

1 Executive summary

- 1.1 Twice a year at the OBR, we provide a detailed central forecast for the economy and the public finances. These forecasts provide a transparent benchmark against which to judge the significance of new economic and fiscal data and against which to estimate and explain the likely impact of policy decisions. But since the future can never be known with precision, all such ‘point’ forecasts are necessarily surrounded by uncertainty – the likelihood that any given forecast will turn out to be accurate in all respects is essentially negligible.
- 1.2 We stress these uncertainties in every *Economic and fiscal outlook (EFO)* we publish. We present probability distributions around our central forecasts based on past forecast performance, sensitivity analysis of key assumptions and assessments of the fiscal implications of different economic scenarios. And once a year, in our *Forecast evaluation report (FER)*, we compare the latest outturn data to our earlier central forecasts and seek to explain the inevitable differences. This year we have stepped up our analysis of the risks around our forecasts – and around long-term fiscal sustainability more generally – with the publication of our first *Fiscal risks report*.
- 1.3 Throughout this report, we describe the arithmetic divergence between the central forecasts and the subsequent outturns as ‘differences’ rather than ‘errors’, because in many cases it would have been impossible to avoid them given the information available when the forecast was made. Where we do find genuine errors, which could 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 such as ours.
- 1.4 The backdrop to this report is:
- a **real economy** in which growth has slowed steadily over the past three years, with growth over the past year weakening as household real incomes and spending were squeezed by higher inflation following the fall in the pound after the EU referendum;
 - a **labour market** that has continued to exhibit strong growth in employment, but weak growth in earnings and productivity; and
 - a falling **budget deficit** and a **public debt to GDP ratio** that has broadly stabilised once allowance is made for the impact of the monetary policy easing following the referendum, which has added to the headline public sector net debt measure.
- 1.5 This is our first *FER* to consider forecasts relative to outturn data that embody the initial response of the economy to the Brexit vote and the start of exit negotiations. At this early stage, it appears that the impact of a weaker pound on households’ real incomes and spending through higher inflation has been broadly in line with our post-referendum

forecasts. Business investment data have been revised significantly – as is often the case – and now suggest that it slowed more sharply than previously thought in 2015 but has grown at a moderate pace since then. There appears to have been a modest boost to net trade from sterling’s depreciation. Net inward migration has slowed, probably partly as the fall in the pound reduced the value of UK wages in potential immigrants’ home currencies.

What questions do we seek to answer in this report?

- 1.6 The focus of this year’s report is an evaluation of our one- and two-year ahead forecasts for 2016-17. This means looking at our March 2015 forecast – the last under the Coalition Government – and our March 2016 forecast – our last before the EU referendum. In terms of the economy, we explore why real GDP growth fell a little short of both forecasts and what we can learn from the composition of those differences – including what we can learn about the initial effects of the referendum. In terms of the public finances, we ask why, on a like-for-like basis, our March 2015 forecast proved to be optimistic – including the effect of the higher public spending announced after the 2015 General Election – and why our March 2016 forecast proved to be slightly pessimistic – despite the weaker real economy.
- 1.7 In Chapter 2, we also take a deeper look at trends in productivity growth and the labour market. Once again we are faced with productivity performing more weakly than forecast, but employment and the average number of hours worked surprising to the upside. We also draw some lessons for the judgement about the future path of potential output that we will need to make in our forthcoming *EFO*, to be published alongside the Chancellor’s Autumn Budget on 22 November.

Explaining 2016-17 forecast differences

- 1.8 Real GDP growth in the period up to mid-2017 was weaker than predicted in both our March 2015 and March 2016 forecasts, but nominal GDP growth – which is the more important driver of the public finances – fell short of our March 2015 forecast by a smaller margin while it actually exceeded our March 2016 forecast. The composition of GDP is also fiscally important because of the variation in which different elements are taxed:
- **In expenditure terms**, the shortfall in real GDP growth was dominated by the weakness in business investment, which is fiscally favourable in the short term because it boosts corporation tax receipts. But over longer horizons, weak business investment is fiscally damaging since it reduces the productive capacity of the economy as a whole. Relative to our March 2016 forecast, while consumer spending was a little weaker than expected in real terms, that shortfall was more than offset by higher-than-expected inflation to leave nominal spending – which drives tax receipts – higher than forecast.
 - **In income terms**, the nominal differences relative to both forecasts were broadly based across the main components. Relative to both forecasts, average earnings growth was weaker than expected while employment growth was stronger. Profits growth was stronger than in both our March 2015 and March 2016 forecasts.

1.9 On a broadly like-for-like basis – abstracting from the effect of classification changes – our March 2015 forecast was too optimistic while our March 2016 forecast was too pessimistic:

- **Relative to our March 2015 forecast**, borrowing was £10.9 billion higher than expected, with much higher-than-expected spending more than offsetting higher-than-expected receipts. For spending, this was largely the consequence of significant increases in departmental spending announced in the July 2015 Budget, which were topped up further in the Spending Review in November 2015. Local authorities also spent more than we forecast, drawing more than expected on their reserves and prudential borrowing to do so. Receipts were boosted by policy measures, including raising rates of insurance premium tax and dividend tax, and the introduction of a stamp duty surcharge on purchases of second homes and buy-to-lets. Corporation tax receipts were also stronger than expected, but self-assessment income tax receipts were significantly weaker.
- **Relative to our March 2016 forecast**, borrowing was £2.8 billion lower than expected, more than explained by higher-than-expected receipts. Unexpected economic developments boosted receipts, as stronger profits and higher employment more than offset the effect of weak average earnings growth. Other receipts surprises were positive too, including a variety of factors boosting onshore corporation tax receipts, and smaller upside surprises in VAT and capital gains tax receipts. Spending was higher than expected, with higher local authority spending and the effect of higher RPI inflation on debt interest both raising spending compared with our forecast. A larger-than-expected departmental underspend and differences in the timing of EU payments in calendar year 2017 were the largest factors acting in the opposite direction.

2016-17 data revisions and 2017-18 year-to-date outturns

1.10 Our *FER* analysis is carried out on the basis of the September vintage of the Office for National Statistics (ONS) public finances data for 2016-17. One striking feature is the extent to which it has been revised since the ONS published its initial estimate in April. The latest estimate of the deficit is £7.0 billion lower than the initial one, with classification and methodology changes accounting for £1.3 billion of that and the remainder attributable to a combination of higher central government receipts (£4.9 billion), lower central government spending (£0.6 billion) and lower local authority borrowing (£0.2 billion).

1.11 On the latest estimate, borrowing in the first five months of 2017-18 was broadly flat relative to the same period in 2016-17. Our March 2017 forecast predicted that borrowing in the full year would be £58.3 billion, a £6.5 billion rise relative to our March estimate of 2016-17 borrowing but a £13.2 billion rise relative to the latest ONS estimate, following the large downward revisions.

1.12 Our March forecast estimated that self-assessment income tax receipts would fall £3.9 billion on the previous year as a result of unwinding of the dividend income shifting that had boosted 2016-17 receipts. As self-assessment is paid near the end of the fiscal year, this expected fall will not have affected the latest data. But some of the overall downward

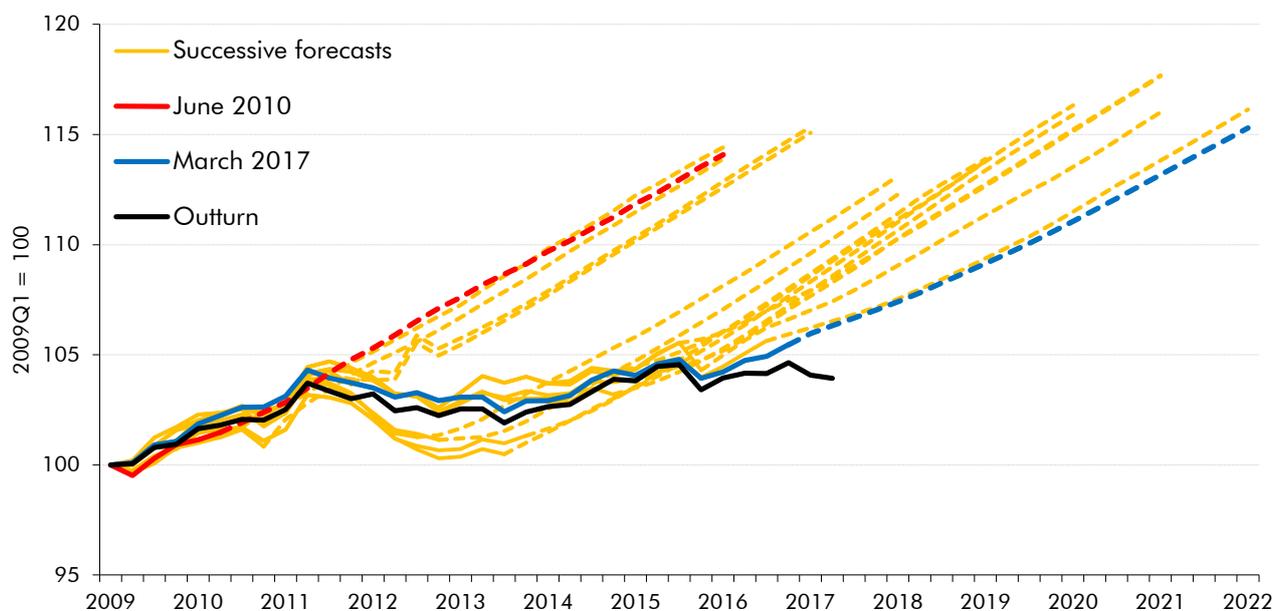
revision to the 2016-17 deficit over the past five months would, all else equal, be expected to result in lower borrowing this year than forecast in March. The judgements we make about in-year receipts and spending are likely to be an important factor in our forthcoming November forecast.

Productivity growth and the labour market

Productivity growth

1.13 One recurring theme in past *FERs* has been productivity falling short of our forecasts (Chart 1.1) while employment and average hours worked have exceeded them. That pattern is repeated for both forecasts evaluated in this report and, based on revised GDP data and outturns in the first half of 2017, will be repeated again for our March 2017 forecast.

Chart 1.1: Successive OBR productivity forecasts (output per hour)



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

1.14 Our rationale for basing successive forecasts on an assumed pick-up in prospective productivity growth has been that the post-crisis period of weakness was likely to reflect a combination of temporary, albeit persistent, influences. And as those factors waned, so it seemed likely that productivity growth would return towards its long-run historical average.

1.15 The hiatus in productivity growth has now lasted for almost a decade, and some of the earlier explanations for its weakness seem less applicable today. For example, in the immediate post-crisis period, labour hoarding in the face of temporarily weak demand was a plausible hypothesis, but that became less appropriate once firms began hiring again. Subsequently, we placed more weight on the hypothesis that an impaired banking system had slowed the reallocation of resources to more productive uses. But the banking system is now much better capitalised and more robust than it was in the immediate aftermath of the

crisis, so this explanation no longer looks as relevant as it once did. More recently, as the labour market has tightened, with the unemployment rate now at its lowest since the early 1970s, upward pressure on wage growth was expected to encourage firms to economise on labour and to push through productivity improvements, but that has yet to happen. This limited response of wage growth to emerging labour market tightness is an international phenomenon that the IMF has addressed in its October 2017 *World Economic Outlook*.

- 1.16 Some other explanations remain relevant. For example, business investment has been very weak since the crisis. Business investment today is just 5 per cent above its pre-crisis peak almost a decade ago; in contrast, a decade after the 1980s and 1990s recessions, investment was 63 and 30 per cent higher than the pre-recession peaks respectively. This sustained weakness in investment will have limited the contribution to labour productivity growth from capital deepening.
- 1.17 The abnormally low level of interest rates could also be weighing on productivity growth by allowing weak and highly indebted firms to survive for longer than they normally would, by alleviating the burden of servicing their debts. This would lower productivity both through a ‘batting average’ effect and by preventing the efficient reallocation of those resources to more productive uses. Heightened uncertainty created by the Brexit vote may also have encouraged firms to expand production by increasing inputs of relatively flexible labour rather than less easily reversed investment in capital.
- 1.18 It is notable that the ‘productivity puzzle’ is not just a UK phenomenon. For instance, the US Congressional Budget Office has made similar downward revisions to its productivity forecasts, as have the IMF and the OECD in their forecasts for many advanced economies. And weak investment and the impact of very low interest rates are plausible explanations for many countries. But it is also worth noting that some commentators have argued that the advanced economies have entered an era of permanently subdued productivity growth for structural reasons.
- 1.19 At the time of our March forecast, productivity growth had strengthened in 2016, averaging 0.4 per cent a quarter to leave productivity up 1.5 per cent in the year to the end of 2016, but this has proved yet another false dawn. The renewed weakness of productivity so far in 2017 may in part be a temporary effect of the Brexit vote and the uncertainty that it has generated. But given the bigger picture – both over time and across countries – it is clear that we will need to revisit our trend productivity growth assumptions again in November.
- 1.20 Our March 2017 forecast assumed that trend productivity growth would rise slowly to reach 1.8 per cent in 2021. Actual productivity growth averaged 2.1 per cent a year in the pre-crisis period, but has averaged just 0.2 per cent over the past five years. While we continue to believe that there will be some recovery from the very weak productivity performance of recent years, the continued disappointing outturns, together with the likelihood that heightened uncertainty will continue to weigh on investment, means that we anticipate significantly reducing our assumption for potential productivity growth over the next five years in our forthcoming November 2017 *EFO*.

Labour market developments

- 1.21 The weakness of productivity growth has been accompanied by stronger-than-expected employment growth, ongoing falls in unemployment (to 4.3 per cent of the labour force, compared with our March assumption of 5.0 per cent for the equilibrium, or sustainable, rate of unemployment), and average hours rising a little rather than falling as assumed. Strong growth in hours worked, alongside weak earnings growth, suggests that we will also need to revisit our assumptions about potential labour supply. The Bank of England currently estimates that the equilibrium unemployment rate is around 4½ per cent. Given the impact of weak earnings growth on people's incomes, it may also be sensible to assume that the long-term downward trend in hours worked takes longer to reassert itself.
- 1.22 We will be considering all the relevant evidence in detail as we prepare our November forecast. Other things being equal a downward revision to prospective productivity growth would weaken the medium-term outlook for the public finances, while a lower sustainable rate of unemployment and more hours worked would strengthen it. The ONS's downward revisions to last year's budget deficit would also be beneficial, to the extent that they feed through to future years. That said, the downward revision to productivity growth is likely to have the largest quantitative impact.

Refining our forecasts

Lessons learnt

- 1.23 It is often the case that the lessons emerging from our *FERs* have already been acted upon because they were identified during an *EFO* forecast process. In some areas, that has been repeated this year. Lessons that have been reinforced include:
- the importance of the **composition of labour income**, in particular that employment-driven growth has been less tax-rich than earnings-driven growth would have been;
 - savings associated with **major reforms of the incapacity and disability benefits** systems had fallen short of expectations, due largely to challenges in delivering the reforms;
 - the challenges in forecasting **self-assessment (SA) income tax and capital gains tax** receipts, due to data limitations, the complex effects of behavioural responses to policy changes, the trend towards incorporations and shifts in the income distribution; and
 - the use of **local authority reserves**, which has been a repeated source of surprise relative to our forecasts – in both directions – with the latest surprise being the extent to which they were drawn down to support higher local authority spending in 2016-17.
- 1.24 There are also new issues and themes that have been identified in this year's evaluation:
- The importance of **corporation tax payment timing assumptions**. The speed at which companies pay off their liabilities arising from a particular year's profits can have a

marked effect on receipts. In addition, the surge in receipts from life assurance companies in 2016-17 suggests that we also need to look further at how the effect of bond price movements on profits in the sector are modelled.

- The unexplained downward **trend in tax credits and in-work housing benefit caseloads**. In recent forecasts we have made successive and substantial downward revisions to tax credits spending, with similar, if smaller, revisions to the in-work element of the housing benefit caseload. This appears to be related to lower-than-expected inflows (rather than higher-than-expected outflows) and to average incomes across the caseload rising faster than assumed. The underlying drivers of these forecast differences remain under investigation.
- The challenges and importance of the **in-year estimates for receipts and spending** that form the basis of our fiscal forecasts. As most of our models are specified to forecast the *growth* of a tax or spending stream from a starting point, any difference between forecast and outturn for the year in progress when the forecast is made will compound over the forecast period. We use the latest available data – including administrative data – when making these estimates, but the pattern of receipts or spending through the year can change and subsequent revisions can change the picture significantly, as has been illustrated clearly by the large revisions to 2016-17 since our March forecast.

Review of fiscal forecasting models

- 1.25 In preparing our fiscal forecasts we utilise more than 350 models of varying size and complexity. The outputs are scrutinised during forecast rounds and model development work is undertaken between forecasts. This year we have introduced a more systematic approach to following up our analysis of fiscal forecasting differences and the issues raised in *EFO* forecasting rounds, working with our partners across government in doing so.
- 1.26 This review forms part of a broader process of model development. Over the past year, we have moved to new models in a number of areas, including the incorporations model used to adjust our income tax, NICs and corporation tax forecasts for the trend toward employees and self-employed individuals incorporating, as well as the model we use to estimate the proportion of consumer spending subject to the 20 per cent rate of VAT. We plan to move to a new North Sea revenues model in our November forecast.
- 1.27 We have reviewed 19 models in depth against the five criteria we set out last year (accuracy, plausibility, transparency, effectiveness and efficiency). Informed by this, we have identified some overarching issues that we plan to work on over the next year, including supplementing our microsimulation models with top-down approaches, reviewing the balance between short- and long-term dynamics in our econometric models and assessing the impact of significant policy changes on the modelling approaches we use.
- 1.28 As well as these general conclusions, we have attached a high priority to development work on three forecasting models:

- **Onshore corporation tax:** in recent forecasts we have repeatedly under-predicted onshore CT receipts. We will work with HMRC to review the main industrial, commercial and financial sector components of this model, including the econometric equations we use to project key income and deduction streams. We are also working with HMRC to improve the transparency of the model and its outputs.
- **Self-assessment income tax:** we have repeatedly over-forecast receipts in recent years. This appears to be due to weakness in the effective tax rate, which has not been captured by the model. We will therefore be considering alternative approaches to modelling the effective tax rate. We will also work with HMRC and the ONS to investigate and better understand trends in the tax base and how these income streams are captured in the National Accounts.
- **Universal credit (UC):** as the rollout of UC accelerates over the next year, the spending flowing through the system will rise significantly. We currently factor UC into our forecasts as a marginal effect relative to the existing system rather than on a full-cost basis. This will become more problematic as outturn data will increasingly reflect UC rather than the system that is being replaced. The shift to UC also involves a number of complex changes in entitlement and the possibility that recipients' behaviour will change in response – e.g. take-up rates, error and fraud, and decisions about whether and how much to work. Assumptions in all these areas will need to be reviewed as evidence of actual effects becomes available. We will set out our latest UC modelling in detail in our next *Welfare trends report*, which will be published later in 2017-18.

Comparison with past official forecasts

1.29 In Annex B we compare the absolute size of our forecast differences to the average across official forecasts made in the 20 years before the OBR was created, although any differences between our forecast record and that of the Treasury before us could be influenced by many factors beyond the control of the forecaster in question. We have so far produced 16 forecasts, but the sample that we can compare against outturns is still relatively small – especially at longer time horizons. We can compare only seven of our forecasts at a 4-year horizon and five at a 5-year horizon. And we have not yet had to forecast through a recession, which is typically when the largest differences arise – because their timing and depth are so uncertain. For what it is worth, our forecasts for real GDP growth and net borrowing have on average been more accurate than Treasury forecasts were on average over the previous 20 years.