexit than we anticipated. We revised down the expected contribution from business investment to GDP growth over this period by more than half between our March and November forecasts but, in the event, it has not contributed at all to growth. Indeed, business investment has actually fallen in five of the past eight quarters.

Chart 2.2: Real business investment outturns and forecasts



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

2.9 We were also too optimistic about the contribution of net trade to GDP growth in our November 2016 forecast, although net trade has been stronger than our March 2016 forecast. Total government spending has contributed marginally more to growth over the period than we expected in both forecasts, largely due to the increase in spending announced in the 2018 Budget.

2.10 Overall, our pre-referendum March 2016 forecast – which assumed (reflecting government policy at the time) that the UK would not leave the EU – understandably proved over-optimistic, particularly in terms of private investment. Even so, the one-year ahead forecast error is smaller than the median absolute error for the 20 years preceding the creation of the OBR, and the two-year ahead error is in line with the median (see Annex A). Our post-

referendum November 2016 forecast, which was our first attempt to capture the immediate effects of the referendum outcome, has so far proven unusually accurate, although we did not get the composition of growth quite right.

Table 2.2: Contributions to real GDP growth from 2016Q2 to 2019Q3

	Percentage points						
	Private consumption	Business investment	Other private investment	Total government	Net trade	Stocks and statistical discrepancy	GDP
March 2016 forecast	4.6	2.0	0.5	0.3	-0.3	0.1	7.1
November 2016 forecast	3.3	0.8	0.3	0.4	0.8	0.1	5.7
Latest data	3.7	0.0	0.2	1.0	0.2	-0.3	5.0
Difference[1]							
March 2016	-0.9	-1.9	-0.3	0.7	0.6	-0.3	-2.2
November 2016	0.4	-0.8	0.0	0.6	-0.6	-0.4	-0.8

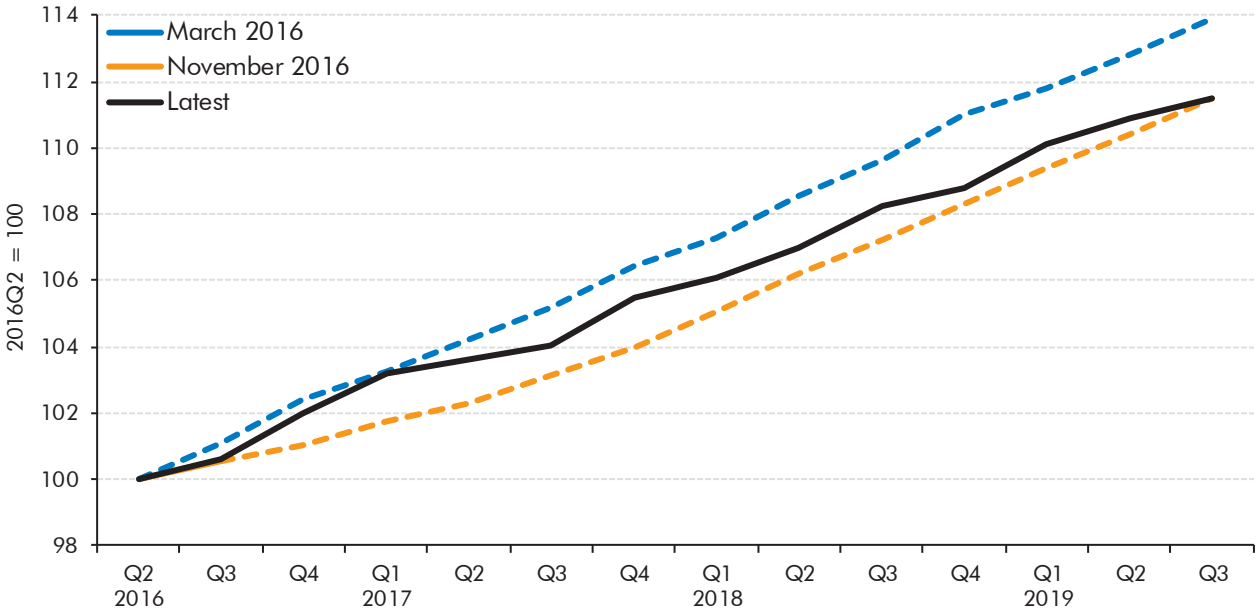
[1] Difference in unrounded numbers.

Nominal GDP

2.11 Public discussion tends to focus on real GDP – the volume of goods and services produced in the economy. However, it is nominal GDP – or cash value of those goods and services – that is more important for the public finances. That is because tax liabilities are mostly determined by cash quantities (for example, VAT is levied on nominal consumer spending, income tax on nominal earnings and corporation tax on nominal profits). In addition, a large share of public spending is also set in nominal terms, either through multi-year cash plans (public services, grants, administration and capital spending) or because it is linked to consumer price inflation (social security and public service pensions).

2.12 Chart 2.3 shows that nominal GDP has grown exactly in line with our November 2016 forecast over the period as a whole, having over-performed over the first year and under-performed thereafter. This reflects prices having increased somewhat faster than expected, offsetting the modest shortfall in real GDP growth over the same period. For our March 2016 forecast, cumulative growth in nominal GDP was 2.4 percentage points lower than expected, almost entirely due to the 2.2 percentage point shortfall in real GDP growth. As it stands, our November forecast for cumulative nominal GDP growth has proved remarkably accurate, although there may yet be revisions to the past data in future Blue Books. Box 2.1 analyses the impact of the latest Blue Book on nominal and real GDP.

Chart 2.3: Nominal GDP outturns and forecasts



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

Table 2.3: Contributions to nominal GDP growth from 2016Q2 to 2019Q3

	Percentage points					
	Private consumption	Private investment	Total government	Net trade	Stocks and statistical discrepancy	GDP
March 2016 forecast	9.5	3.4	1.0	-0.2	0.3	13.9
November 2016 forecast	8.5	2.0	1.2	-0.4	0.2	11.5
Latest data	7.4	1.4	2.5	-0.2	0.3	11.5
Difference[1]						
March 2016	-2.1	-1.9	1.5	0.0	0.1	-2.4
November 2016	-1.0	-0.6	1.3	0.2	0.1	0.0

[1] Difference in unrounded numbers.

Table 2.4: Growth in National Accounts deflators from 2016Q2 to 2019Q3

	Per cent						
	Private consumption	Private investment	Total government	Exports	Imports	Terms of trade	GDP
March 2016 forecast	7.0	5.1	3.1	5.1	4.8	0.4	6.4
November 2016 forecast	7.6	5.5	3.5	11.3	14.3	-2.6	5.4
Latest data	5.5	7.9	6.3	11.8	12.8	-0.9	6.3
Difference[1]							
March 2016	-1.5	2.8	3.2	6.7	8.0	-1.2	-0.1
November 2016	-2.1	2.4	2.9	0.5	-1.5	1.8	0.8

[1] Difference in unrounded numbers.

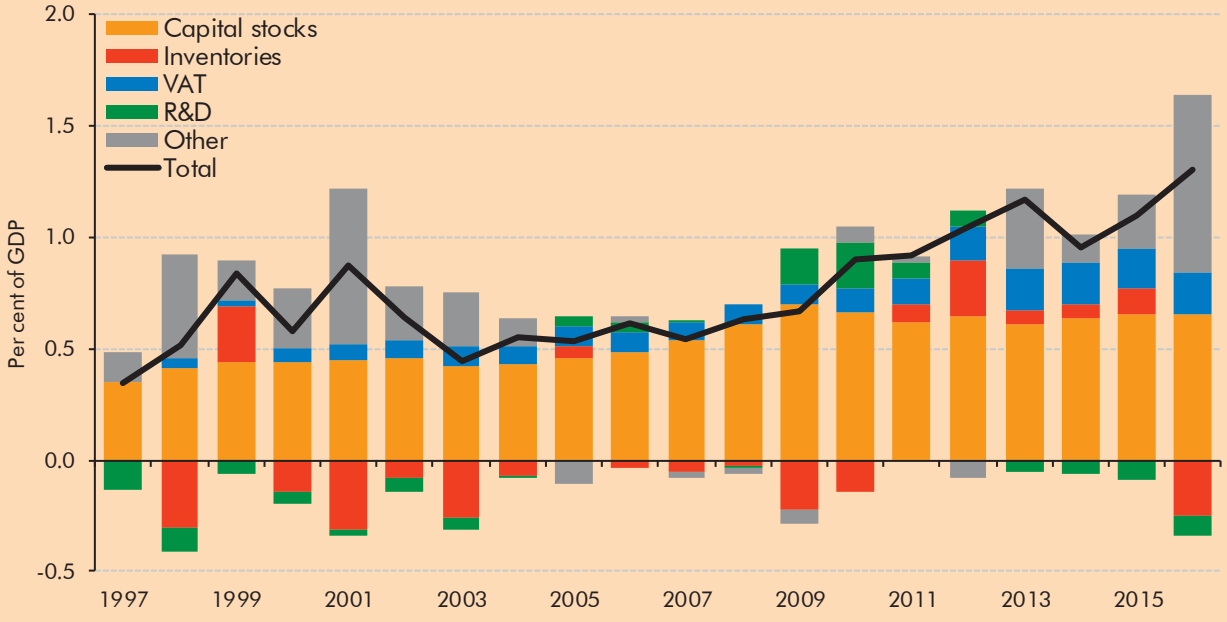
Box 2.1: Rewriting history: Blue Book 2019

In Blue Book 2019, the ONS introduced some methodological changes and new data sources. The most significant was a change to the way the capital stock is measured. The ONS revised down the estimated lives of many productive assets and as a result revised up its historical estimates of whole-economy depreciation. In the market sector, this has not affected measured gross output. However, for some sectors of the economy where no market prices exist, such as the public sector and charities, the ONS assumes that the value of output is equal to the cost of production (known as the 'sum-of-costs approach'), which includes the cost of 'using up' capital. Therefore, in the non-market sector, an increase in depreciation results in an increase in measured gross output and so a rise in overall GDP.[a]

Chart A shows that changes in capital stocks data were the largest contributor to the level of nominal GDP being revised up by an average of 0.8 per cent a year between 1997 and 2016, with an increase of 1.3 per cent (or £26 billion) in 2016. ('Other' revisions also have a large impact in 2016. This captures all other methodological improvements, new data and balancing, which tend to play a larger role in more recent data.) The increase in measured depreciation has also increased the share of whole-economy income flowing to capital. This means that the share of labour in national income – an important determinant of our fiscal forecasts, given the higher effective tax rate levied on labour income relative to other forms of income – has been revised down by an average of 0.4 percentage points over the same period.

The Blue Book did not fully balance the three different measures of GDP from 2017 onwards. But the September Quarterly National Accounts contained upward revisions to cumulative growth in nominal GDP between the first quarter of 2017 and the second quarter of 2019 of 0.2 per cent relative to the first estimate of GDP. It is likely that there will be further revisions after the ONS carries out a full rebalancing of GDP for 2017 for the release of Blue Book 2020.

Chart A: Contributions to the change in the level of nominal GDP



Source: ONS

Blue Book 2019 also contained material revisions to the household saving ratio. For years prior to 2017, these were relatively small – averaging -0.2 percentage points a year. But from 2017 onwards, the average upward revision is 1.7 percentage points. The largest contributor was a £29 billion increase in 'mixed income' due to the incorporation of more recent information and updated estimates of the different income streams of the self-employed, although the ONS has signalled that part of this upward revision will be reversed in future.[b] The new treatment of student loans – which splits the amount lent by the Government into two parts: a loan that is expected to be repaid with interest; and a grant reflecting the part that is expected to be written off – also boosted the saving ratio. The fact that interest is now only accrued on the portion of the loan that is expected to be repaid lowers recorded household spending relative to the previous treatment.[c] Finally, lower household transfers to the NPISH sector also contributed to an upward revision to the saving ratio over this period.

[a] ONS, *National Accounts articles: Changes to the capital stock estimation methods for Blue Book 2019*, August 2019.
[b] The ONS plan to make further changes to the way it is forecast when HMRC data are not available, and so there will be a further revision to mixed income in the December Quarterly National Accounts. Mixed income is expected to be revised down in 2018 by £3.1 billion. The December Quarterly National Accounts will also rectify an error in the measurement of local government social benefits. Both changes will lead to a downward revision in the saving ratio from 6.8 to 6.3 per cent in the second quarter of 2019. There is also likely to be further revisions to mixed income when the latest HMRC data is taken on in the Blue Book 2020.
[c] ONS, Student loans in the public sector finances: a methodological guide, June 2019.

The income composition of GDP

2.13 As well as breaking down changes in GDP across spending categories, we also disaggregate them by income. The income composition is important for the public finances as the effective tax rates levied on different income sources vary substantially. Table 2.5 compares the two forecasts for the sources of income with the latest outturn data.

2.14 Compensation of employees, which includes wages and salaries plus employers' social contributions, is the largest component, accounting for approximately half of nominal GDP. We revised down our forecast after the EU referendum, because we believed the labour market would soften as GDP growth slowed. In fact, it has proved more resilient than expected and compensation of employees has actually grown in line with our pre-referendum forecast, reflecting continued employment growth and, more recently, a pick-up in wage growth. Unit labour costs – the ratio of worker compensation to productivity – also rose more rapidly than we anticipated in both our March and November forecasts.

2.15 Based on the September 2019 Quarterly National Accounts, we also underestimated growth in other income. However, in the December Quarterly National Accounts, due to be released on 20 December, the ONS plans to revise down growth in mixed income between 2017 and 2018 from 7.7 to 5.4 per cent, bringing it closer to our forecasts.[2] Our November forecast also included a large contribution from the statistical discrepancy as ONS data at the time showed that the income measure of GDP was below the balanced estimate reconciling all three measures of GDP (income, expenditure and output). Most of this discrepancy was subsequently allocated to other components of income when the 2016 GDP figures were balanced in the 2018 Blue Book.

[2] ONS, *National Accounts Articles: Improvements to Mixed Income*, December 2019

Table 2.5: Contributions to GDP income growth from 2016Q2 to 2019Q3

	Percentage points					
	Compensation of employees	Corporations' gross operating surplus	Other income	Taxes on products and production	GDP	Statistical discrepancy
March 2016 forecast	7.0	1.9	3.7	1.4	13.9	0.0
November 2016 forecast	5.3	2.0	1.1	1.2	11.5	1.9
Latest data	7.0	1.7	2.2	1.2	11.5	-0.5
Difference[1]						
March 2016	0.0	-0.2	-1.5	-0.2	-2.4	-0.5
November 2016	1.7	-0.4	1.2	-0.1	0.0	-2.4

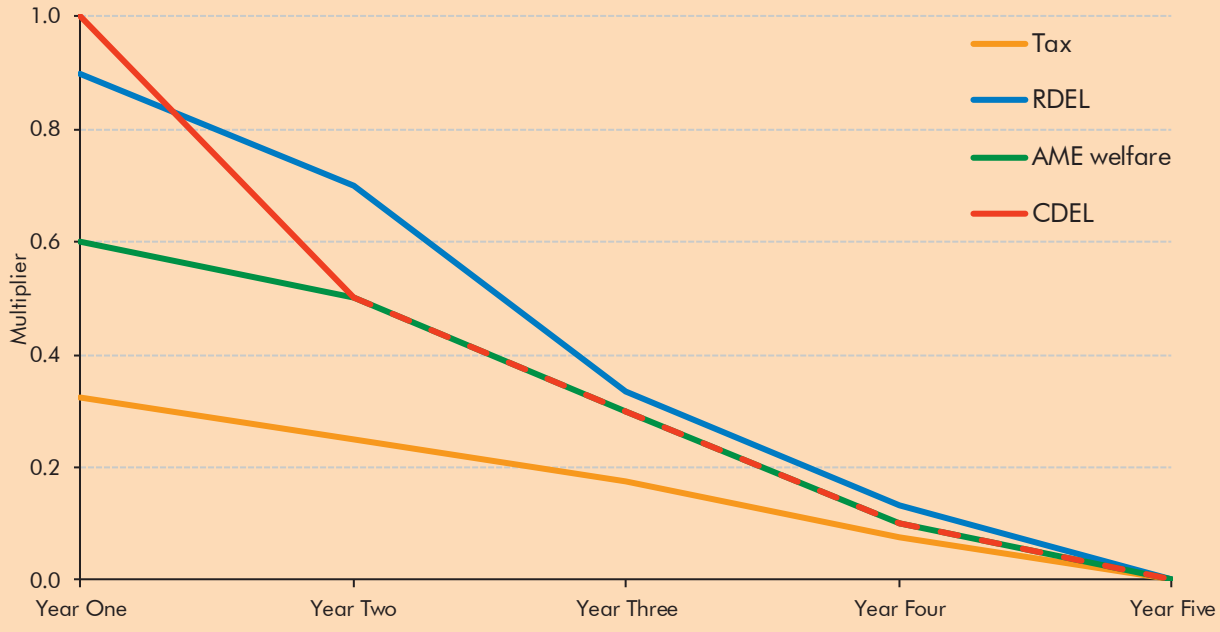
[1] Difference in unrounded numbers.

2.16 One factor affecting our forecasts for real and nominal GDP is the stance of fiscal policy and how we evaluate its impact on activity. We discuss this in Box 2.2.

Box 2.2: Fiscal policy and GDP growth

To incorporate the potential impact of fiscal policy on economic activity, we apply a set of 'fiscal multipliers' to estimates of discretionary changes in taxes and spending and then adjust our economic forecast accordingly. The multipliers vary according to the type of tax or spending category and are shown in Chart B. These show the impact on the level of GDP in successive years of a permanent change in the associated fiscal category. For example, a cut in taxes worth 1 per cent of GDP is assumed to boost GDP by 0.3 per cent a year later, but that effect is expected to decline over time. All are assumed to taper to zero in the final year of the forecast.

Chart B: Fiscal multipliers used by the OBR



Source: OBR

Different studies come to different conclusions about the sizes of fiscal multipliers, but the estimates we have used fall within the range of those found in the academic literature.[a]

We have generally assumed, consistent with the empirical evidence,[b] that fiscal tightening, or loosening, has no permanent effect on the level of output (i.e. the multipliers taper to zero). This attenuation of the initial effect of policy measures takes place through several channels, especially countervailing changes in the exchange rate, in wages and prices, and in monetary policy. For instance, all else equal, a rise in government consumption would tend to boost demand for non-traded goods, resulting in an appreciation in the exchange rate and a weakening in the net trade contribution to GDP. The increased spending would also increase the demand for resources, putting upward pressure on both pay and prices. And that in turn would necessitate the adoption of a tighter monetary stance by the MPC in order to keep inflation in line with the Government's inflation target.

There may be circumstances, however, where this assumption is inappropriate – for instance, when monetary policy is constrained or during a deep downturn, when prompt policy action may prevent adverse consequences for supply (known as 'hysteresis'). Some research suggests that a failure to allow for such considerations may have contributed to forecast errors following the financial crisis.[c] However, others argue that, even in the aftermath of the crisis, the long-run fiscal multipliers were negligible.[d] We examined this issue in our 2018 *FER* and concluded that other factors, such as the euro-area debt crisis, impaired credit markets and a loss of confidence were likely to have been more important than an underestimation of fiscal multipliers. Furthermore, recent work suggests that such considerations are likely to be less relevant at the current juncture when unemployment is relatively low and there is limited spare capacity, especially if fiscal policy were to become more expansionary.[e]

In principle, a large programme of public investment might also lead one to re-evaluate the outlook for potential output growth. To date, we have not made incremental adjustments to our potential growth forecasts in response to (the generally modest) changes in government investment spending – in part because of the significant uncertainty that already surrounds our potential output forecast. But in any case, the impact of higher public investment on supply is frequently uncertain. Some public investment – for instance, in key transport infrastructure – can be expected to raise potential output but often only beyond our usual forecast horizon. Some projects, though serving a valuable social purpose, will have negligible impact on potential GDP – for instance, investments in national defence. And in some cases, spending may simply end up substituting for private investments that would otherwise have taken place. In addition, when plans for higher spending are announced, it is often unclear what projects will be undertaken and when they will be completed, while some increases in spending may simply reflect cost overruns on existing projects.

Most empirical studies find a relatively weak relationship between public investment and potential growth, perhaps because while some investments have boosted supply, others have had little or no effect.[f] Furthermore, recent work suggests that the impact of public investment is lower for more developed countries.[g] Nevertheless, as with all our other fiscal multipliers, we expect to keep our assumptions regarding the long-run impact of public investment on potential output under review.

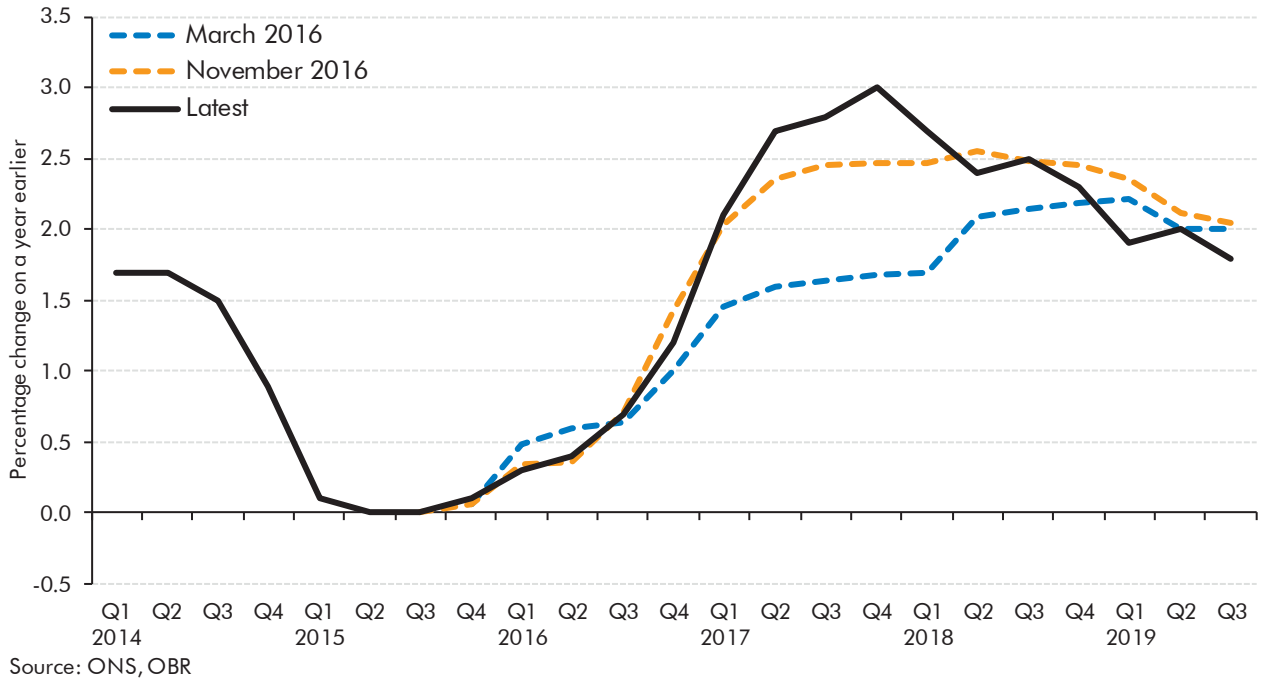
[a] For recent analysis of fiscal multipliers in 'normal' times see: T. Warmedinger, C. D. Checherita-Westphal, P. Hernandez de Cos, 'Fiscal Multipliers and Beyond', *ECB Occasional Paper 162*, June 2015 and V. A. Ramey, 'Ten Years after the Financial Crisis: What Have We Learned from the Renaissance in Fiscal Research?'. *NBER Working Paper No. 25531*, February 2019.
[b] See for example: E. M. Leeper, et al. 'Fiscal foresight and information flows', *Econometrica* 81 (3), 2013 and R. Barrell and M. Weale, 'The Economics of a Reduction in VAT', *Fiscal Studies: The Journal of Applied Public Economic* 30 (1), March 2009.
[c] O. Blanchard, and D. Leigh, "Growth Forecast Errors and Fiscal Multipliers", *American Economic Review* 103 (3), 2013.
[d] S. Sumner, 'Why the Fiscal Multiplier is Roughly Zero', *Mercatus Policy Briefs*, November 2013.
[e] C. Glocker, G. Sestieri, & P. Towbin, 'Time-varying fiscal spending multipliers in the UK', *Banque de France Working Paper* 643, January 2019.
[f] S. Arslanalp, S., F. Bornhorst, S. Gupta & E. Sze, 'Public capital and growth', July 2010 and E. Pappa, 'Government spending multipliers: An international comparison', June 2010.
[g] Z. An, A. Kangur & C. Papageorgiou, 'On the Substitution of Private and Public Capital in Production', IMF Working Paper 232, November 2019.

Consumer price inflation

2.17 In March 2016, we forecast that CPI inflation would rise slowly to reach the Bank of England's 2 per cent target in 2018. In the event, it picked up more sharply in 2017 and 2018, peaking at 3.0 per cent in the final quarter of 2017, before then falling to 1.8 per cent in the third quarter of 2019.

2.18 The initial overshoot was predominantly due to the fall in the pound associated with the vote to leave the EU. In our first post-referendum forecast in November 2016, we revised up our CPI inflation forecast to take account of the sterling depreciation. Outturns were still higher than expected in 2017 and the first quarter of 2018, in part reflecting an unexpected rise in oil prices. From the second quarter of 2018 onwards, outturns have instead been below our November 2016 forecast, largely due to the unexpected appreciation of sterling in the first half of 2018.

Chart 2.4: Forecasts and outturns for CPI inflation



Source: ONS, OBR

2.19 We forecast RPI inflation by adding a 'wedge' to our CPI forecast. In March 2016, we expected the wedge to average 1.2 percentage points in 2018, and lowered this to 1.0 percentage points in the November 2016 forecast. This largely reflected expectations of slower growth in mortgage interest payments (MIPS). In 2018, MIPS growth was stronger than in our November 2016 forecast; however, this was outweighed by movements in the other elements of the wedge, including the 'formula effect' (discussed in Box 2.3). The wedge in that year came in at 0.9 percentage points. As a result, RPI inflation was 0.2 percentage points higher than our March 2016 forecast but 0.2 percentage points lower than our November 2016 forecast.

Box 2.3: Long-run wedge between RPI and CPI inflation

Because it falls short of agreed international statistical standards, the ONS no longer classifies the Retail Prices Index (RPI) as a National Statistic. The Government nevertheless still uses it to calculate interest payments on index-linked gilts, interest charged on student loans and to revalorise excise duties.[a] We make our RPI inflation forecast by adding an estimate of the 'wedge' between RPI and CPI inflation to our CPI inflation forecast. The ONS decomposes this wedge into the following components:

- **The 'formula effect'.** The RPI and CPI use different methods to aggregate individual price quotes, with the RPI employing an arithmetic averaging technique (the 'Carli' method) that has unsatisfactory properties – in particular, a temporary rise in individual prices can generate a permanent rise in the overall index – and results in the RPI generally overstating true inflation.
- **Housing costs.** Some housing cost components are included in the RPI, but not in the CPI, including measures of depreciation, council tax and mortgage interest payments. The CPIH measure includes housing costs, but in a more economically acceptable and comprehensive fashion than RPI.
- **Other differences in coverage.** Certain items are included in one index but not the other; for example, the CPI includes overseas student tuition fees but the RPI does not, while the RPI contains vehicle excise duty but the CPI does not.
- **Other differences including in the weights.** This residual category includes differences in the underlying source information and population covered; for instance, RPI excludes the spending of the richest households, whereas CPI does not.

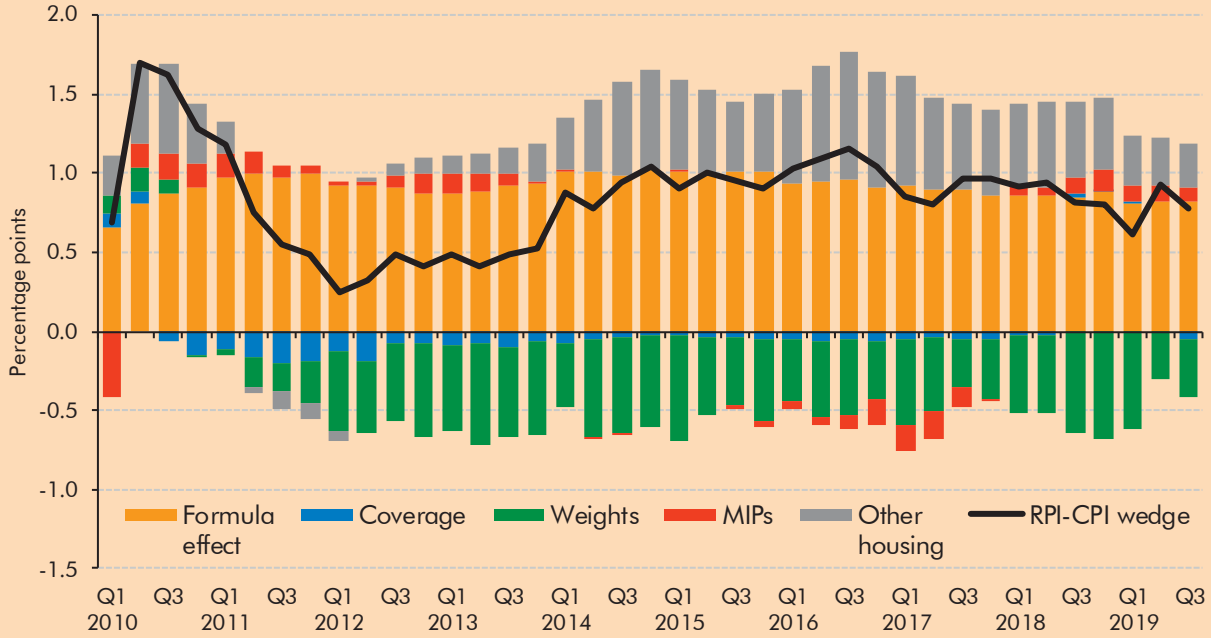
We have revised our assumption of the long-run RPI-CPI wedge on two previous occasions, reflecting changes in ONS data collection practices and developments in the outturn data.[b] The latest outturns have led us to revisit this assumption again, as set out in Table A. We have:

- Revised down the **formula effect** by 0.1 percentage points, to reflect the recent trend in this component as shown by Chart C.
- Revised down the contribution of **other differences including weights** by 0.1 percentage points reflecting new data published since 2015.

- Maintained the assumption that **other differences in coverage** contribute nothing to the wedge in steady state.
- Revised up the **housing** component by 0.1 percentage points, largely reflecting an increase in the weight of housing depreciation since 2015. We assume that housing depreciation grows in line with our house price inflation forecast, which in turn we expect to rise in line with average earnings in the long run.

This means we now expect the long-run wedge to be 0.9 percentage points compared to our previous assumption of 1.0 percentage points. This will be reflected in our next forecast.

Chart C: Contributions to the RPI-CPI inflation wedge



Source: ONS, OBR

Table A: Long-run assumption for the RPI-CPI inflation wedge

	Percentage points contributions, unless otherwise stated					
	Formula effect	Coverage	Weights	Other housing	MIPs	Total
Previous assumption	0.9	0.0	-0.4	0.3	0.1	1.0
Latest assumption	**0.8**	**0.0**	**-0.5**	**0.4**	**0.1**	**0.9**
Change	-0.1	0.0	-0.1	0.1	0.0	-0.1

Note: Components may not sum to total due to rounding.

[a] ONS, *Shortcomings of the Retail Prices Index as a measure of inflation*, March 2018.
[b] For further detail see Box 3.3 of our March 2015 *Economic and fiscal outlook* and Miller (2011) *Working Paper No. 2: The long-run difference between RPI and CPI inflation*.

Housing market

2.20 House price inflation has been weaker than we forecast in both March 2016 and November 2016, as shown in Table 2.6. House price inflation has been particularly subdued over the past 12 months, in all likelihood reflecting Brexit-related uncertainty.

2.21 Property transactions have been quite volatile in recent years, most notably in 2016. Buy-to-let and second home purchasers brought forward transactions to avoid paying the 3 per cent stamp duty surcharge pre-announced in the 2015 Autumn Statement and effective from April 2016. At the time of our March 2016 forecast, we significantly underestimated the amount of forestalling that occurred. Transactions have since been significantly lower than we forecast in November 2016, which is consistent with Brexit-related uncertainty weighing on activity in the housing market.

Table 2.6: Housing market indicators from 2016Q2 to 2019Q3

	Per cent, unless otherwise stated	
	House price inflation	Growth in transactions
March 2016 forecast	16.2	3.6
November 2016 forecast	14.5	20.1
Latest data	10.1	11.7
Difference[1]		
March 2016	-6.1	8.0
November 2016	-4.4	-8.4

[1] Difference in unrounded numbers.

The labour market and productivity

2.22 The latest estimates show that population growth since the second quarter of 2016 has been broadly in line with the ONS's 2014-based principal projection that we used as the basis for the two forecasts under evaluation. Participation has been marginally stronger than projected in both March and November 2016, largely because of faster-than-expected increases in participation among those aged between 50 and 64.

2.23 Contrary to our forecasts, the unemployment rate has continued to fall. In March 2016, we expected it to stabilise around 5¼ per cent in the medium term. As of the third quarter of 2019, unemployment stood at 3.8 per cent and it has hovered around 4 per cent for the past eighteen months. So, not surprisingly we have subsequently revised down our estimate of the equilibrium rate of unemployment.

2.24 We also expected average hours to fall back in each of these forecasts as a pick-up in average earnings growth led households to choose to work fewer hours in aggregate. In fact, real wage growth started to fall from mid-2016 as the depreciation of sterling worked through into higher inflation and only recently has it returned to pre-referendum levels. As it is, average hours have risen slightly, which, combined with unexpectedly high employment, has meant total hours worked have increased more than we expected.

2.25 Output growth has been relatively subdued since the second quarter of 2016, and has been driven largely by an increase in employment and hours worked rather than an improvement in productivity – output per hour worked. The counterpart to the relatively strong labour market performance has thus been deeply disappointing growth in productivity. Productivity has performed much worse than in our November 2016 forecast, having risen only 1.5 per cent since mid-2016. Business investment has stagnated since the referendum and the reduction in capital deepening will have held down productivity growth. Some of this may reflect the heightened uncertainty following the Brexit vote, with businesses preferring to meet demand by employing labour rather than investing in capital because the former is more easily reversed. And some firms may also have diverted resources to Brexit preparations from more productive uses.[3]

Table 2.7: Labour market indicators from 2016Q2 to 2019Q3

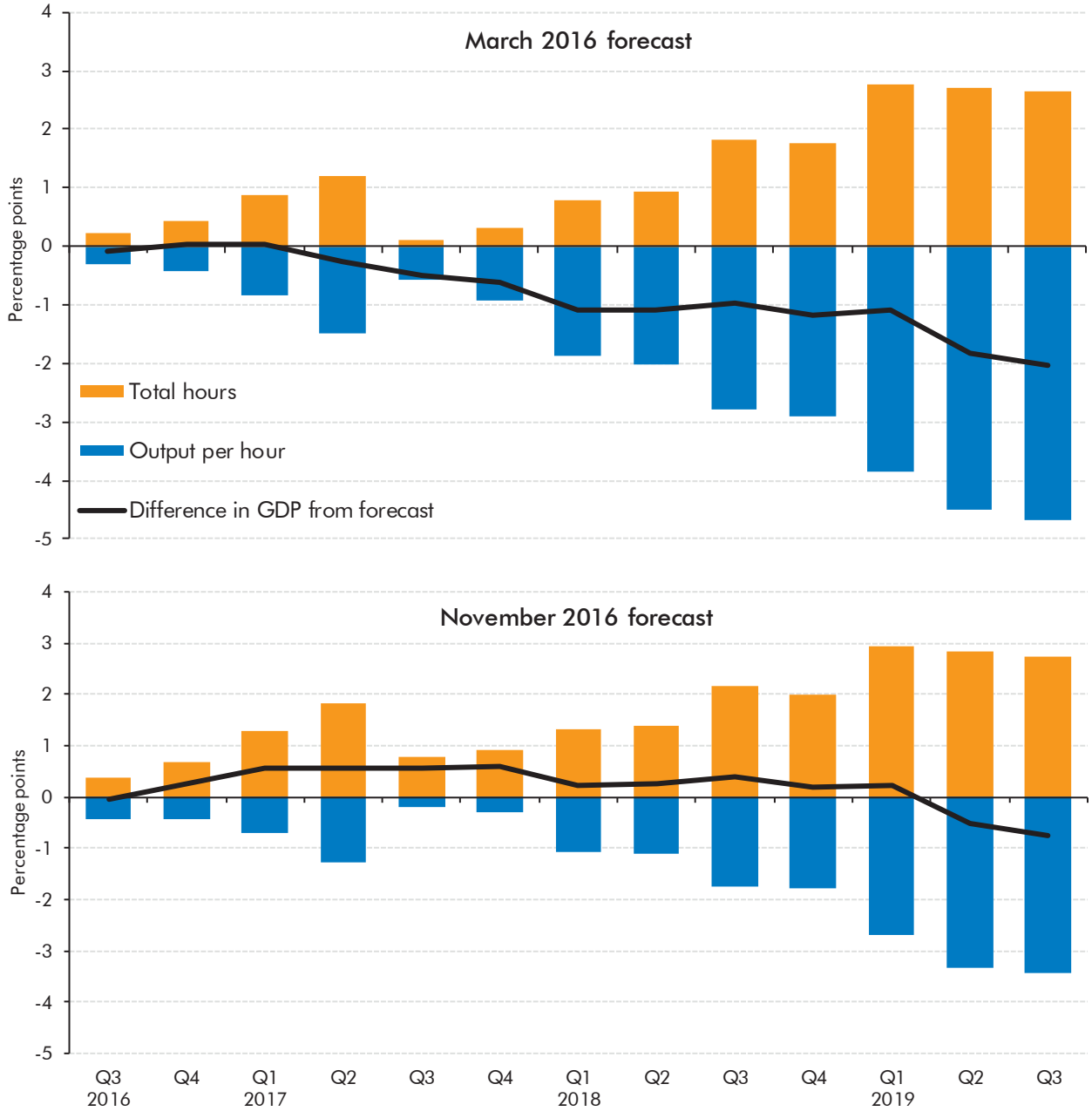
	Change in adult population (thousands), unless otherwise stated						
	Total employment	Unemployment (LFS)[2] (per cent)	Participation	Population	Average hours (per cent)	Total hours worked (per cent)	Productivity per hour (per cent)
March 2016 forecast	470	5.3	607	1,016	-0.6	0.9	6.4
November 2016 forecast	320	5.4	502	1,018	-0.2	0.8	5.0
Latest data	1,006	3.8	669	911	0.4	3.6	1.5
Difference[1]							
March 2016	536	-1.5	62	-105	1.0	2.7	-4.9
November 2016	686	-1.5	167	-107	0.6	2.8	-3.6
Memo: Q3 2019 levels	*32,753*	*3.8*	*34,059*	*53,345*	*32.1*	*1,053*	*440*

[1] Difference in unrounded numbers.
[2] Rate as of Q3 2019.

2.26 Chart 2.5 show how unexpected strength in total hours worked and unexpected weakness in productivity have combined to deliver a modest shortfall in real GDP relative to our November 2016 forecast and a more substantial one relative to our March 2016 forecast. Chart 2.6 shows that this pattern has continued through 2018 and 2019 to date when compared against our November 2017 forecast, despite the fact that we revised down potential productivity materially in that forecast.[4]

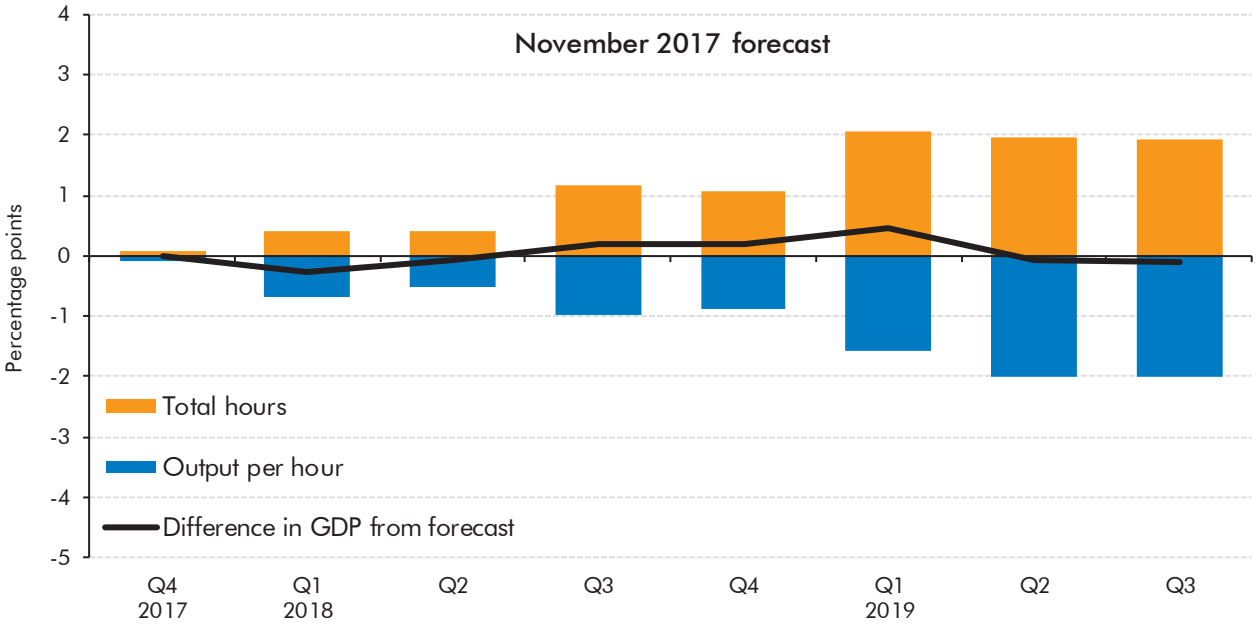
[3] Bloom et al, Bank of England *Staff Working Paper No. 818: The impact of Brexit on UK firms*, August 2019.
[4] In Chart 2.6, we show growth from the fourth quarter of 2017, whereas the detailed forecast began one quarter earlier. This abstracts from the unusually large drop in average hours worked in the third quarter of 2017 that generated a 1.0 per cent quarterly drop in total hours worked and an equivalent boost to measured growth in output-per-hour.

Chart 2.5: Real GDP, total hours and productivity growth surprises



Source: ONS, OBR

Chart 2.6: Real GDP, total hours and productivity growth surprises: November 2017



Source: ONS, OBR

3 The public finances

Introduction

3.1 This chapter:

- describes our adjustments to outturn data and forecasts for **public sector net borrowing (PSNB)**, **current receipts,** and **spending**, in order to put them on a like-for-like basis (from paragraph 3.2);
- discusses the performance of our **March 2016 and November 2016 PSNB forecasts for 2018-19** (from paragraph 3.7) and the **receipts** (from paragraph 3.12) and **spending** (paragraph 3.29) forecasts underpinning them; and
- assesses our forecasts for **public sector net debt** in 2018-19 (from paragraph 3.49).

Generating comparable forecasts and outturn data

3.2 In our *Forecast evaluation reports (FER)*, we typically restate our previous forecasts so that they are broadly consistent with the latest statistical treatments in outturn data published by the Office for National Statistics (ONS). This usually involves generating forecasts for items that have subsequently been classified into the public sector (and thus into the scope of our forecasts) or removing them for those that have been classified out. For the former, we tend to assume that our forecasts would have been correct, so that they do not affect the story of why outturn differed from forecast. For this *FER*, as well as restating some parts of our March 2016 and November 2016 forecasts, we have adjusted ONS outturn data to remove the effects of recently implemented changes – some of which are large.

Adjustments to outturn data

3.3 Over the past year, and particularly in its September 2019 release, the ONS has made several statistical and methodological changes to the public finances data. In order to compare our March 2016 and November 2016 forecasts with outturn data on a like-for-like basis, we have adjusted the outturn data to remove these changes. A fuller discussion of them, and their effects on our March 2019 forecast, was presented in our recent *Restated March 2019 forecast* publication.

3.4 Table 3.1 documents the effects of our adjustments. These are:

- **Corporation tax correction**. This lowered receipts by £4.4 billion in 2018-19, so removing its effect raises the adjusted outturn. This reflects two corrections: removing double-counting in respect of directly payable corporation tax credits, the largest of

which is the R&D tax credit; and accurately reflecting the split between larger companies that pay via the 'quarterly instalment payment' regime and smaller ones that do not. The effect on cash (rather than accrued) receipts in 2018-19 is £4.0 billion.

- **Public sector funded pension schemes**. The inclusion of funded schemes (such as the Local Government Pension Scheme), NEST and the Pension Protection Fund within the public sector boundary added significantly to measured spending and receipts. These effects are removed. The schemes affect PSNB in 2018-19 and the change in PSND between 2017-18 and 2018-19 differently. PSND outturns have been adjusted by an additional £2.7 billion to remove this additional effect.

- **Depreciation**. Improvements in ONS methodology for measuring the capital stock increased estimated depreciation in 2018-19. This raises current spending and receipts, and reduces public sector net investment, but leaves PSNB unchanged.

- **Student loans**. The improved accounting treatment of student loans recognises that many loans will never be repaid in full. The portion that is expected to be written off is now treated as a grant to the student at the point of the loan outlay. This grant element does not accrue interest. The new treatment also records a grant to the private sector when student loans are sold for less than the value at which they are recorded in the public finances. Overall, the new treatment raises capital spending and lowers accrued interest receipts. The net effect is to raise PSNB by £12.4 billion in 2018-19.

- **Lifetime ISA**. The ONS has decided to classify spending associated with lifetime ISAs as a current grant, whereas we had previously expected it to be treated as a capital grant. We have therefore switched the outturn back to capital spending for the purposes of this *FER*. But the effects on spending are small, and they are neutral for PSNB.

Table 3.1: Adjustments to published ONS outturn data for 2018-19

	£ billion							
		Adjustments for statistical changes						
	ONS outturn	Corpora-tion tax correction	Funded public sector pension schemes	Deprecia-tion	Student loans	Lifetime ISA	Total adjust-ment	Adjusted outturn
Total receipts	**811.4**	**4.4**	**-19.0**	**-10.0**	**2.3**	**0.0**	**-22.3**	**789.1**
of which:								
Corporation tax	57.6	4.4					4.4	62.0
Gross operating surplus	53.0		-0.6	-10.0			-10.6	42.4
Interest and dividends	24.1		-17.9		2.3		-15.6	8.4
Other receipts	676.8		-0.6				-0.6	676.2
Total spending	**852.8**	**0.0**	**-20.4**	**-10.0**	**-10.1**	**0.0**	**-40.5**	**812.4**
of which:								
Current spending on goods and services	400.3		0.0	-10.0			-10.0	390.4
Interest and dividend payments	226.1		16.2				16.2	242.3
Net social benefits	56.6		-18.1				-18.1	38.5
Other current spending[1]	74.3		-16.9			-0.1	-17.0	57.3
Depreciation	48.8			-8.4			-8.4	40.4
Gross investment	95.6		-1.6		-10.1	0.1	-11.6	84.0
Less depreciation	-48.8			8.4			8.4	-40.4
PSNB	**41.4**	**-4.4**	**-1.3**	**0.0**	**-12.4**	**0.0**	**-18.1**	**23.3**

[1] Other current spending is the sum of subsidies, current grants and VAT and GNI based EU contributions.

Restatement of our March 2016 and November 2016 forecasts

3.5 We have restated our March and November 2016 forecasts for:

- **Housing associations**. These were part of the public sector in those forecasts but have since been reclassified back into the private sector. This reduces investment and debt interest spending by public corporations relative to what was assumed in our forecasts. We have discussed the various reclassifications of housing associations and the Government's efforts to keep them off the public balance sheet in several reports.[1]

- **Environmental levies**. Our forecasts assumed that the warm home discount and feed-in tariffs would eventually be classified as imputed tax-and-spend items in the public finances statistics, given their similarity to other schemes treated that way. But the ONS has not yet classified them as such, so these are removed from our forecasts. This lowers spending and receipts by £2.0 billion in March 2016 and by £1.7 billion in November 2016, but has no effect on PSNB.

[1] See, for example, Annex B of our November 2015 *EFO* (when they were first classified to the public sector), the section from paragraph 4.170 onwards in our November 2017 *EFO* (when English housing associations were classified back to the private sector following statistically motivated changes to how they are regulated) and Box 6.1 of our 2019 *Fiscal risks report*. Northern Irish housing associations continue to be classified in the public sector and our treatment reflects this.

- **VAT refunds**. In October 2018, the ONS included refunds to several public sector organisations (including the BBC, the NHS, Police and Crime Commissioners, and academies) in the public finances data for the first time. This increased VAT refunds recorded in receipts and spending by £3.4 billion, but left PSNB unchanged. We have added this amount to both VAT refunds forecasts.

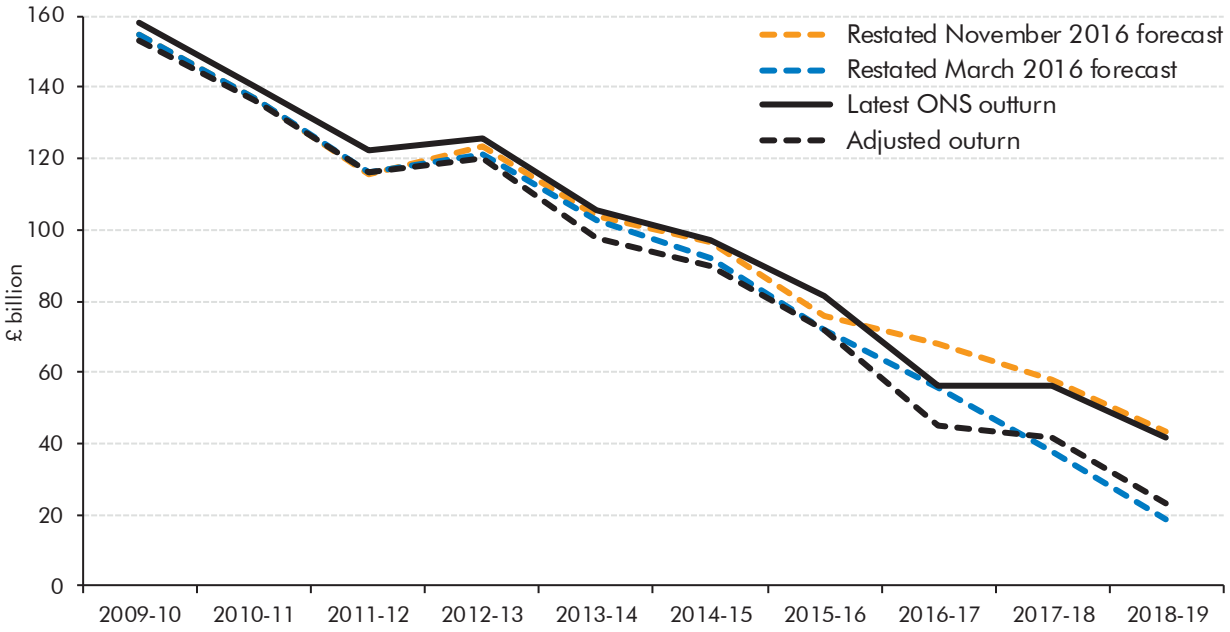
- **Departmental current budgets**. Our forecasts focus on 'PSCE in RDEL' (public sector current expenditure in resource departmental expenditure limits). This spans many spending categories and we place more emphasis on the total than the proportion in each category. We have therefore mapped our RDEL forecasts onto current spending categories using 2018-19 outturn proportions so that differences from the mechanical mapping that was done at the time do not feature in our assessment of these forecasts.

- **Universal credit**. Housing benefit is administered by local government while universal credit is administered by central government. We have restated our forecasts to be consistent with the proportion of housing support now administered by central government (i.e. in universal credit) in outturn, rather than following the 'marginal cost' approach we use to generate our forecasts of welfare spending.[2] This is neutral for total managed expenditure and PSNB, but shifts about £3 billion of net social benefits spending between central and local government.

3.6 Chart 3.1 compares our restated March 2016 and November 2016 PSNB forecasts with the adjusted outturn data, which provides a like-for-like comparison. It shows that our March 2016 forecast was reasonably accurate, while our November 2016 one was too pessimistic. That is in stark contrast to what we saw with our economy forecasts, where the March forecast was too optimistic while the November forecast proved quite accurate. The chart also shows actual outturn. On that basis, the November forecast looks the more accurate – but only by chance, with the like-for-like forecast difference coincidentally very close in size to the effect of the ONS classification and other statistical changes.

[2] See our January 2018 *Welfare trends report* for a discussion of this methodology and its implications.

Chart 3.1: Comparing our restated PSNB forecasts with adjusted and actual outturns



Source: ONS, OBR

2018-19 in detail

3.7 Why did our March 2016 PSNB forecast prove accurate, despite being based on an overoptimistic economy forecast? And why did our November 2016 PSNB forecast prove pessimistic, despite being based on an accurate economy forecast? We consider these twin puzzles next.

3.8 We have deployed a simpler approach to evaluating these forecast differences than the one we usually use in *FERs*. In part this reflects the other calls on the departments we work with over recent months preparing an eventually aborted Budget forecast. But it also reflects the nature of these forecast differences, which can usefully be split into those relating to the starting point for each forecast and those relating to subsequent growth. For March 2016, this means our 2015-16 in-year estimates and three years' growth to 2018-19. For November 2016, it means our 2016-17 in-year estimates and two years' subsequent growth.

3.9 In-year estimates are typically generated using statistical techniques overlaid by our judgements in the light of monthly outturn data for part of the year.[3] Growth in receipts or spending from that starting point is then typically generated using forecast models that relate the receipts or spending line to our economy forecast and other assumptions.

[3] As described in Taylor J. and Sutton A., OBR *Working paper No.13: In-year fiscal forecasting and monitoring*, September 2018.

Public sector net borrowing

3.10 Table 3.2 sets out our March 2016 and November 2016 forecast differences for PSNB in 2018-19, based on restated forecasts and adjusted outturn. It shows that:

- Our **March 2016 forecast** underestimated borrowing by just £4.4 billion, as receipts and spending exceeded our forecasts by £14.3 billion and £18.7 billion respectively. These differences were concentrated in the forecasts for growth between 2015-16 and 2018-19, with the starting point proving reasonably accurate (as one would expect when monthly data are available for most of the year). Stronger spending growth largely reflected higher departmental current spending and higher investment spending by both central and local government. Stronger receipts growth was dominated by unexpectedly buoyant onshore corporation tax receipts.

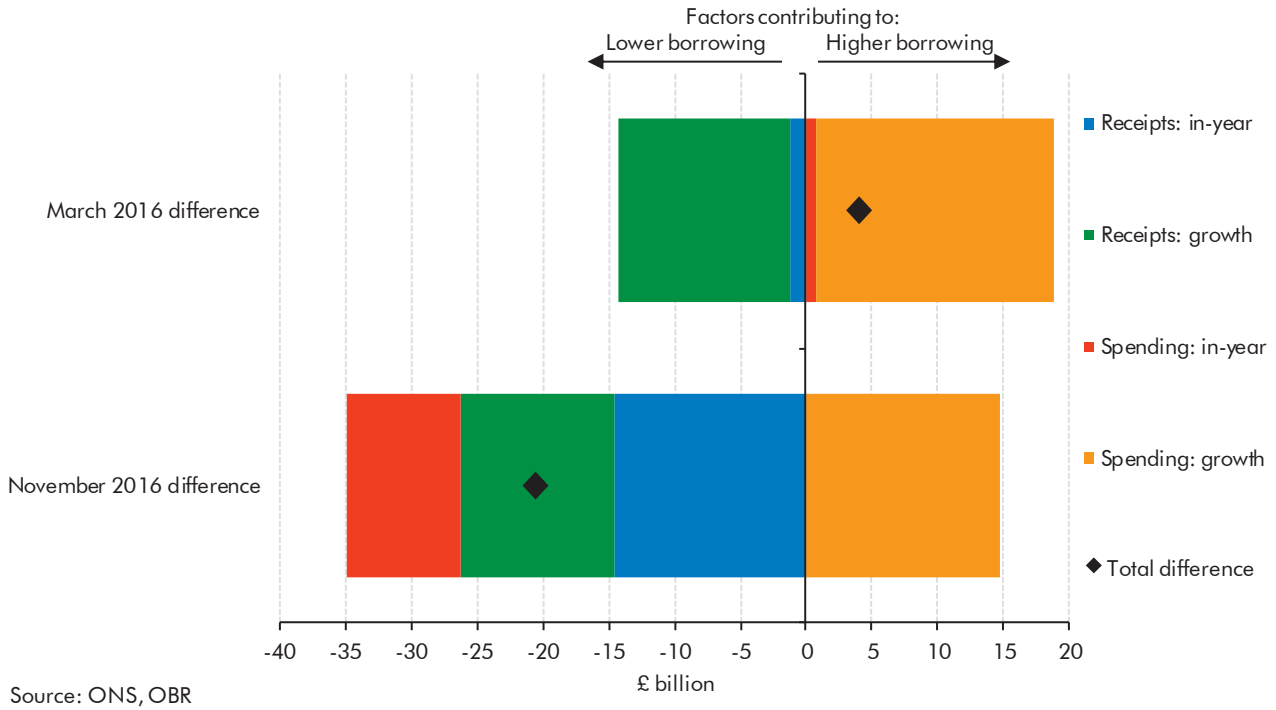
- Our **November 2016 forecast** overestimated borrowing by a larger margin of £20.3 billion, with receipts underestimated by £26.3 billion and spending underestimated by just £6.0 billion. This difference is more than explained by our in-year forecast for 2016-17 proving much too pessimistic, with the change in borrowing over the subsequent two years proving more accurate. This latter feature is not unexpected given the reasonably accurate economy forecast on which it was based, although the small borrowing difference reflected both receipts and spending rising more than expected. Our overly pessimistic receipts forecast for 2016-17 reflected several factors, including the fact that the published ONS monthly data were revised substantially during the year, as we detailed in Box 3.1 of our 2017 *FER*.

Table 3.2: 2018-19 receipts, spending and net borrowing forecasts

	£ billion				
	Restated forecast	Adjusted outturn	Difference	*of which:* In-year estimate	*of which:* Growth thereafter
Public sector net borrowing					
March 2016	18.9	23.3	4.4	-0.3	4.7
November 2016	43.6	23.3	-20.3	-23.3	3.0
Public sector current receipts					
March 2016	774.7	789.1	14.3	1.2	13.2
November 2016	762.8	789.1	26.3	14.6	11.6
Total managed expenditure					
March 2016	793.6	812.4	18.7	0.8	17.9
November 2016	806.4	812.4	6.0	-8.7	14.7

3.11 Chart 3.2 shows the contributions to each PSNB forecast difference from receipts and spending split between in-year errors and those in forecasting subsequent growth.

Chart 3.2: Breakdown of PSNB in-year and growth forecast differences



Source: ONS, OBR

Receipts

3.12 Receipts in 2018-19 were £14.3 billion higher than we forecast in March 2016, with much of this upside surprise explained by corporation tax. Splitting this difference into the parts related to our in-year estimate and to subsequent growth shows receipts in 2015-16 exceeded our forecast by £4.8 billion, while growth in receipts between 2015-16 and 2018-19 exceeded it by £12.5 billion. Receipts increased by 15.2 per cent over those three years, whereas our forecast had assumed growth of 13.2 per cent. Other sources of strength in receipts included VAT, capital gains tax, council tax, business rates and insurance premium tax. The main sources of offsetting weakness were PAYE income tax and National Insurance contributions (NICs), and stamp duty land tax.

3.13 Receipts in 2018-19 exceeded our November 2016 forecast by £26.3 billion. Our in-year estimate for 2016-17 was £18.3 billion too low, with receipts growth between then and 2018-19 underestimated by £10.7 billion. On an adjusted outturn basis, receipts increased by 8.5 per cent over those two years, whereas we had assumed growth of 7.0 per cent. All the large taxes exceeded our forecasts (income tax, NICs, VAT and corporation tax). Stamp duty land tax and environmental levies were the only items for which receipts fell materially short of our forecast.

Table 3.3: 2018-19 like-for-like receipts forecast differences

	£ billion				
	Restated forecast	Adjusted outturn	Difference	*of which:* In-year estimate	*of which:* Growth thereafter
March 2016 forecast					
Total	**774.7**	**789.1**	**14.3**	**1.2**	**13.2**
Income tax	198.2	192.6	-5.6	-0.9	-4.7
of which:					
Pay as you earn (PAYE)	169.7	163.5	-6.2	-0.4	-5.9
Self assessment (SA)	30.9	31.5	0.6	0.2	0.4
National insurance contributions	138.9	137.3	-1.7	-0.8	-0.9
Value added tax	130.3	133.1	2.8	0.9	1.9
Onshore corporation tax (cash)	46.1	55.3	9.2	0.2	9.0
Council tax	32.8	34.4	1.6	0.2	1.4
Business rates	28.7	30.1	1.4	0.8	0.7
Property transaction tax	15.3	12.3	-3.0	0.2	-3.2
Capital gains tax	7.5	9.2	1.7	0.0	1.7
Insurance premium tax	4.9	6.3	1.4	0.1	1.3
Other taxes and receipts	172.1	178.5	6.4	0.5	5.9
November 2016 forecast					
Total	**762.8**	**789.1**	**26.3**	**14.6**	**11.6**
Income tax	183.5	192.6	9.1	3.3	5.8
of which:					
Pay as you earn (PAYE)	157.0	163.5	6.5	2.5	3.9
Self assessment (SA)	29.4	31.5	2.1	0.6	1.5
National insurance contributions	133.0	137.3	4.2	1.9	2.4
Value added tax	129.9	133.1	3.2	1.8	1.4
Onshore corporation tax (cash)	49.4	55.3	5.8	3.3	2.5
Council tax	33.2	34.4	1.2	-0.1	1.3
Business rates	30.3	30.1	-0.2	0.5	-0.7
Property transaction tax	13.2	12.3	-0.9	0.6	-1.5
Capital gains tax	8.3	9.2	0.9	1.3	-0.5
Insurance premium tax	6.0	6.3	0.3	-0.1	0.4
Other taxes and receipts	175.9	178.5	2.6	2.1	0.5

Income tax and NICs

3.14 **PAYE income tax and NICs receipts** in 2018-19 fell short of our March 2016 forecast by £6.2 billion and £1.7 billion respectively. Both in-year estimates for 2015-16 were too high. PAYE income tax then increased by £5.9 billion less between 2015-16 and 2018-19 than we forecast. This reflected lower-than-expected earnings growth and higher-than-expected inflation, partly offset by higher-than-expected employment.

3.15 Compared to our November 2016 forecasts, PAYE income tax and NICs receipts both came in higher than expected (by £6.5 billion and £4.2 billion respectively). This was mainly due to unexpectedly strong employment and, unusually, stronger earnings growth, partly offset by higher inflation. We revised down our earnings growth forecast in November 2016 to reflect a weaker path for productivity growth after the EU referendum. As it turned out,

productivity growth has been even weaker than we expected, but despite that earnings growth has been a little stronger.

3.16 **Self-assessment (SA) income tax receipts** in 2018-19 came in slightly higher than our March 2016 forecast. Receipts exceeded our November 2016 forecast by a larger margin of £2.1 billion. Neither difference is large relative to the year-to-year variability of SA receipts.

VAT

3.17 VAT receipts exceeded our March 2016 and November 2016 forecasts by £2.8 billion and £3.2 billion respectively. This reflects several factors:

- Relative to both forecasts, **household spending** growth was stronger than expected, reflecting a steeper drop in the saving ratio in 2016 and 2017 than anticipated.

- The drop in the implied **VAT gap** in 2018-19 was larger than we assumed in either forecast. This fall might reflect actual changes in non-compliance but it could also reflect errors in the estimates of the theoretical tax take under full compliance.

- **Policy changes** also boosted receipts relative to our March 2016 forecast, including the new VAT flat rate scheme announced in Autumn Statement 2016. This introduced a 16.5 per cent flat rate for registered businesses with smaller taxable turnovers. It was expected to raise £195 million in 2018-19 when originally costed.

Corporation tax

3.18 Corporation tax has been one of the largest sources of error in our recent fiscal forecasts. Analysing those differences is made more difficult by the move from using cash receipts to a time-shifted proxy for accrued receipts in the public finances statistics (in 2017), and the recent corrections to errors in the data (including the double-counting of corporation tax credits). The effect of these changes on corporation tax receipts in 2018-19 were to raise them by £2.5 billion and reduce them by £4.4 billion respectively.

3.19 Table 3.3 abstracts from the accounting treatment change by focusing on cash receipts. On a cash basis, correcting the double-counting error reduced recorded receipts by £4.0 billion in 2018-19. Unfortunately, neither the published ONS outturn nor the adjusted outturn that we are using in this chapter provide a true like-for-like basis against which to compare our March 2016 and November 2016 forecasts.

3.20 Restating our forecasts to abstract fully from the double-counting correction is not straightforward, as it would have changed our view of the forecast starting point in each previous *EFO*. In what follows, we first analyse the difference between each forecast and the adjusted outturn – consistent with the rest of the chapter – and versus the published outturn. We then present something closer to a like-for-like assessment by generating simple restated forecasts that mechanically reflect the corrected data.

3.21 Adjusted outturn cash receipts in 2018-19 were £9.2 billion higher than our March 2016 forecast, while actual receipts were £5.2 billion higher. The true like-for-like difference should lie between these figures. Our underestimate reflected the following factors:

- Relative to overall corporate income, **fewer capital allowances have been used than we expected** – explaining around £2.3 billion of the difference. Recent HMRC analysis suggests that attrition from the overall capital allowance pool – amounts that leave the pool, but not because they have been used against profits – has been greater than we had previously assumed. This leaves fewer capital allowances being carried forward for future use. In our March 2019 *EFO*, we revised our capital allowance forecast down significantly – and thus revised up our receipts forecast – on the back of this analysis. This modelling issue was probably a larger source of the capital allowances overestimate than the weaker-than-expected business investment since the EU referendum vote.

- Other outturn **economic determinants** explain another £1.4 billion of the difference. Around half of this relates to the cumulative growth in financial company profits, which was stronger than expected.

- The remaining £1.6 billion difference relative to published outturn is likely to be explained by **a faster-than-assumed fall in the use of other deductions and reliefs**, in particular group relief. As set out in Chapter 4, we plan to review these models further over the coming year. Box 3.2 of our 2018 *FER* set out how falling use of deductions (including because of policy measures) has helped to boost onshore corporation tax receipts in recent years despite successive cuts to the headline rate.

3.22 Adjusted outturn cash receipts in 2018-19 were £5.8 billion higher than our November 2016 forecast, while actual outturn receipts were £1.9 billion higher. The latter difference is more than explained by the starting point – the actual outturn for 2016-17 exceeded our November 2016 forecast by £3.3 billion. In part that was because receipts in 2016-17 were unusually concentrated towards the end of the year. That might reflect firms marking down their profit expectations too aggressively in the immediate aftermath of the referendum, only to revise them up again soon after when output growth proved more resilient.

3.23 Had we known about the double-counting issue at the time of our March and November 2016 forecasts, the mechanical effect would have been to lower our in-year forecasts by £1.5 billion and £1.7 billion respectively (for 2015-16 in March 2016 and for 2016-17 in November 2016). If we had assumed the same growth rates thereafter, forecast differences on something closer to a like-for-like basis would have been between the two described above, at £6.8 billion and £3.7 billion respectively.

Other taxes

3.24 **Business rates** came in £1.4 billion higher than our March 2016 forecast but £0.2 billion lower than our November forecast. The relatively large difference compared with March reflects two factors. First, the transitional relief scheme that accompanied the 2017 business

rates revaluation. Our March 2016 forecast assumed that the scheme would have a net cost to the Exchequer, as the previous two schemes had. In November 2016, when we had full details of the scheme, we assumed that it would be fiscally neutral (adding around £0.5 billion to receipts in 2018-19 relative to our March 2016 assumption). Initial evidence suggests that the scheme will indeed prove broadly fiscally neutral. Second, the ONS revised up 2015-16 Scottish business rates between our March and November 2016 forecasts by £0.7 billion, so this higher starting level was reflected in our November forecast but not in March.

3.25 **Council tax** receipts in 2018-19 outperformed our March 2016 forecast by £1.6 billion and our November 2016 forecast by £1.2 billion. Both can be attributed to growth assumptions rather than in-year estimates, in particular as a result of subsequent policy measures. These are described in paragraph 3.42, alongside the associated local authority spending.

3.26 **Property transaction tax** receipts in 2018-19 fell short of both forecasts, with the margin largest relative to the pre-referendum March 2016 forecast. Property transactions were weaker than both forecasts assumed, as the property market cooled following the EU referendum (and by more than we predicted in November 2016). Weaker house price inflation also contributed to lower receipts. The weakness was overlaid by policy measures, in particular the introduction of the first-time buyer's relief from November 2017. HMRC estimates that this cost £0.5 billion in 2018-19.

3.27 **Capital gains tax** came in higher than both our March 2016 and November 2016 forecasts. Our March 2016 underestimate is explained in part by a larger than expected rise in equity prices. Relative to November 2016 it is due to underestimating 2016-17 receipts.

3.28 **Insurance premium tax (IPT)** receipts in 2018-19 were £1.4 billion (29 per cent) higher than our March 2016 forecast. More than half this upside surprise reflects the November 2016 policy decision to raise the standard rate of IPT from 10 to 12 per cent. IPT receipts consequently exceeded our November 2016 forecast by the much smaller margin of £0.3 billion.

Spending

3.29 Our *FERs* typically break down spending according to the detailed line-by-line forecasts that we produce in each *EFO*. In this slimmed down *FER*, we have focused on the broader categories that the ONS focuses on in its monthly outturns. As noted above, we have used outturn proportions to map our departmental current spending forecasts onto these categories to facilitate like-for-like comparisons.

3.30 On a like-for-like basis, spending exceeded our March 2016 forecast by £18.7 billion (2.3 per cent). In both absolute and proportionate terms, the largest upside surprises came in capital spending – by both central government and local authorities, including via their housing revenue accounts, which are classified as public corporations. Current spending was also higher than expected, but by smaller amounts, with departmental and welfare spending higher than expected while debt interest spending was lower than expected.

3.31 Spending exceeded our November 2016 forecast by just £6.0 billion (0.7 per cent). Again, investment was materially higher than we forecast (albeit by a smaller margin), while current spending surprises followed a similar pattern to those for March.

Table 3.4: 2018-19 like-for-like spending forecast differences

	£ billion				
	Restated forecasts		Adjusted outturn	Difference	
	March 2016	November 2016		March 2016	November 2016
Current spending on goods and services	386.2	387.8	390.4	4.2	2.6
Net social benefits	237.7	241.7	242.3	4.6	0.6
Interest and dividend spending	43.6	40.4	38.5	-5.2	-2.0
Other current spending[1]	53.3	57.7	57.3	3.9	-0.4
Total current spending	**720.8**	**727.5**	**728.4**	**7.6**	**0.9**
Gross investment	72.9	78.9	84.0	11.1	5.1
Less depreciation	-43.5	-43.4	-40.4	3.1	3.0
Net investment	**29.4**	**35.4**	**43.6**	**14.3**	**8.2**
Total managed expenditure	**793.6**	**806.4**	**812.4**	**18.7**	**6.0**

[1] Other current spending is the sum of subsidies, current grants and VAT and GNI based EU contributions.

Central government

3.32 Central government spending exceeded our March 2016 forecast by £7.1 billion and our November 2016 forecast by £0.9 billion. The large March 2016 underestimate was dominated by higher-than-expected current spending on goods and services (i.e. departmental spending) and gross investment, partly offset by overestimating debt interest.

Table 3.5: 2018-19 like-for-like central government spending forecast differences

	£ billion				
	Restated forecasts		Adjusted outturn	Difference	
	March 2016	November 2016		March 2016	November 2016
Current spending on goods and services	261.3	261.0	265.5	4.2	4.6
Net social benefits	214.7	217.4	214.7	0.0	-2.7
Interest and dividend spending	54.1	52.6	48.8	-5.3	-3.8
Other current spending[1]	162.2	165.1	167.2	5.0	2.1
Total current spending	**692.3**	**696.1**	**696.3**	**4.0**	**0.1**
Gross investment	61.8	64.2	64.9	3.1	0.8
Less depreciation	-21.8	-21.6	-18.6	3.2	3.1
Net investment	**40.0**	**42.5**	**46.4**	**6.4**	**3.8**
Total managed expenditure	**754.1**	**760.3**	**761.2**	**7.1**	**0.9**

[1] Other current spending is the sum of subsidies, current grants and VAT and GNI based EU contributions.

Current spending on goods and services

3.33 Current spending on goods and services by central government in 2018-19 was £4.2 billion higher than our March 2016 forecast and £4.6 billion higher than our November 2016 one. Around 90 per cent of spending in this category is departmental resource spending on pay and procurement. These budgets were boosted by subsequent policy

measures. Overall resource DEL in 2018-19 was raised by £1.2 billion in Spring Budget 2017 and then by a further £2.3 billion in the Autumn Budget that year.

Net social benefits

3.34 On a like-for-like basis, the difference between our March 2016 forecast and spending in 2018-19 was negligible, but spending fell short of our November 2016 forecast by £2.7 billion.

3.35 The largest surprise was spending on disability benefits, which exceeded our forecasts by £2.6 billion and £0.9 billion respectively. Both forecasts underestimated the extent to which spending on disability living allowance (DLA) and its replacement personal independence payment (PIP) for working-age adults would rise, despite them both having been revised up materially relative to previous forecasts. In March 2016 we incorporated a £0.9 billion cut in PIP spending in 2018-19 announced in Budget 2016. But this was dropped only a few days later, which contributed to the higher forecast and thus a smaller error in November 2016. Working in the opposite direction, tax credits spending has been significantly lower than expected, in part reflecting unexpectedly strong income growth among tax credits claimants.

3.36 Net public service pensions spending is also categorised as 'net social benefits'. We overestimated spending in 2018-19 by £1.0 billion in March 2016 and by £0.8 billion in November 2016. That reflected an overestimate of pensions in payment in the teachers' pension scheme and an underestimate of receipts in the NHS pension scheme respectively.

Debt interest

3.37 We overestimated central government debt interest in 2018-19 in both 2016 forecasts – by £5.3 billion in March and £3.8 billion in November. In each case, the largest contribution came from inflation-linked gilts, where RPI inflation was lower than forecast. Gilt yields were also materially lower than assumed in our March forecast.

Other current spending

3.38 Other central government current spending consists of subsidies, current grants, and VAT and GNI-based EU contributions. We underestimated these by £5.0 billion in March 2016 and by £2.1 billion in November 2016. This reflects several factors, including:

- Spending on **company tax credits** was £2.4 billion higher than our March 2016 forecast and £1.7 billion above our November 2016 one. The largest contributor was R&D tax credit, where take-up was greater than expected. HMRC does not yet have full outturn data for 2017-18, let alone for 2018-19, so these ONS outturns are subject to further revision.

- We overestimated **environmental levies** by £0.6 billion in March 2016 and by £2.0 billion in November 2016. We included the capacity markets scheme in our forecasts for the first time in March 2015, which raised receipts and spending in 2018-19 by £0.6 billion. In November 2016, we included an additional auction in the forecast, which

raised that forecast by £1.2 billion in 2018-19 (although the auction cleared at a much lower price than we expected). In the event, in late 2018 the capacity markets scheme was suspended following a European Court of Justice ruling removing its state aid approval.

- We underestimated **expenditure transfers to EU institutions** in 2018-19 by £1.1 billion in our March 2016 forecast. This was mostly due to the fall in the pound associated with the referendum result, which increased the sterling cost of the UK's euro-denominated payments. Our November 2016 forecast accounted for this rather better, only slightly overestimating spending. The smaller difference also in part related to the UK rebate.

- **Central government current grants to local authorities** in RDEL were overestimated by £1.9 billion in March 2016 and £2.9 billion in November 2016. This partly reflects the business rates retention pilot schemes that were launched in 2017 and 2018.

Net investment

3.39 Net investment by central government in 2018-19 exceeded our forecasts by £6.4 billion relative to March 2016 and by £3.8 billion relative to November. Around £3 billion of each came from overestimating depreciation. Our November 2016 forecast for gross investment was therefore reasonably accurate, but spending exceeded our March 2016 forecast by £3.1 billion. The large upward revision between March and November reflected a £2.9 billion boost to departmental capital spending announced in Autumn Statement 2016.

Local government

3.40 Spending by local government is largely financed by grants from central government and by local sources of revenue such as council tax and retained business rates. Lags in statistical reporting mean that we have an incomplete picture of local government spending in 2018-19.

3.41 Table 3.6 shows that total local government spending in 2018-19 exceeded our March 2016 forecast by £8.0 billion and our November 2016 forecast by £2.4 billion. We underestimated gross investment substantially in both forecasts. In March, this was compounded by underestimating current spending; in November, it was partly offset by overestimating the same. We have restated our net social benefits forecasts to reflect the transfer of some housing benefit spending to central government under universal credit.

Table 3.6: 2018-19 like-for-like local government spending forecast differences

	£ billion				
	Restated forecasts		Adjusted outturn	Difference	
	March 2016	November 2016		March 2016	November 2016
Current spending on goods and services	124.9	126.8	124.8	0.0	-1.9
Net social benefits	23.0	24.2	27.6	4.6	3.4
Interest and dividend spending	0.7	0.6	0.7	0.0	0.0
Other current spending[1]	-108.8	-107.4	-110.0	-1.1	-2.5
Total current spending	**39.7**	**44.2**	**43.1**	**3.4**	**-1.1**
Gross investment	4.8	5.9	9.4	4.6	3.5
Less depreciation	-12.7	-12.7	-12.5	0.2	0.2
Net investment	**-7.9**	**-6.8**	**-3.1**	**4.7**	**3.7**
Total managed expenditure	**44.5**	**50.1**	**52.5**	**8.0**	**2.4**

[1] Other current spending is the sum of subsidies, current grants and VAT and GNI based EU contributions.

Total current spending

3.42 Total current spending by local government was underestimated by £3.4 billion in March 2016 and overestimated by £1.1 billion in November 2016. We split our local government spending forecasts between the amounts that are financed by central government transfers and the amounts that are locally financed. For current expenditure, the latter exceed both forecasts by around £5 billion. Within this:

- Income from **retained business rates** was £3.3 billion higher than our March 2016 forecast and £4.2 billion higher than our November 2016 forecast. This was due to the business rates retention pilot schemes launched in 2017 and 2018.

- **Council tax** receipts were £1.2 billion higher than our March 2016 forecast and £1.1 billion higher than our November 2016 one. In each case, a key contributor was the policy decision to increase the amount by which local authorities could raise the adult social care precept without calling a local referendum to a maximum of 3 per cent rather than 2 per cent. The tax base also grew faster than expected.

- This was offset by greater-than-expected **accumulation of reserves** by local authorities, with £1.8 billion being added versus our forecast of close to zero.

3.43 The difference between the underestimate in March 2016 and the overestimate in November 2016 in terms of total current spending is explained by the combined effect of errors in forecasts for several small flows and accounting adjustments. Imputed spending on local authority pensions was overestimated by around £2 billion in both forecasts.

Net investment

3.44 Locally financed capital spending in England in 2018-19 was £14.7 billion, nearly twice the level in both forecasts. This large discrepancy is almost entirely explained by capital spending financed by 'prudential' borrowing, which came in £6.2 billion above our March 2016 forecast and £5.8 billion above our November 2016 forecast. This form of local

government investment had averaged around £5 billion a year in the five years to 2015-16, before rising sharply to £6.8 billion in 2016-17, £10.1 billion in 2017-18 and £9.9 billion in 2018-19. A key driver of this sharp rise was local authorities' diversification into commercial property investment, chiefly as a means of boosting income to offset cuts in central government funding while exploiting the low interest rates levied on PWLB lending.[4]

3.45 Several factors partly offset this large underestimate, including lower spending financed by capital grants from central government. Overall, gross investment by local government exceeded our March 2016 forecast by £4.6 billion and our November 2016 one by £3.5 billion. Our forecast for local government depreciation was close to outturn, leaving the picture for net investment similar to that for gross investment.

Public corporations

3.46 Spending by public corporations largely consists of two elements: capital investment by public corporations; and the debt interest saving associated with the gilts held in the Bank of England's Asset Purchase Facility (APF). In 2018-19, the effect of the latter exceeded the former, so spending was negative overall. But it was less negative than our March 2016 forecast by a margin of £3.6 billion and than our November 2016 forecast by £2.7 billion. We underestimated gross investment spending in March 2016 whereas we overestimated the APF-related debt interest saving in November 2016.

Table 3.7: 2018-19 like-for-like public corporations spending forecast differences

	£ billion				
	Restated forecasts		Adjusted outturn	Difference	
	March 2016	November 2016		March 2016	November 2016
Current spending on goods and services	0.0	0.0	0.0	0.0	0.0
Net social benefits	0.0	0.0	0.0	0.0	0.0
Interest and dividend spending	-11.2	-12.8	-11.0	0.2	1.8
Other current spending[1]	0.0	0.0	0.0	0.0	0.0
Total current spending	**-11.2**	**-12.8**	**-11.0**	**0.2**	**1.8**
Gross investment	6.3	8.8	9.7	3.4	0.9
Less depreciation	-9.0	-9.1	-9.3	-0.3	-0.2
Net investment	**-2.7**	**-0.3**	**0.4**	**3.1**	**0.7**
Total managed expenditure	**-4.9**	**-4.0**	**-1.3**	**3.6**	**2.7**

[1] Other current spending is the sum of subsidies, current grants and VAT and GNI based EU contributions.

3.47 The beneficial contribution of the APF to public corporation debt interest was £1.7 billion smaller in 2018-19 than we forecast in November 2016 as Bank Rate – which is the rate paid on the bank reserves that finance the APF's gilt holdings – was higher than we assumed. Bank Rate was also higher than we assumed in March 2016, but by a smaller margin. But we did not forecast the expansion in the size of the APF's gilt holdings to £435

[4] The PWLB is the Public Works Loans Board, which lends to local authorities at a fixed margin above gilt yields, which have themselves fallen sharply in recent years, including since the EU referendum vote.

billion that was announced soon after the EU referendum. As these effects largely offset, our March forecast for the APF-related debt interest saving was only £0.1 billion too large.

3.48 We underestimated net investment by public corporations by £3.1 billion in March 2016 and by £0.7 billion in November 2016. This included higher investment from local authorities' housing revenue accounts (which are classified as public corporations), particularly compared to our March 2016 forecast. Depreciation in public corporations was slightly lower than expected, offsetting some of this difference.

Public sector net debt

3.49 In this section, we focus on the year-on-year change in public sector net debt (PSND), 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. In line with the treatment throughout this chapter, forecasts have been restated for the reclassification of housing associations and outturn data adjusted for the recent ONS classification changes.

3.50 Abstracting from changes in net borrowing, the rise in the cash level of debt in 2018-19 was over £10 billion less than we predicted in both March 2016 and November 2016. The Government sold more financial assets, especially those belonging to UK Asset Resolution, than it had planned back in 2016. In part, this reflected sales previously planned for 2017-18 that slipped into 2018-19. In addition, RBS share sales in the year fell short of our March forecast by £2.9 billion, but exceeded our November one by £2.5 billion (because the Government temporarily put its RBS share sales on hold after the referendum, so that forecast assumed no further sales would take place – pending confirmation of a new plan).

3.51 Early redemptions of loans extended under the Bank of England's Term Funding Scheme (TFS) reduced debt by £5.8 billion. In our November 2016 forecast we had assumed no early redemptions, while the TFS had not been created at the time of our March 2016 one.

3.52 Differences due to valuation effects were small. In neither forecast did we anticipate the fall in sterling over the course of 2018-19 that boosted the year-end sterling value of the foreign exchange reserves. To varying degrees, this was offset by overestimating the amount by which PSND would be reduced by the government selling gilts above par.

Table 3.8: The change in public sector net debt in 2018-19

	£ billion				
	Forecast[1]		Estimates	Difference	
	March 2016	November 2016		March 2016	November 2016
Net borrowing	**18.9**	**43.6**	**23.3**	**4.4**	**-20.3**
Financial transactions	**26.3**	**28.5**	**14.4**	**-11.9**	**-14.1**
of which:					
Net lending	21.8	22.0	23.1	1.4	1.2
Sales or purchases of financial assets	-9.2	-7.6	-13.3	-4.2	-5.7
Bank of England schemes	0.0	0.0	-5.8	-5.8	-5.8
Other factors	13.7	14.1	10.4	-3.3	-3.7
Valuation	**-6.7**	**-8.0**	**-8.3**	**-1.6**	**-0.3**
of which:					
Gilt premia	-6.6	-8.2	-5.4	1.2	2.8
Reserves	-0.2	0.2	-2.9	-2.7	-3.1
Classification	**-6.0**	**-6.0**	**-6.0**	**0.0**	**0.0**
Change in net debt	**32.4**	**58.1**	**23.4**	**-9.0**	**-34.7**

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 to 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 systematic review of fiscal forecasting models.
- Based on the modelling principles documented in our October 2017 *Forecast evaluation report (FER)*, we **set out our main modelling priorities for the coming year**.

Lessons learnt

4.3 Lessons highlighted in our *FERs* have often already been acted upon, because they had been identified during the preparation of our *Economic and fiscal outlook (EFO)* forecasts. This is particularly true this year as we consider two older vintages of forecast.

4.4 In recent FERs we have highlighted the importance of the in-year estimates for receipts and spending that form the starting point for our fiscal forecast. Chapter 3 noted that the forecast difference for borrowing in subsequent years in our November 2016 forecast can be more than explained by the in-year forecast for 2016-17 proving too pessimistic.

4.5 We reviewed the performance of our in-year forecasts, and the challenges we face in producing them, in a working paper published last year.[1] This identified some areas for development, including the bonus assumptions in our income tax and NICs forecast and payment patterns in the onshore corporation tax forecast. We have looked more closely at these in-year estimates in the past year and continue to seek to make greater use of real-time PAYE information on income tax and NICs to inform our assumptions.

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

4.6 Many of the lessons from a retrospective evaluation of our 2016 forecasts have already been highlighted in past *FERs*. But comparing those forecasts with the latest data has altered some of those lessons, while reinforcing others. For example:

- The difficulties in **predicting how households will react to changes in the outlook for real income**. We drew attention in last year's *FER* to the unexpected resilience of real household consumption following the referendum. More recent data have altered that story somewhat, and the forecast difference has shrunk considerably. Annual growth in household spending to the second quarter of 2019 was revised down from 1.8 to 1.1 per cent in the latest Quarterly National Accounts. Alongside upward revisions to household income growth, this means that the saving rate has held up better than previously thought. The recurring pattern of upward revisions to the saving ratio was discussed in Box 3.4 of our October 2018 *EFO*.

- The challenge of **anticipating how quickly shocks will affect the economy and the public finances**. After the referendum, business investment initially held up better than we expected. But more recently it has disappointed, falling in five of the past eight quarters, reaching a level significantly below our first post-referendum forecast. It is likely that this recent weakness reflects the impact of the postponement of the UK's departure from the EU and the continuing uncertainty about the post-Brexit trading relationship.[2] The change in the exit date is not something that we could reasonably have foreseen and in any case our forecasts have to be conditioned on stated government policy. Nevertheless, the past year has provided further evidence of the effect that sustained periods of elevated uncertainty can have on business decisions.

- The importance of the **composition of labour income**, in particular the continued strength in employment and weakness in average earnings growth. In response we revised down our estimate of the sustainable unemployment rate in both March 2017 and October 2018. And productivity growth has fallen far short of even our downwardly revised November 2017 forecast. The more recent forecast differences may be due in part to the continuation of the uncertainty surrounding the UK's exit from the EU and the nature of the subsequent trading relationship. Businesses appear to have preferred to meet demand by employing labour rather than investing in capital because the former is more easily reversed, while preparations for Brexit may also have led to a diversion of effort.

- The importance of trends in the **use of corporation tax deductions and reliefs**. A key reason for the underestimate of receipts in both 2016 forecasts was that fewer capital allowances were used than expected. In light of this, we revised down significantly our March 2019 forecast of their use, increasing our forecast for corporation tax revenues. Less use of other deductions, such as group relief, also explains some of our over-pessimism on receipts. We will review these assumptions over the coming year.

[2] B. Broadbent, *Investment and uncertainty: the value of waiting for news,* speech at Imperial College Business School, May 2019.

- **Local authorities' use of borrowing to finance capital expenditure** has been much greater than anticipated – in 2018-19 it was almost twice what we forecast in March and November 2016. We have raised our forecast significantly, but information in this area is relatively poor so the forecast is uncomfortably reliant on judgement. The Treasury has recently increased the interest rate it charges local authorities to borrow from the Public Works Loan Board – their main source of borrowing. It will be challenging to estimate the effect of this on capital spending.

4.7 This year we analysed our spending forecasts relative to the categories that the ONS uses in its monthly outturn data, rather than the more detailed ones we employ in each *EFO* that are derived from the Treasury's spending control framework and the National Accounts. This revealed some issues with the mapping between the two that we intend to improve in future forecasts. Doing so will facilitate monitoring outturn data against our most recent published forecast.

Review of fiscal forecasting models

4.8 In 2016, we 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*.

4.9 Last year we identified 19 separate tax and spending models to look at in greater detail, of which seven were carried over from the previous year. 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 2019. 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.

Progress against last year's recommendations

4.10 Last year's *FER* set out 45 recommendations for model development work across the 19 models. During the year we agreed with HMRC to review alcohol duties instead of betting and gaming duties. Of the now 46 recommendations, 15 have been fully resolved and 8 partly resolved. With most of this work progressing during the summer, these have yet to be reflected in a forecast, but will feed into our next one. We have published a full update in the 'model assessment database' on our website, but the key steps include:

- Our assumptions on differential earnings growth across the income distribution will be informed by **real-time information (RTI) from the PAYE income tax system**, following work by HMRC to investigate potential options for including this data source. In the short term, RTI will be used to inform the assumptions built into the personal tax model (PTM), while HMRC will continue to investigate how RTI can be used directly in the model. The use of this source will enable much more timely information to be included

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

on movements in the earnings distribution, particularly at the very top end which accounts for a disproportionate share of receipts. This assumption has been a major source of forecast differences in the past. We will also adopt a new methodology for forecasting income tax on occupational and personal pensions, drawing more effectively on information in our state pension forecast.

- We made progress on several fronts in respect of our forecasts of **onshore corporation tax**. HMRC has improved the transparency of the methodology used to time-shift cash receipts onto the National Accounts basis used in our forecasts, and of the way in which the pool of historical spending in the capital allowances model evolves over time. These will enable us to make better informed forecast judgements, and the time-shifting methodology should also permit more effective monitoring of receipts as payments from large companies are brought forward. Despite this progress, there is still a considerable programme of work underway to improve the model further.

- The behavioural responses embedded in our forecasts of **alcohol duties** will now be linked to the overall product price, rather than just the rate of duty applied, given that consumer behaviour will depend on the full price and not just the duty element.

- The **student loans forecast model** has been converted to deliver outputs in line with the new ONS treatment of student loans in the public sector finances.

- We reviewed and updated the **structure and assumptions underpinning several smaller models**, including those for capital gains tax, carer's allowance and devolved income tax.

Modelling priorities for the coming year

4.11 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 six new separate tax and spending forecast models** to look at in greater detail. Our choices were based on a review of issues raised during past challenge and scrutiny processes, 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 our need to forecast new areas of the public finances due to ONS classification changes. These criteria generated 12 new priorities for model development.

- **We have carried forward 21 recommendations that were not fully resolved from last year's review**, related to 13 individual fiscal forecasting models, and added a further 12 priorities for these models.

4.12 The model review priorities this year sit within some overarching themes identified in previous years' reviews, including:

- **Understanding and fully exploiting outturn data sources.** We hope to increase further our use of RTI data over the coming year. This will include, if possible, using the data more fully in our forecasts of Scottish and Welsh devolved income tax receipts. Similarly, progress has been made on the use of universal credit (UC) administrative data to inform our forecasts, with better identification of claimant characteristics and a better match with payments made. But further work is needed to understand how UC is affecting spending month by month, so that we can be more confident about what explains changes in total spending on UC and the legacy benefits and tax credits in the year in progress. Better understanding of what is happening concurrently is essential to inform our judgement about the implications of outturn data for future spending.

- **Better alignment with ONS accounting treatment, including the consequences of recent classification changes.** In the past year we have made progress on student loan modelling, time-shifting corporation tax receipts and central government accounting adjustments, though there is more to do. The major ONS classification and methodological changes affecting funded public service pension schemes and capital stocks and depreciation require significant model development. This work will also encompass the requirements of forecasting wider measures of the public sector balance sheet such as public sector net worth (PSNW).

- **Improving the plausibility and transparency of forecast models.** This includes stronger links with the determinants in our economy forecast, which was identified as an issue in this year's review of the capital gains tax model, as well as reviewing our incorporations modelling to ensure that it reflects recent policy changes in relevant taxes. Greater transparency helps us better specify the key assumptions of the models, and make more informed judgements about them, as with the continuing development of the models underpinning our corporation tax forecasts. Bringing key policy changes within the models, such as with the residential nil rate band for inheritance tax and first-time buyers relief for stamp duty land tax, will both improve transparency and each model's efficiency and effectiveness.

4.13 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 2021.

A Comparison with past official forecasts

A.1 This annex compares the difference between the OBR's various fiscal forecasts and the latest outturns with the average differences in official forecasts over the previous 20 years.

A.2 This exercise provides some guide to relative forecast performance, but with important limitations. Most fundamentally, these comparisons are often influenced by factors beyond the control of the forecaster in question. For example, we may be looking at periods in which the underlying behaviour of the public finances was inherently more or less predictable, in which the size and distribution of unforeseeable shocks was different, or in which policymakers responded differently when the public finances diverged from expectations. And we have not yet had to forecast through a recession, which is often when the largest forecast differences arise (because their timing and depth are so uncertain). We therefore evaluate our forecasts against the median absolute average of the previous 20 years' forecasts – which excludes the large forecast differences associated with the recession in the late 2000s – as well as reporting against the mean absolute average difference.

A.3 We have so far produced 20 forecasts, but the sample that we can compare against outturns is still relatively small – especially at longer time horizons. We can compare only twelve of our fiscal-year forecasts at a four-year horizon and nine at a five-year horizon.

A.4 In addition to the public finances, we also undertake this comparison for our forecasts of 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 macroeconomic forecasts.

A.5 For what it is worth, our forecast differences for real GDP and net borrowing have, more often than not, been smaller in size than the average differences in official forecasts over the 20 years before the OBR was created.

Real GDP growth

A.6 Table A.1 shows our forecast differences for real GDP growth. Large differences between forecast and outturn are infrequent and concentrated near the forecast horizon, reflecting the increased effect of our over-optimism in projecting potential growth. These instances aside, other notable differences 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 forecasts

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 over-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 1.9 per cent. Based on our view of potential output and the output gap in our March 2019 forecast, this difference can be attributed both to potential growth and to cyclical factors being weaker than we had assumed.

- 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 in the first three quarters of 2012 were available at the time. Much of the in-year forecast difference reflects subsequent data revisions (see Box 2.2 of our 2018 *Forecast evaluation report*).

- 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.

- Our **December 2013** forecast was too optimistic about growth in 2018. We assumed that by the end of the forecast period real GDP growth would strengthen to 2.7 per cent, as both potential output growth recovered and the remaining spare capacity in the economy was used up. But the latest outturn data record growth of just 1.4 per cent. At such a long horizon, a forecast difference of this size is well within the range of uncertainty. Indeed in December 2013 we estimated that there was a 40 per cent chance that growth in 2018 would be within the range of 1.4 to 3.9 per cent.

- As discussed in Chapter 2, our **March 2016** forecast was too optimistic about growth in 2018. Our forecast was based on prevailing government policy that the UK would not leave the EU, so we did not foresee the slowdown in growth that occurred in 2018 due to the impact of Brexit-related uncertainty on domestic demand.

Table A.1: Forecast differences for real GDP growth

	Per cent[1]					
	Calendar years ahead					
	In-year	One	Two	Three	Four	Five
Forecast differences (colours reflect magnitude relative to pre-OBR median)						
June 2010	0.7	-0.8	-1.3	-0.8	-0.1	-0.3
November 2010	0.1	-0.6	-1.1	-0.8	-0.2	-0.3
March 2011	-0.2	-1.0	-0.8	-0.3	-0.4	
November 2011	0.6	0.8	0.0	-0.1	-0.6	-1.1
March 2012	0.7	0.1	-0.1	-0.6	-1.1	
December 2012	1.6	0.9	0.6	0.1	-0.8	-0.9
March 2013	1.5	0.8	0.1	-0.8	-0.9	
December 2013	0.7	0.2	0.2	-0.7	-0.8	-1.3
March 2014	-0.1	0.1	-0.7	-0.7	-1.1	
December 2014	-0.4	0.0	-0.3	-0.5	-0.9	
March 2015	-0.1	-0.4	-0.4	-0.9		
July 2015	0.0	-0.4	-0.5	-1.0		
November 2015	0.0	-0.5	-0.6			
March 2016	-0.1	-0.3	-0.7			
November 2016	-0.1	0.5	-0.3			
March 2017	-0.1	-0.2		Smaller than median absolute difference		
November 2017	0.4	0.0		Median sized difference		
March 2018	-0.1			Less than ½ std. dev. above median absolute		
November 2018	0.1			More than ½ std. dev. above median absolute		
Median absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.6	0.7	0.8	0.7	0.8	n/a
Autumn	0.8	0.7	0.6	0.8	0.8	0.7
Forecast differences (colours reflect magnitude relative to pre-OBR mean)						
June 2010	0.7	-0.8	-1.3	-0.8	-0.1	-0.3
November 2010	0.1	-0.6	-1.1	-0.8	-0.2	-0.3
March 2011	-0.2	-1.0	-0.8	-0.3	-0.4	
November 2011	0.6	0.8	0.0	-0.1	-0.6	-1.1
March 2012	0.7	0.1	-0.1	-0.6	-1.1	
December 2012	1.6	0.9	0.6	0.1	-0.8	-0.9
March 2013	1.5	0.8	0.1	-0.8	-0.9	
December 2013	0.7	0.2	0.2	-0.7	-0.8	-1.3
March 2014	-0.1	0.1	-0.7	-0.7	-1.1	
December 2014	-0.4	0.0	-0.3	-0.5	-0.9	
March 2015	-0.1	-0.4	-0.4	-0.9		
July 2015	0.0	-0.4	-0.5	-1.0		
November 2015	0.0	-0.5	-0.6			
March 2016	-0.1	-0.3	-0.7			
November 2016	-0.1	0.5	-0.3			
March 2017	-0.1	-0.2				
November 2017	0.4	0.0		Smaller than mean absolute difference		
March 2018	-0.1			Mean sized difference		
November 2018	0.1			Bigger than mean absolute difference		
Mean absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.8	1.2	1.2	1.2	1.2	n/a
Autumn	0.8	1.0	1.1	1.1	1.2	1.1

[1] A positive figure indicates outturn was above forecast.

Public sector net borrowing

A.7 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 level of GDP do not greatly affect our interpretation of how the public finances have evolved, but the upward revisions have reduced the ratios of fiscal measures expressed as a share of GDP. This makes comparisons of forecasts expressed on that basis hard to interpret, so in this annex we:

- compare **cash borrowing** (Table A.2) and **cash spending** (Table A.3) forecast differences normalised by the latest GDP estimates; and
- present our forecasts for the ***change* in receipts as a share of GDP** against outturns over time, which abstracts from the effects of revisions to the denominator (Table A.4).

A.8 We have also restated our fiscal forecasts and adjusted outturns using the same methodology set out in Chapter 3 in order to make like-for-like comparisons.

A.9 Table A.2 shows that less than a fifth of our PSNB forecasts show larger forecast differences than the median difference over the preceding 20 years. These larger differences include:

- Our **first three forecasts for 2013-14 to 2015-16** were too optimistic, with November 2010 particularly so. This largely reflected lower-than-expected 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 to 2014-15** were consistently too pessimistic. We set out a full analysis of our in-year forecasting performance in *Working Paper No.13: In-year fiscal forecasting and monitoring*.[1] One particular issue during this period was local authority net borrowing. Local authorities added to their reserves rather than reducing them, but this only became apparent much later when reliable data became available. More timely quarterly data are now available to inform our forecasts.
- Our **in-year forecasts for 2016-17** were too pessimistic. The bulk of this reflected stronger-than-expected tax receipts during the second half of the year, although this was partly related to significant revisions to the in-year data.

A.10 **Cash spending forecast differences** have consistently been smaller than the average of the previous 20 years (Table A.3). The larger under-estimates for spending in 2016-17 onwards in some forecasts – particularly December 2014 and March 2015 – reflect the Conservative Government's Summer Budget 2015 decision not to carry out the cuts to departmental spending that had been pencilled in by the Coalition before the 2015 General Election.

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

A.11 More of our **receipts forecast differences** have been relatively large by historical standards. Around a third of the years shown in Table A.4 display larger absolute forecast differences than the median absolute difference over the preceding 20 years. Those forecasts include:

- Our **first five forecasts for 2012-13 to 2015-16** were too optimistic, largely reflecting weakness in income tax and NICs receipts, where a less tax-rich composition of labour earnings (through higher employment but weaker average earnings) and policy changes (including successive increases in the income tax personal allowance) led to lower-than-expected effective tax rates.

- Our **'in-year' forecasts for December 2012, March 2013 and March 2016** were all too optimistic. These all largely reflected subsequent upward revisions to nominal GDP growth in those years, which reduced receipts as a share of GDP.

- Our **December 2014 to July 2015 forecasts** were too pessimistic. A substantial portion of this difference reflects statistical changes relating to corporation tax receipts, as set out in more detail in Chapter 3. Tax rises announced following the 2015 General Election also contributed to the receipts surplus, including the introduction of the bank surcharge (in 2016) and the apprenticeship levy (in 2017).

Table A.2: Forecast differences for cash PSNB

	Per cent of outturn GDP					
	Fiscal years ahead					
	In-year	One	Two	Three	Four	Five
Forecast differences (colours reflect magnitude relative to pre-OBR median)						
June 2010[1]	-0.1	-0.7	0.1	1.5	2.4	3.0
November 2010	-0.7	0.0	1.4	2.4	3.2	3.1
March 2011	-0.5	-0.3	0.8	1.9	2.6	2.5
November 2011	-0.6	-0.3	0.3	0.8	1.3	1.3
March 2012	-0.4	-0.2	0.4	1.1	1.4	1.5
December 2012	-0.2	-0.3	-0.2	-0.1	-0.2	0.8
March 2013	-0.3	-0.8	-0.7	-0.9	-0.8	0.3
December 2013	-0.3	0.0	0.0	0.0	1.2	1.6
March 2014	-0.1	0.0	0.2	0.4	1.5	1.7
December 2014	-0.3	-0.3	0.1	1.1	1.3	
March 2015	-0.2	-0.2	0.1	1.2	1.3	
July 2015[1]	-0.1	0.1	-0.1	0.7	0.8	
November 2015	-0.1	-0.3	0.9	1.0		
March 2016	0.0	-0.5	0.2	0.2		
November 2016	-1.2	-0.8	-0.9			
March 2017	-0.3	-0.7	-0.6			
November 2017	-0.4	-0.7		Smaller than median absolute difference		
March 2018	-0.2	-0.6		Median sized difference		
November 2018	-0.1			Less than ½ std. dev. above median absolute		
March 2019	0.0			More than ½ std. dev. above median absolute		
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	2.4
Autumn	0.4	1.1	1.4	1.3	2.1	2.5
Forecast differences (colours reflect magnitude relative to pre-OBR mean)						
June 2010[1]	-0.1	-0.7	0.1	1.5	2.4	3.0
November 2010	-0.7	0.0	1.4	2.4	3.2	3.1
March 2011	-0.5	-0.3	0.8	1.9	2.6	2.5
November 2011	-0.6	-0.3	0.3	0.8	1.3	1.3
March 2012	-0.4	-0.2	0.4	1.1	1.4	1.5
December 2012	-0.2	-0.3	-0.2	-0.1	-0.2	0.8
March 2013	-0.3	-0.8	-0.7	-0.9	-0.8	0.3
December 2013	-0.3	0.0	0.0	0.0	1.2	1.6
March 2014	-0.1	0.0	0.2	0.4	1.5	1.7
December 2014	-0.3	-0.3	0.1	1.1	1.3	
March 2015	-0.2	-0.2	0.1	1.2	1.3	
July 2015[1]	-0.1	0.1	-0.1	0.7	0.8	
November 2015	-0.1	-0.3	0.9	1.0		
March 2016	0.0	-0.5	0.2	0.2		
November 2016	-1.2	-0.8	-0.9			
March 2017	-0.3	-0.7	-0.6			
November 2017	-0.4	-0.7				
March 2018	-0.2	-0.6		Smaller than mean absolute difference		
November 2018	-0.1			Mean sized difference		
March 2019	0.0			Bigger than mean absolute difference		
Mean absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.3	0.9	1.8	2.6	3.0	3.4
Autumn	0.5	1.3	1.9	2.1	2.7	3.2

[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: Forecasts 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.

Outturns have been adjusted in line with several statistical changes announced in ONS' September 2019 *Public sector finances* release. See Chapter 3 for more information.

Table A.3: Forecast differences for cash spending

	Per cent of outturn GDP					
	Fiscal years ahead					
	In-year	One	Two	Three	Four	Five
Forecast differences (colours reflect magnitude relative to pre-OBR median)						
June 2010[1]	0.5	0.1	-0.1	-0.4	-0.3	-0.4
November 2010	0.0	-0.3	-0.3	-0.1	-0.1	-0.8
March 2011	0.3	-0.7	-0.9	-0.7	-0.7	-1.4
November 2011	-0.2	-0.5	-0.3	-0.3	-0.5	-0.3
March 2012	0.2	-0.3	-0.1	-0.1	-0.3	-0.2
December 2012	0.2	-0.1	0.1	-0.2	0.0	0.8
March 2013	0.3	0.0	0.1	-0.2	0.1	0.8
December 2013	0.1	0.1	-0.2	-0.1	0.8	1.3
March 2014	0.2	0.0	-0.2	0.1	1.0	1.3
December 2014	0.2	0.1	0.8	1.7	2.1	
March 2015	0.2	0.3	1.1	2.1	2.4	
July 2015[1]	0.2	0.3	0.4	0.9	1.2	
November 2015	0.1	-0.1	0.5	0.8		
March 2016	0.1	0.0	0.7	0.8		
November 2016	-0.3	0.1	0.3			
March 2017	0.0	-0.2	0.2			
November 2017	0.0	0.0		Smaller than median absolute difference		
March 2018	-0.1	-0.1		Median sized difference		
November 2018	-0.1			Less than ½ std. dev. above median absolute		
March 2019	-0.1			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	0.9	1.2	1.7	1.9
Autumn	0.8	0.7	0.9	1.0	1.8	2.2
Forecast differences (colours reflect magnitude relative to pre-OBR mean)						
June 2010[1]	0.5	0.1	-0.1	-0.4	-0.3	-0.4
November 2010	0.0	-0.3	-0.3	-0.1	-0.1	-0.8
March 2011	0.3	-0.7	-0.9	-0.7	-0.7	-1.4
November 2011	-0.2	-0.5	-0.3	-0.3	-0.5	-0.3
March 2012	0.2	-0.3	-0.1	-0.1	-0.3	-0.2
December 2012	0.2	-0.1	0.1	-0.2	0.0	0.8
March 2013	0.3	0.0	0.1	-0.2	0.1	0.8
December 2013	0.1	0.1	-0.2	-0.1	0.8	1.3
March 2014	0.2	0.0	-0.2	0.1	1.0	1.3
December 2014	0.2	0.1	0.8	1.7	2.1	
March 2015	0.2	0.3	1.1	2.1	2.4	
July 2015[1]	0.2	0.3	0.4	0.9	1.2	
November 2015	0.1	-0.1	0.5	0.8		
March 2016	0.1	0.0	0.7	0.8		
November 2016	-0.3	0.1	0.3			
March 2017	0.0	-0.2	0.2			
November 2017	0.0	0.0				
March 2018	-0.1	-0.1		Smaller than mean absolute difference		
November 2018	-0.1			Mean sized difference		
March 2019	-0.1			Bigger than mean absolute difference		
Mean absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	1.2	1.1	1.2	1.6	1.8	2.0
Autumn	1.0	0.8	0.9	1.1	1.7	2.2

[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: Forecasts 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.

Outturns have been adjusted in line with several statistical changes announced in ONS' September 2019 *Public sector finances* release. See Chapter 3 for more information.

Table A.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
Forecast differences (colours reflect magnitude relative to pre-OBR median)						
June 2010[1]	0.6	0.9	0.3	-0.8	-1.3	-1.4
November 2010	0.5	0.0	-0.9	-1.4	-1.4	-1.2
March 2011	0.2	-0.4	-1.1	-1.6	-1.5	-1.3
November 2011	-0.3	-0.8	-1.0	-1.0	-0.8	-0.3
March 2012	0.0	-0.7	-1.0	-1.2	-0.8	-0.4
December 2012	-0.6	-1.2	-1.0	-1.0	-0.5	-0.2
March 2013	-0.6	-0.9	-0.8	-0.6	-0.5	-0.3
December 2013	0.2	0.2	-0.1	0.1	0.2	0.5
March 2014	0.2	0.2	-0.1	0.2	0.3	0.7
December 2014	0.5	0.6	0.6	0.8	1.2	
March 2015	0.3	0.7	0.8	0.9	1.3	
July 2015[1]	0.4	0.3	0.3	0.5	0.9	
November 2015	0.0	0.0	-0.2	0.2		
March 2016	-0.5	-0.4	-0.2	0.1		
November 2016	0.3	0.1	0.5			
March 2017	0.1	0.3	0.4			
November 2017	0.3	0.4		Smaller than median absolute difference		
March 2018	-0.2	0.0		Median sized difference		
November 2018	-0.2			Less than ½ std. dev. above median absolute		
March 2019	-0.3			More than ½ std. dev. above median absolute		
Median absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.3	0.8	1.1	0.8	0.7	1.7
Autumn	0.3	0.8	0.9	0.8	0.6	1.1
Forecast differences (colours reflect magnitude relative to pre-OBR mean)						
June 2010[1]	0.6	0.9	0.3	-0.8	-1.3	-1.4
November 2010	0.5	0.0	-0.9	-1.4	-1.4	-1.2
March 2011	0.2	-0.4	-1.1	-1.6	-1.5	-1.3
November 2011	-0.3	-0.8	-1.0	-1.0	-0.8	-0.3
March 2012	0.0	-0.7	-1.0	-1.2	-0.8	-0.4
December 2012	-0.6	-1.2	-1.0	-1.0	-0.5	-0.2
March 2013	-0.6	-0.9	-0.8	-0.6	-0.5	-0.3
December 2013	0.2	0.2	-0.1	0.1	0.2	0.5
March 2014	0.2	0.2	-0.1	0.2	0.3	0.7
December 2014	0.5	0.6	0.6	0.8	1.2	
March 2015	0.3	0.7	0.8	0.9	1.3	
July 2015[1]	0.4	0.3	0.3	0.5	0.9	
November 2015	0.0	0.0	-0.2	0.2		
March 2016	-0.5	-0.4	-0.2	0.1		
November 2016	0.3	0.1	0.5			
March 2017	0.1	0.3	0.4			
November 2017	0.3	0.4				
March 2018	-0.2	0.0		Smaller than mean absolute difference		
November 2018	-0.2			Mean sized difference		
March 2019	-0.3			Bigger than mean absolute difference		
Mean absolute differences over the 20 years preceding the creation of the OBR						
Spring/summer	0.5	0.9	0.9	1.1	1.1	1.5
Autumn	0.5	0.9	1.1	1.0	1.1	1.2

[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: Forecasts 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.

Outturns have been adjusted in line with several statistical changes announced in ONS' September 2019 *Public sector finances* release. See Chapter 3 for more information.

Index of charts and tables

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