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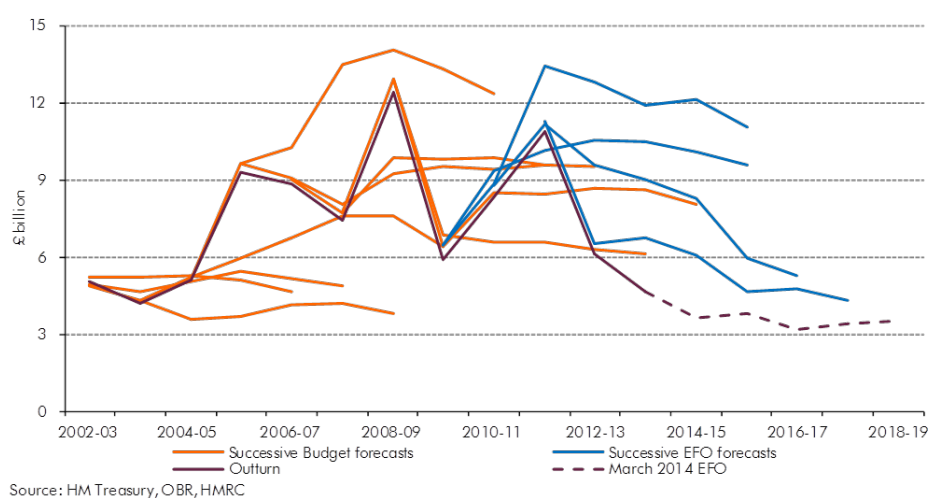
RE: FORECASTS AND PROJECTIONS FOR OIL AND GAS RECEIPTS

As you know, we are today publishing our annual *Fiscal sustainability report*, which looks at the health of the UK public sector balance sheet and at the long-term outlook for the public finances. It includes long-term projections for oil and gas receipts. The relevant section of the report can be found between pages 109 and 121 here: http://budgetresponsibility.org.uk/pubs/2014-FSR_OBR_web.pdf. But given the interest that the Committee has shown in this topic, I thought it might also be helpful to highlight the key points in a letter to you:

- The OBR was created in 2010 to provide independent and authoritative analysis of the UK public finances, free from partisan political influence. (For the avoidance of doubt, we take no position either way on the upcoming referendum on Scottish independence and we have made it very clear that we would not participate in the UK Treasury's efforts to make the case for a 'no' vote.)
- Each year we produce two medium-term forecasts for the public finances (at the time of the UK Budget and Autumn Statement) and one set of long-term projections (in the FSR). All include estimates of future oil and gas receipts, comprising Ring Fence Corporation Tax (including the Supplementary Charge) and Petroleum Revenue Tax.
- Oil and gas receipts are one of the most volatile streams of revenue coming into the Exchequer, which also makes them one of the most difficult to forecast. This reflects the number and the nature of the factors that determine these revenues: the levels of oil and gas production, global dollar prices, the sterling/dollar exchange rate, the scale of tax-deductible capital and operating expenditure, and the history of past profits and losses for each company in the industry that determine if and when they will pay tax on newly generated profits. Most of these individual determinants are difficult to predict in their own right, even over a very short time horizon.

- The chart below illustrates the volatility of oil and gas receipts and how hard they are to forecast. The average absolute percentage change in receipts from one year to the next over the period shown has been nearly 35 per cent – compared to just 5 per cent for income tax or 7 per cent for VAT. In recent years, this volatility has reflected changes in production and expenditure. At the end of the last decade, it was price movements that explained most of the volatility.

Oil and gas receipts: outturns and forecasts

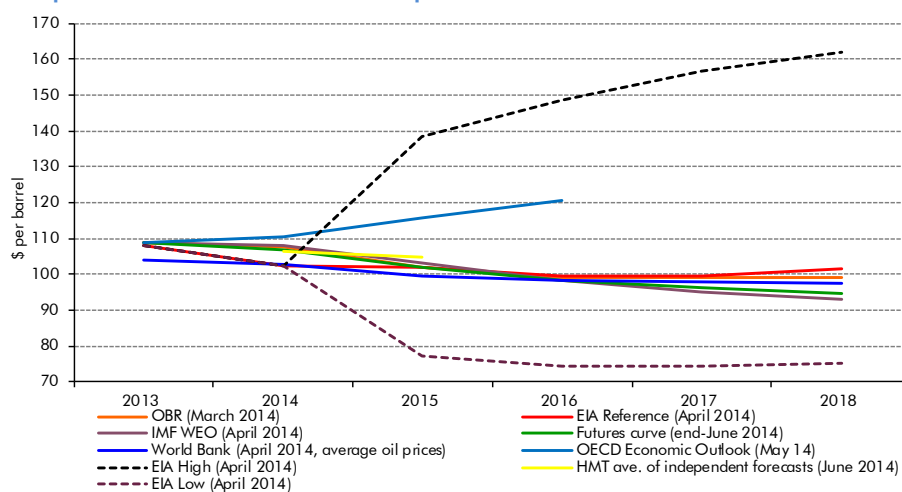


- The forecast lines are distributed both above and below the outturn path of receipts, which demonstrates that they have been neither systematically too optimistic nor systematically too pessimistic over the period as a whole. Towards the end of the period, the OBR's four Budget forecasts have tended to be too optimistic, as receipts grew by less than we expected in 2010-11 and 2011-12 and then more than halved over the subsequent two years. Indeed, the £4.7 billion raised in 2013-14 was less than had been predicted in all six previous Budget forecasts that had included a forecast for that year.
- Looking forward, our long-term projections start from the five-year forecast that we published in our March *Economic and fiscal outlook*. This showed revenues falling from £6.1 billion in 2012-13 to £3.5 billion in 2018-19. Our forecast for 2017-18 was almost £1 billion down on a year earlier, largely reflecting lower-than-expected production in 2013 that pushed down the forecast in subsequent years: oil production is forecast to be around 11 per cent lower and gas production around 8 per cent lower by 2017-18 than we forecast last year. Our forecast for the dollar oil price in 2017-18 was slightly higher than it had been a year earlier, but the appreciation of the pound meant that the forecast sterling price was slightly lower.
- Over the medium term forecast, we assume that oil and gas prices move in line with futures markets over the first two years and are constant thereafter. As the International Monetary Fund has noted: 'Futures price based forecasts are hard to beat' over a two year horizon, but 'the relative forecasting ability of futures prices

deteriorates the longer the forecast horizon, which likely reflects lower liquidity at the back end of futures curves'.¹

- The chart below compares our March medium term forecast for the dollar oil price to recent forecasts from the International Monetary Fund, the World Bank, the Organisation for Economic Cooperation & Development (OECD) and the US Energy Information Administration (EIA), as well as to the five-year path of future prices.

Oil price forecasts and futures prices



Source: OBR, IMF, OECD, World Bank, Thomson Reuters, EIA, HM Treasury

- Most of the forecasts are broadly similar, reflecting assessments of demand and supply and the fact that futures prices have not moved a great deal since March. (The OECD simply assumes that oil prices will rise by \$5 per barrel per year.) But the enormous uncertainty around these forecasts is highlighted by the EIA's 'high price' and 'low price' scenarios: the former assumes higher costs of supply from non-conventional sources; the latter assumes lower costs of production and lower demand from China and the Middle East. Meanwhile the World Bank argues that in the longer term 'prices are expected to fall due to growing supplies of unconventional oil, efficiency gains, and (less so) substitution away from oil'.²
- Our medium term forecast for oil and gas production is based on projections by the Department for Energy and Climate Change (DECC). These are compiled using field-level data from the operators of each field. DECC adjusts these estimates, for example to take account of project slippage and the industry's past over-optimism.
- North Sea production has now been falling consistently since 1999, by an average of 7.8 per cent a year. But we have accepted DECC's judgement that production is likely to flatten off over the next few years, reflecting recent very high levels of capital investment. (Oil and Gas UK, the industry trade association, forecasts that production will

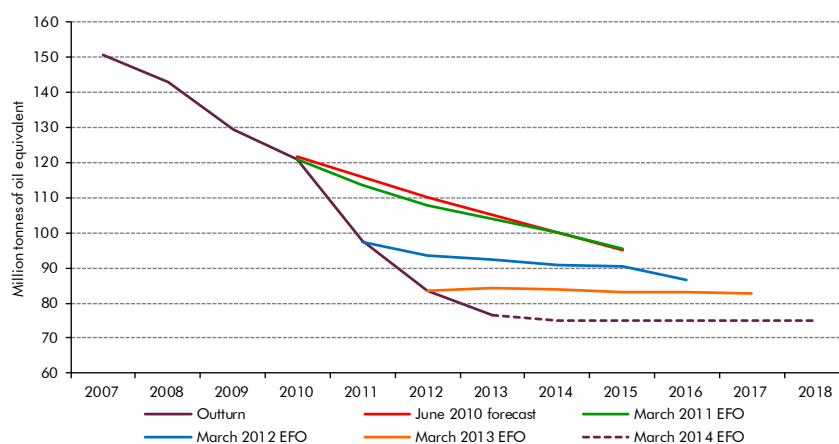
¹ Do commodity futures help forecast spot prices? IMF Working Paper No: 11/254.

² World Bank (2014), Commodity Markets Outlook, April 2014.

rise by about 20 per cent over the same period, which would only take it back to the average level recorded in 2011 and 2012.)

- We believe that this is a reasonable central judgement. But – as the chart below illustrates – we have assumed in each of our last four spring/summer forecasts that the ongoing fall in production was about to slow or stabilise. Instead it has continued apace.

North Sea production: outturns and OBR spring forecasts

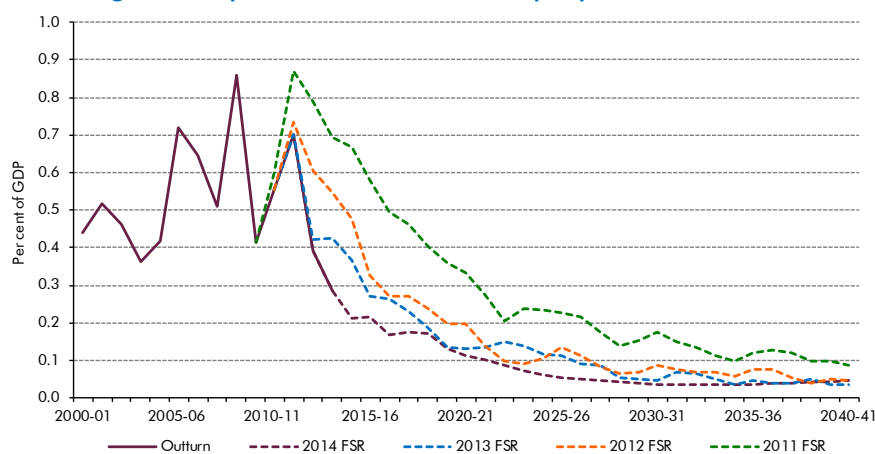


Source: DECC, OBR

- To generate our long-term projections, we commission HMRC to run their oil and gas revenue model to extend the medium-term forecast to 2040-41. The model estimates revenues at an individual field level, based on data provided by operators. The data are augmented to allow for extra production from new incremental projects in existing fields, development of technical reserves and new exploration.
- Beyond the medium-term forecast, we assume that:
 - oil and gas prices rise in line with our long-term assumption for whole economy inflation (2.2 per cent a year);
 - production falls by 5 per cent a year, significantly slower than the 7.8 per cent a year average fall since 1999;
 - real operating and capital expenditure move in line with production, and;
 - decommissioning expenditure is as reported by operators.
- Under these assumptions, we project that receipts will average around 0.06 per cent of UK GDP between 2019-20 and 2040-41, around a fifth of the level recorded in 2013-14. Expected revenues over this period total £39.3 billion, down £12.6 billion from our estimate last year. Of this downward revision:
 - around £9 billion reflects a downward revision to expected production. As noted above, unexpectedly weak production in 2013 has prompted us to revise down our medium-term forecast. This knocks through to the long-term projections;
 - around £1 billion reflects effect of lower sterling oil prices, which reduce receipts, partly offset by higher gas prices, which increase them, and;

- around £6 billion reflects updated information across a number of elements of the projections. The individual elements cannot be quantified precisely, but they include:
 - new data on field ownership and the group structure of operating companies. This has reduced projected receipts for two main reasons: first, because more production is expected to come from firms that have losses to carry forward and set off against future tax liabilities; and second, because more operating and capital expenditure is expected to be undertaken by firms that have sufficient profits to set it off against;
 - HMRC have updated the information used to model the ring fence expenditure supplement in the projections. As the supplement raises the amount of profit that can be offset with a given amount of past losses, the change interacts with the updating of field level information described above; and
 - an increase in the number of firms expected to have losses to set off against future tax liabilities at the beginning of the long-term projection period. This reflects the downward revision to production over the medium term in our March forecast.
- these downward revisions are offset by a boost to receipts of around £4 billion due to lower expected expenditure, which is tax deductible. We have revised down the capital expenditure projections in our medium-term forecast (which knocks through to the long term), because of updated information from operators. This is partly offset by upward revisions to expected operating expenditure.

Oil and gas receipts: outturns and OBR projections



Source: HMRC, ONS, OBR

- Taking the March medium term forecast and today's long-term projections together, we have reduced our central projection for total oil and gas receipts between 2013-14 and 2040-41 by £20.6 billion since last year's FSR, from £82.2 billion to £61.6 billion.
- Needless to say, there are big uncertainties around many of the determinants of the post-2019 projections. So we test the sensitivity of our central projection to a number of judgements, among them:
 - **Prices:** In our central scenario oil prices rise from \$102 a barrel in 2015 to \$160 dollars a barrel in 2040. Under the EIA 'high price' scenario shown above, oil prices rise from \$138 a barrel in 2015 to \$350 a barrel in 2040, delivering £71.8 billion more revenue than our central projection. Under the EIA 'low price' scenario, oil prices drop to \$77 a barrel in 2015 and then rise only to \$120 a barrel in 2040, delivering £23.0 billion less revenue than in our central projection. But it should be noted that these alternative price paths would also have a significant impact on the wider economic and fiscal forecast.
 - **Production:** Our central projection assumes that production falls by 5 per cent a year beyond 2018-19, significantly less than the 7.8 per cent a year decline we have seen over the past decade. If production was to fall by 7.5 per cent a year, more in line with the recent past, revenues would be reduced by £12.9 billion from our central projection. But if the strength of recent investment kept production flat for a further five years beyond the medium term forecast, before then falling by 5 per cent a year, revenues would be £14.9 billion higher than in the central projection. Much the same would be true if output rose 20 per cent over the next five years (as the industry expects), then fell 5 per cent a year.

To conclude, our projections suggest that North Sea oil and gas receipts will remain a valuable fiscal resource for many years to come. But they are highly volatile from year to year, which makes near-term forecasting very difficult. And while it is clear that the long-term trend in receipts is downward, the pace of that decline – and the amount that can be collected as it happens – is highly uncertain and very sensitive to the path of production and prices. Whichever government receives these receipts needs to plan on that basis.

I hope this is helpful and of interest.

Robert Chote
Chairman