

The OBR's historical forecast database: a prickle of porcupines

Which Budget forecast the strongest single year for GDP growth? Which had to revise it down the most in any year? Which budget deficit forecast was widest of the mark? These questions and more can be answered from a database of official economic and fiscal forecasts on our website.

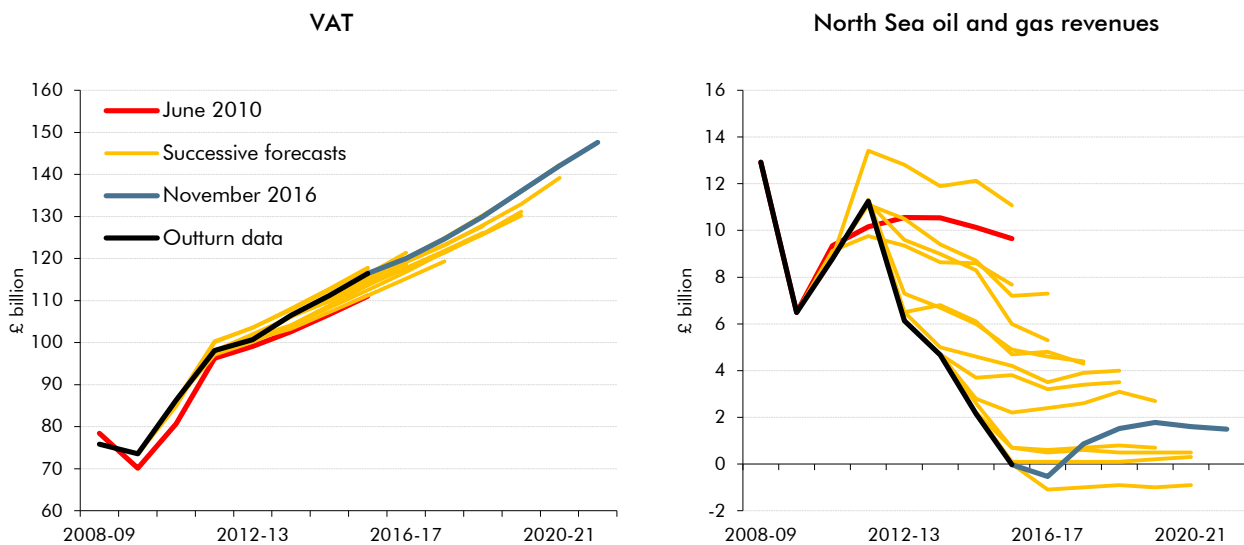
We have overhauled our historical forecast database so that it now includes successive forecasts and recent outturn data for many more variables – including all the main lines of tax and public spending, plus the major fiscal aggregates (such as public sector borrowing and debt) – from our forecasts since 2010. The database also includes most of the economic and fiscal forecasts published by the Treasury prior to 2010 and in some cases back as far as 1970. (But the Treasury published less detail of its forecasts than the OBR does now.)



In addition to all the numbers, the database allows you to generate a ‘porcupine chart’ for any variable that compares successive forecast paths with the outturn data available at the time of our most recent forecast (currently November 2016). These charts are so-called because forecast lines often resemble the quills rising from a porcupine’s back, especially when the forecaster repeatedly predicts that a particular variable will rise (or fall) only for the outturn data not to do so as quickly as expected. The differences between the forecast lines and the outturn data are often referred to as ‘errors’ (for example when we try to explain them in our annual *Forecast evaluation reports*), but they are not necessarily mistakes or differences that could have been avoided. They may reflect:

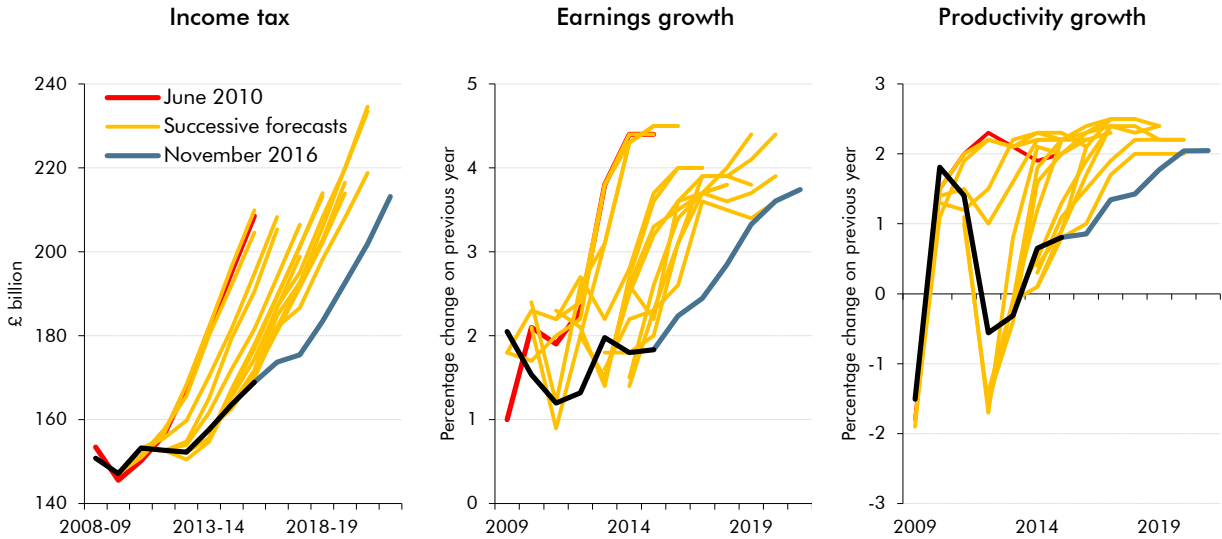
- **classification changes:** the definition of the variable in question may change, so that comparing a forecast and subsequent outturn does not compare like with like if one or other cannot be restated on a comparable basis. A good example, as we illustrate below, is the overall cash value of the economy or nominal GDP.
- **revisions to back data:** the data available when the forecaster makes his or her prediction – and therefore the ‘jumping-off point’ for the forecast – may be revised after the event. (Classification changes and revisions of this sort explain why some ‘quills’ are not attached to the porcupine’s back.) The forecaster may also predict outturn data correctly on the basis of the information available at the time, only for the data covered by the forecast itself to be revised. Revisions can also turn what in early data vintages appears to be an inaccurate forecast into an accurate one.

- **policy changes:** the OBR is required to produce its forecasts on the basis of current stated government policy, not on the basis of how we think policy might change. So outturns may differ from forecasts because of subsequent policy changes that we have not attempted to predict but which other forecasters might try to. So, for example, our forecasts for fuel duty receipts in recent years have been 'overoptimistic' because the Government has repeatedly cancelled fuel duty increases in line with inflation that it has told us to assume will take place. In an unconstrained forecast, we would take this regular pattern of behaviour into account.
- **genuine forecast errors:** leaving aside these factors, that we generally do not try to predict, most forecasts have a considerable degree of uncertainty around them and 'errors' are to be expected. For example, the average absolute error in official forecasts for the budget deficit is 1.6 per cent of GDP at a two-year horizon. Not surprisingly, forecast errors tend to be larger when the variable being forecast is more volatile in outturn. For example, the average absolute percentage error in official forecasts for North Sea oil and gas receipts two years ahead is 26 times bigger than for VAT receipts, mirroring the fact that in absolute terms year-on-year changes in North Sea receipts are on average seven times bigger than year-on-year changes in VAT receipts. This in turn reflects the fact that VAT receipts are largely driven by consumer spending, which moves quite smoothly, while North Sea receipts reflect a number of volatile factors, such as production, world prices, exchange rate movements and the distribution of profits and losses in the industry.

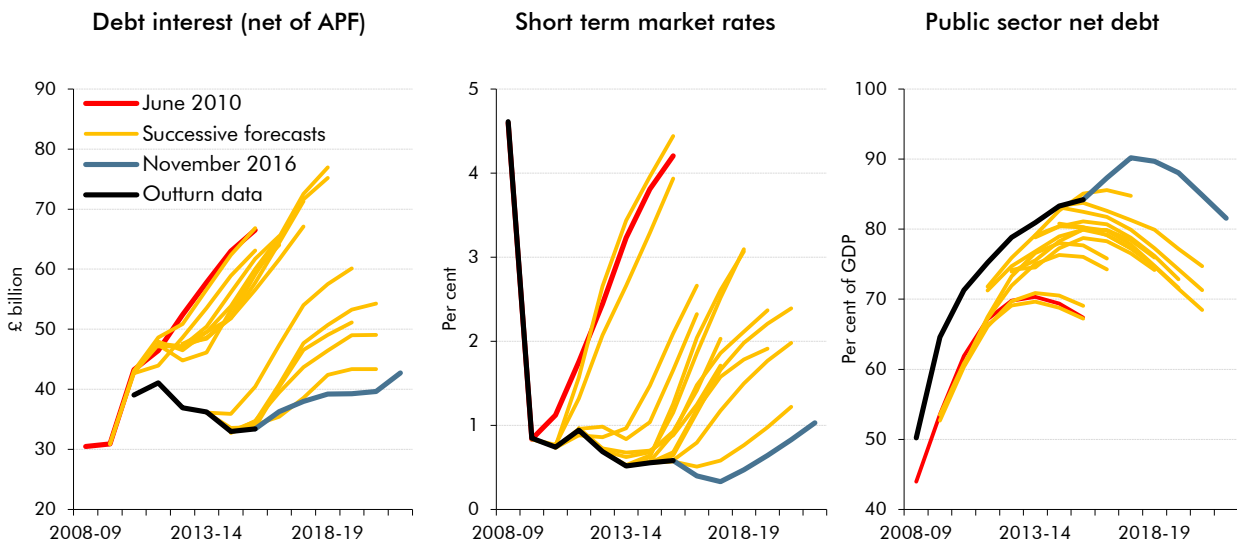


Turning just to our own forecasts since June 2010, the database now covers 40 economy variables and 58 fiscal variables, including 27 tax lines and 24 spending lines. The data and the porcupines allow you to track the patterns in forecast revisions over time. For example:

- **income tax has repeatedly fallen short of expectations. Why?** Because earnings growth has too. Why? Because productivity growth has remained weak, when our forecasts have tended to assume that it will return to its historical average within the forecast horizon. Understanding the cause of weak productivity growth – and what it implies for the judgement we need to make about when and to what extent it will recover – remains the most important uncertainty in our (and most people's) forecasts.



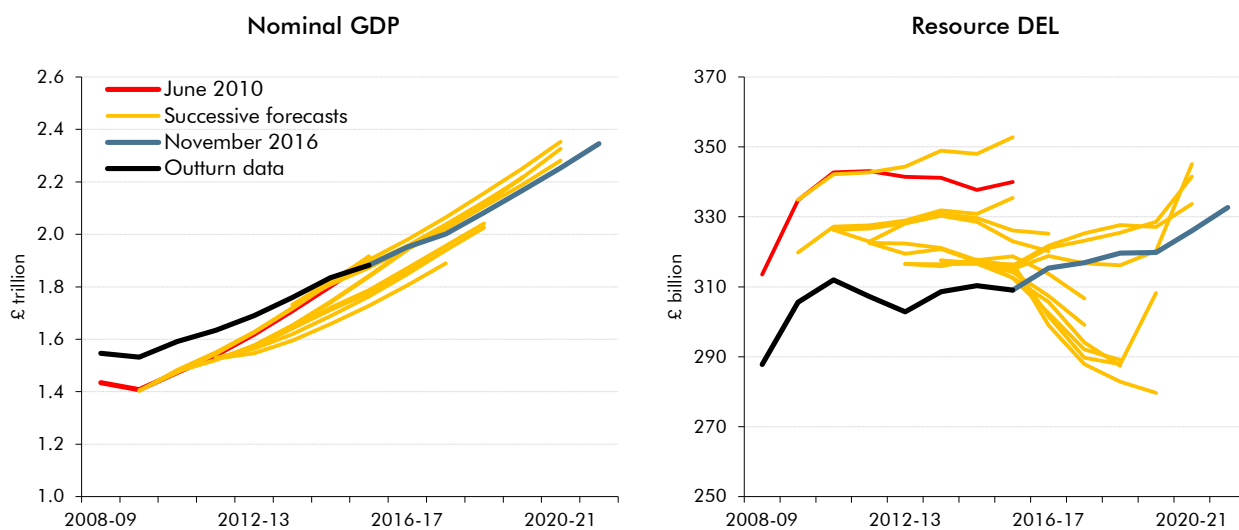
- **debt interest spending has been revised down in most of our forecasts. Why?** Because interest rates – which we assume to move in line with financial market expectations – have fallen and markets have ceased to expect much of a pick-up over the coming five years. That has outweighed the effect of us revising up the amount of debt on which interest must be paid (because of things like the productivity-driven shortfall in income tax receipts).



As we noted above, the relationship between forecasts and the latest outturns can be clouded by statistical classification changes that mean we do not always compare like with like. Taken at face value, even though we overestimated the growth of nominal GDP in our early forecasts – 29 per cent versus 18 per cent for our June 2010 forecast of the five years to 2015-16 – the latest data suggest that we underestimated the *level* of nominal GDP in most years. That reflects subsequent changes to the measurement of nominal GDP in the National Accounts that pushed it up by large amounts, for example the inclusion of research and development expenditure and changes in how GDP factors in the annual value to owner-occupiers of the housing they live in.

Forecasts for current spending by government departments (resource DEL) are subject to similar classification-related changes, in this case relating to Treasury decisions about what spending to

control through departmental expenditure limits (DEL) and what via annually managed expenditure (AME). Movements in DEL spending relative to forecast are also primarily the result of explicit policy changes.



To come back to the questions that we began with, and looking back over the variables for which we have decades' worth of forecasts:

- **Which Budget forecast the strongest single year for GDP growth?** John Major's 1992 Budget foresaw GDP growth reaching 3¾ per cent in 1994-95, as the economy recovered from recession. (The latest ONS data report growth of 3.9 per cent in that period, so this was also one of the more accurate official forecasts.)
- **Which had to revise it down the most in any year?** Alistair Darling's 2008 Pre-Budget Report revised down prospects for 2009 by 3½ percentage points to a contraction of -1 per cent. His 2009 Budget saw the equal second-largest downward revision, again relating to 2009, of 2½ percentage points to -3½ per cent. In the event, both were still optimistic, with growth now estimated at -4.3 per cent in 2009.
- **Which annual deficit forecast was widest of the mark?** Gordon Brown's 2005 Budget was the first in which the forecast horizon extended to 2009-10. It foresaw a deficit of 1.5 per cent of GDP. It did not foresee the financial crisis and recession that were to intervene. The latest ONS estimate of the deficit in 2009-10 is 10.1 per cent of GDP, giving a forecast error of 8.6 per cent (£168 billion in today's terms, £133 billion in cash terms).

Notes

1. The historical forecast database can be found here: <http://budgetresponsibility.org.uk/data/>
2. The OBR is the UK's independent fiscal watchdog. We produce forecasts for the economy and the public finances, assess progress against the Government's fiscal targets, and report on long-term fiscal sustainability.
3. Questions about this release should be sent to OBR.Press@obr.gsi.gov.uk.
4. The OBR's release policy can be found on our website at: <http://budgetresponsibility.org.uk/topics/requests-for-information/>