ESSENTIAL READING

Key Issues Meeting 2: Fiscal policy and the forecast

and (CAPD)[1]

In our central forecast, the fiscal consolidation is a growing headwind to the level of demand over the whole forecast horizon. But despite this GDP growth is at trend and the output gap closes, reflecting strong private domestic demand growth and falling private financial balances. At Key Issues 2 we plan to take you through what we currently assume about the consolidation and look at what needs to happen elsewhere in the economy to deliver the forecast given those assumptions.

- The *Inflation Report* forecast takes place against the backdrop of a large and continuing fiscal consolidation. In our central case, the consolidation continues to act as a growing headwind to the level of demand over the whole forecast horizon. We estimate that fiscal policy is currently dragging on the level of GDP by around 2%. And it continues to drag on GDP growth, by 0.2pp, 0.3pp and 0.1pp at years 1, 2, and 3 respectively. So the total drag on the level of GDP at Year 3 is 2 ¾%. The effects on growth over the forecast are less than the new consolidation measures alone would imply: that is because they are partly offset by the effects of previous measures unwinding.
- How much the consolidation is dragging on the output gap depends on the extent to which you associate it with the supply shocks that have hit the economy since the financial crisis. If you think that much of the consolidation was a response to the hit to supply – in the same way that we think consumers cut back spending in response to lower productivity and incomes – then to first order it is only the degree of tightening over and above that which is pushing down on the output gap, and which monetary policy might need to offset.
- All else equal, the drag from the fiscal consolidation would imply below-trend GDP growth and a widening output gap over the forecast. But instead the A15 Benchmark forecast has growth at trend and a slightly positive output gap, implying something else is happening elsewhere in the economy which offsets the drag from fiscal policy. Given our assumptions that net trade and the current account will be broadly flat over the forecast, that "something else" is concentrated in the domestic private sector. In expenditure terms the counterpart to unusually weak government consumption growth is strong consumption and investment; the counterpart to the narrowing government financial balance is falling household and corporate balances.
- Strong private domestic demand growth is driven by two main factors. First, we think that while other headwinds, in particular world trade and credit spreads, are currently dragging on the level of GDP and the output gap, that drag unwinds over the forecast, boosting GDP growth, lowering private saving, and helping to narrow the output gap – this is the main thing that explains why growth is still at trend despite the consolidation. And second, we think that monetary policy is still very supportive of the level of demand – which is why the output gap is almost closed now despite all the current headwinds to demand.
- Of course our estimates of the effects of the consolidation are highly uncertain, and there are a number of risks to our treatment. If you think fiscal policy should have a larger effect than we assume, for example, that would imply a larger drag on growth over the forecast. Conversely if you think its effect should be less persistent than we assume, as the OBR do, or that its effects should have come through faster, that could actually imply faster growth over the forecast, since the drag on demand would now be unwinding.
- Even if you buy our treatment of fiscal policy, the range of other things that are required to happen for our forecast to come true suggests a number of other risks. We may have been too pessimistic about the continued drag from credit or the world. Conversely we may have overestimated the extent to which monetary policy can continue to support demand. On the demand side we have worried before about whether consumption and investment can sustain the strong growth rates required to keep the output gap closed. And on the financial side, while we think there is evidence that the improvement in credit conditions will be reflected in lower saving rates, households or firms may still turn out not to be willing to run down savings as fast as we expect them to.

---

[1] With thanks to: .

Introduction

The *Inflation Report* forecast takes place against the backdrop of a large and continuing fiscal consolidation. At Key Issues 2 we plan to take you through what we currently assume the consolidation is doing in the forecast, as well as looking at what needs to happen elsewhere in the economy to deliver the forecast given those assumptions. We then will ask you whether in light of this you would like to change any of these assumptions, and whether you would like to change the forecast as a whole.

This note is split into three sections which look at each of these questions in turn. Section 1 sets out what we have assumed about the effect of fiscal policy in the forecast. Section 2 describes what else is happening in the economy to offset that effect. And Section 3 sets out some risks to the central treatment.

Section 1: The assumed effects of fiscal policy

We think the fiscal consolidation has acted as a substantial drag on the level of demand over the past few years, and will drag even more over the forecast. This section of the note examines what we have assumed the fiscal consolidation is doing to demand in the central case. It first sets out the assumptions underlying our estimates of the effects of fiscal policy, then describes the resulting estimates of its effects on GDP and the output gap. For more detail on any of these, please see our recently-published Forecast Primer on the treatment of fiscal policy .

How do we estimate the effects of fiscal policy?

Understanding how we treat fiscal policy in the forecast comes down to two key questions: first, how we measure the size of changes in fiscal policy; and second, what we assume is the effect of a given change, both in terms of its initial impact on the economy and its persistence. This section briefly summarises the answers to each of these questions in turn.

How do we measure the size of changes in fiscal policy?

We use IFS "action-based" estimates of the costs of any new tax or spending measures announced by the government, as detailed after each Budget & Autumn Statement, to measure the size of changes in fiscal policy (**Chart 1**). This bottom-up approach allows us to apply the most appropriate multiplier to different measures. It avoids the difficulties of cyclical adjustment – proneness to revision and tendency to move around independently of new discretionary measures – while still excluding cyclical effects such as automatic stabilisers, which should already be captured in the response to other shocks. It also captures changes in nominal expenditure that would not be picked up in real, volume-based, measures – for instance if the government cut spending on education but without reducing the number of lessons given, that would appear in the IFS measures but not in real government consumption. This is important since cuts in nominal government spending are likely to affect household incomes and thus private demand even if they have no visible effect on government demand.

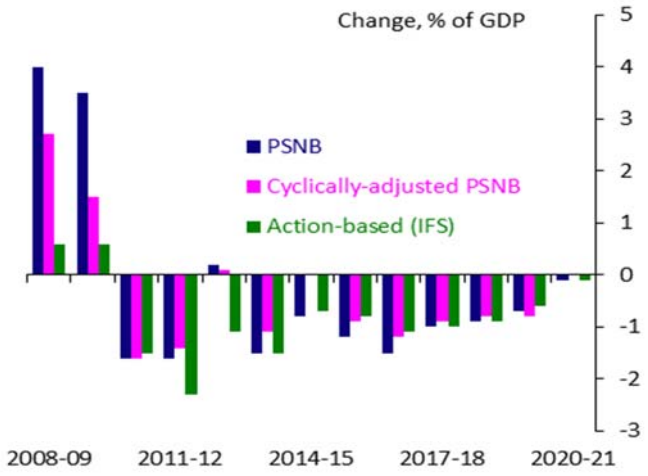
On this basis, the government has tightened discretionary fiscal policy by around 5½% of GDP since 2008. And the consolidation continues at a similar pace over the forecast, with another 3½% of GDP of tightening measures due to be implemented over the next 4 years (**Chart 2**). Departmental spending cuts (the blue bars) make up just over half of the consolidation both over the past and over the forecast. That is still the case after the summer 2015 Budget despite a shift towards a greater share of consolidation via benefit cuts.[2]

To measure the total effect of the consolidation, we also need to choose a baseline relative to which we measure changes in tax and benefits: we use the March 2008 budget as our baseline. The 2008 budget largely predates the big shocks that hit the economy and triggered the consolidation. It also represents the last year before the crisis when

[2] For more information on the content of the Budget see .

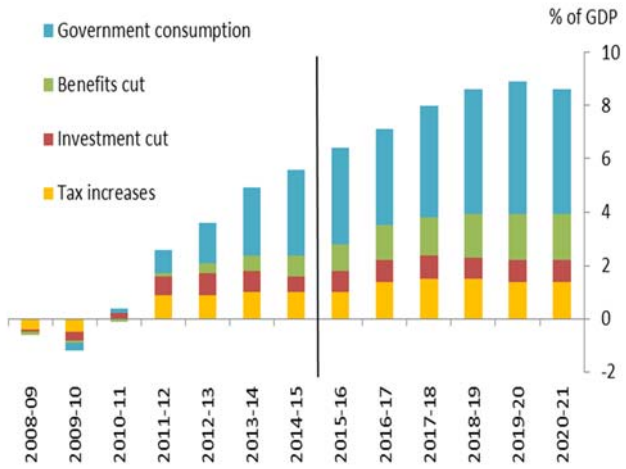
fiscal policy on a broadly sustainable path, in the sense that cyclically-adjusted net borrowing was only a little above its long-run average, and was expected to fall back towards zero.

Chart 1: Measures of discretionary policy



Source: OBR, IFS.

Chart 2: Cumulative action-based approach

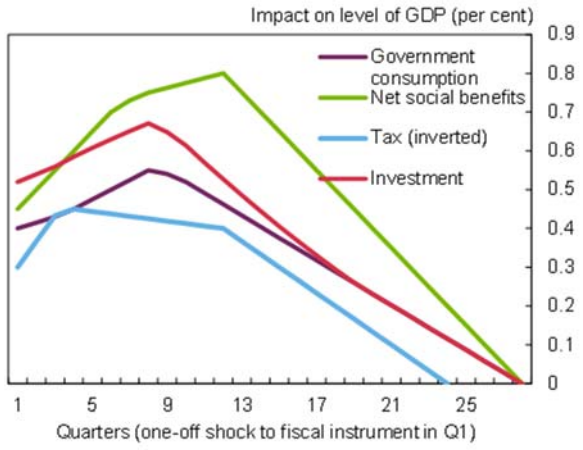


Source: IFS.

What do we assume is the effect of a given change in fiscal policy?

Our estimates of the effect of a change in the stance of fiscal policy on the forecast are based on a set of in-house empirical multipliers, shown in **Chart 3**. The multipliers on impact are between 0.3 and 0.6, with investment most powerful and tax least powerful. The peak multipliers come between one and three years later and are between 0.4 and 0.8. As with monetary policy, we do not think changes in fiscal policy can have permanent effects on the level of demand: the drag on demand must unwind eventually, as expectations and behaviour adjust. So while the effect on GDP persists for some time, it eventually fades to nothing after around 7 years. Given the difficulty in identifying fiscal shocks and the very wide range of estimates from the literature, all of these estimates are of course very uncertain!

Chart 3: Empirical estimates of the effects of discretionary policy



A couple of features of these multipliers are worth noting:

- The impact and peak effects are at the low end of numbers typically found in the literature (albeit there is a very wide range). We think this reflects the fact that most of the fiscal literature is based on US data. Since the UK is a more open economy than the US, proportionally more of any stimulus will leak to other countries via imports, which all else equal would lower the multipliers. In addition, a large share of government output in the UK is measured in volume terms, making it less responsive to changes in spending (as in the education example in the previous section): so measured GDP in the UK is likewise less responsive than in the US, where nominal measures are used.
- The multipliers are also quite persistent, with the full effects of a change in policy taking between six and eight years to unwind. This is particularly striking given that the estimation of these multipliers will implicitly be capturing any offset from monetary policy. In particular they are much more persistent than the OBR's

multipliers – this is the key difference between our approach and theirs. As far as we know this is because the OBR simply *assume* that the effects of policy unwind linearly over four years, whereas our effect is estimated.

What is the effect of fiscal policy in the forecast?

The effect on GDP

Applying our multipliers to the IFS's fiscal measures gives us an estimate of the total effect of the consolidation on GDP, shown in **Charts 4** and **5**. In order to separate the effects of the consolidation itself from the effects of any monetary policy response, these estimates (and all the subsequent estimates shown in this note) are produced under the assumption of no monetary policy response.[3] We think that:

- Since end-2009, the consolidation has detracted almost 3% from the level of GDP, with a peak drag on growth of around 1 ¼pp. The average drag on annual growth over 2010-15 was 0.6pp.
- Over the forecast, the consolidation continues to drag on GDP, by 0.2pp, 0.3pp and 0.1pp at years 1, 2, and 3 respectively. So we think the cumulative drag on GDP growth over the forecast will be ¾%, and the total drag on the level of GDP at Year 3 will be 2 ¾%.

It might seem surprising that the drag from the consolidation on growth slows over the forecast when the consolidation itself is continuing at much the same pace as before. The reason for this is that it has now been long enough since the initial rounds of consolidation for our estimates of their effects to start to wane. While our multipliers embody quite persistent effects from fiscal consolidation (see Section 1), ultimately we think fiscal policy is neutral for demand. As this happens, they drag progressively less on level of GDP and the output gap, and begin to contribute positively to growth, partly offsetting the drag from further consolidation. Our assumption about the persistence of the drag on GDP is really important here: the OBR's shorter persistence assumption means that the contribution from earlier rounds dominates, so that they now have the consolidation contributing positively to growth.

Chart 4: Assumed effect of fiscal policy on GDP level (with monetary policy fixed)

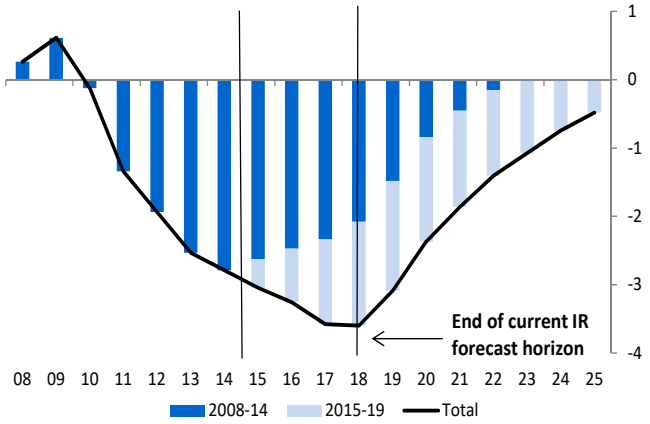
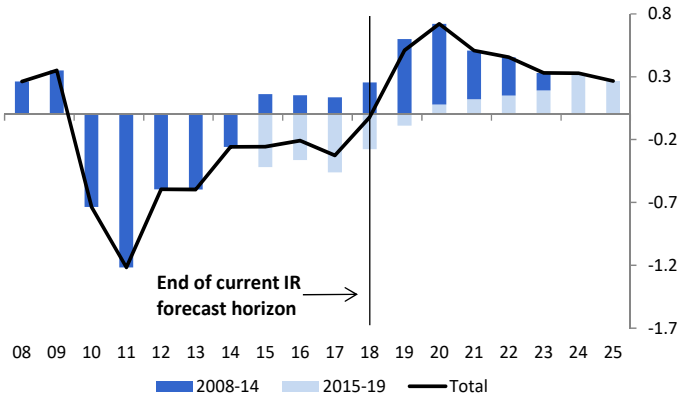


Chart 5: Assumed effect of fiscal policy on GDP growth (with monetary policy fixed)



The effect on the output gap

Given our estimate of the effect of the consolidation on GDP, an important question for monetary policy is the extent to which that represents a drag on the output gap. One approach would be to assume that the whole effect of the consolidation represents a drag on demand and the output gap. But we think a large part of the consolidation was a necessary response to the hit to UK supply caused by the crisis – just as consumption had to adjust downwards

[3] Practically this is done by offsetting the endogenous response of Bank Rate from the multipliers with monetary policy shocks. Estimates in which monetary policy is allowed to respond tend to show a smaller effect from the consolidation, since the policymaker offsets some of the drag on demand by lowering Bank Rate.

in line with lower actual and expected real wages, so government spending had to adjust downwards in line with smaller actual and expected tax receipts. To the extent that this is the case, the consolidation represents demand moving in line with supply rather than away from supply, and so should have relatively little effect on the output gap.

To get at this in practice, we split the effects of the consolidation into two parts: one which we view as a response to the supply hit, and account for as an effect of the supply shocks; and a second which we view as representing what fiscal policy has done *over and above* the required response to supply. We produce this split using the simple fiscal rule built into COMPASS: it assumes that in response to a productivity shock, taxes and government spending and both adjust, smoothly and over a few years, to take the share of government in GDP back to an unchanged equilibrium level. We treat the path of government spending implied by this approach as "warranted" by the supply hit, and account for its effects as one of the consequences of the productivity shock. And we treat the effect of fiscal policy over and above (or below) this as being the consequence of deviations from this "rule". This latter effect is what we refer to as the "fiscal rule" measure of the effect of fiscal policy. Of course this calculation will be sensitive to the precise fiscal rule we choose, and the COMPASS rule isn't in any sense "optimal": we use the COMPASS rule because it is simple and consistent with how we produce the forecast.[4]

An important thing to emphasise is that this distinction has no direct effect on our assumptions about the actual effect of fiscal policy on the forecast: it is purely a question of how we account for GDP and the output gap in terms of the shocks that we think have driven them. This matters to the extent that our accounting for the forecast determines whether you think it is reasonable overall, and consequently what judgements you make. But there is no mechanical link between this distinction and the forecast itself.

Chart 5 shows how we split the effect of GDP between the supply shock and the additional contribution of fiscal policy beyond what the fiscal rule would suggest (again assuming no offset from monetary policy). When the crisis hit in 2008, the fiscal rule would have implied starting to tighten fiscal policy in response to the hit to supply – i.e. the blue bars fell back. Instead, the government loosened policy, thus boosting GDP (pink bars). Since then, however, policy has been tightened faster and further than the rule would imply – the pink line falls back further and faster than the blue bars, with a peak-to-trough fall of nearly 5pp, and the pink bars turn negative. We think fiscal policy is currently dragging on the level of GDP by around 2%, of which a little less than 1% comes from policy being tightened by more than the hit to supply would suggest was warranted. Over the forecast that drag increases by around ½%, approaching 3% by Y3; again, this increase is more than the rule would suggest was warranted.

Chart 6 shows how this drag maps across to the output gap. Because the blue bars in Chart 5 represent a response to a supply shock, we treat them as having moved both actual and potential GDP, so that their effect on the output gap is very small, particularly over the forecast. Indeed to the extent that they have an effect on the output gap at all it is likely to be positive, since the fiscal rule assumes the government smooths through the initial falls in productivity. On the other hand since we treat the pink bars as representing a change in demand not matched by supply, they are virtually identical in Charts 5 and Chart 6. Using this measure therefore implies that fiscal policy is currently dragging on the output gap by around 0.7pp; that drag increases to 1.1pp by the end of the forecast.

How much you think monetary policy would need to do to offset the effects of fiscal policy on the output gap depends on whether you agree with our accounting in terms of demand and supply shocks. If you wanted to offset the drag on the output gap embodied in the pink bars (the "fiscal rule" measure), then all else equal that would require the yield curve to rise by about 1pp less than otherwise by the end of the forecast. If on the other hand you think of the full drag on GDP (the "discretionary measures" measure) as a drag on the output gap, then all else equal the curve should rise by around 2½pp less by the end of the forecast.

[4] A simpler rule of a structural deficit around 2% of GDP (stabilising debt at 40% of GDP) being neutral for the level of GDP would offer a similar narrative. Prior to the recession there was a structural deficit of around 3-4%, suggesting looser policy than the rule and that fiscal policy was therefore supporting the level of GDP. By the end of the forecast the OBR expect a structural deficit of around 1%, suggesting tighter policy than the rule and a drag on the level of GDP by that point.

Chart 5: Accounting for the effects of fiscal policy on GDP (with monetary policy fixed)

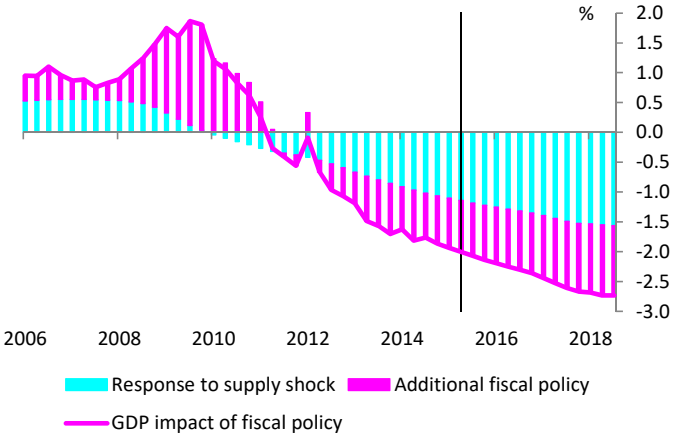
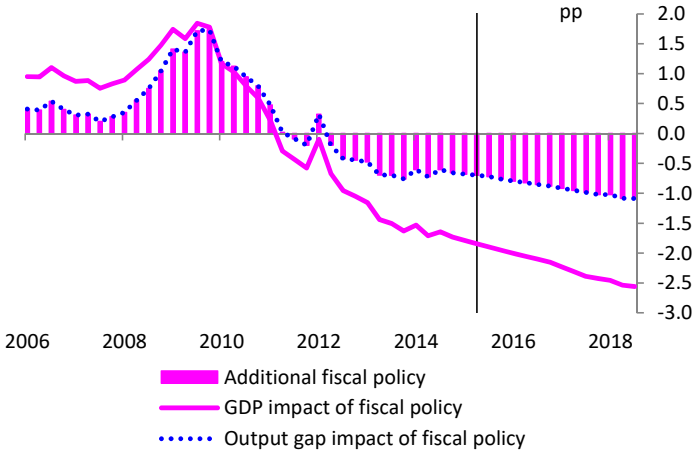


Chart 6: Accounting for the effects of fiscal policy on the output gap (with monetary policy fixed)



Section 2: What needs to happen elsewhere in the economy to deliver our forecast?

The estimates in the previous section imply that the fiscal consolidation has been dragging and will continue to drag on GDP growth and the output gap. All else equal, that would imply below-trend GDP growth and a widening output gap over the forecast. But instead the A15 Benchmark forecast has growth at trend and a narrowing output gap which turns slightly positive. That implies something else is happening elsewhere in the economy which more than offsets the drag from fiscal policy. This section looks at what it is that is happening in the private sector to offset that drag, and examines the economic drivers that we think are responsible.

Some facts about the forecast

Several key features of the forecast can be viewed as counterparts of the fiscal consolidation. On the expenditure side, government spending contributes almost nothing to growth over the forecast, well below its historical average. So for GDP to grow around trend, private demand must grow very strongly by historical standards (**Chart 7**). Given the continued weakness of net trade following the recent appreciation, this strength is all contributed by private domestic demand: consumption growth averages 3% over the forecast, while investment growth averages almost 8%.

Similarly, the government financial balance rises rapidly over the forecast – by about 3½% of nominal GDP. As a matter of arithmetic that means either the current account must close or the private sector financial balance must

Chart 7: Private demand growth is strong

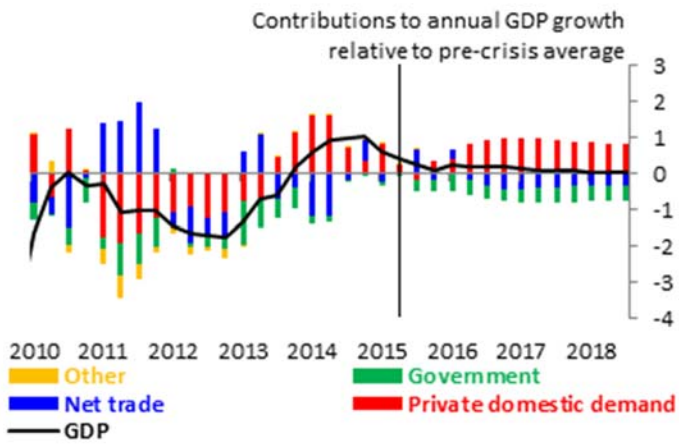
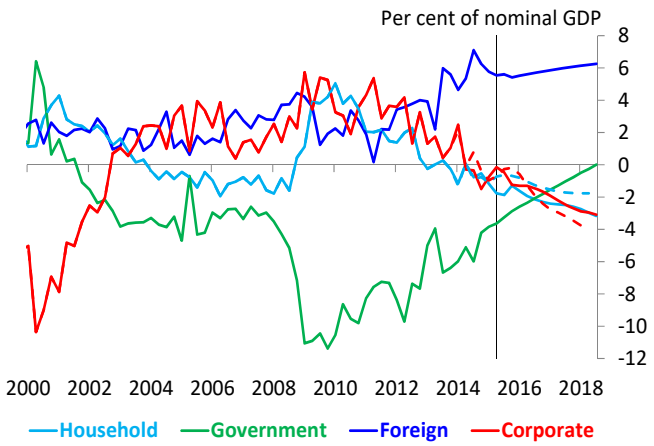


Chart 8: Private sector financial balances are falling



Dashed lines represent May *IR*

fall back. This would be true even if private expenditure were not growing so strongly – since the balances must sum to zero, it would hold for any configuration of expenditure. Again, our flat net trade forecast, together with an assumption that investment income does not bounce back from recent weakness, means that the current account deficit widens slightly over the forecast: so, continuing the pattern of the past few years, it is the private sector that dis-saves to offset increased government saving (**Chart 8**). The household sector balance falls by 1½pp over the forecast while the corporate sector balance falls by around 3pp.

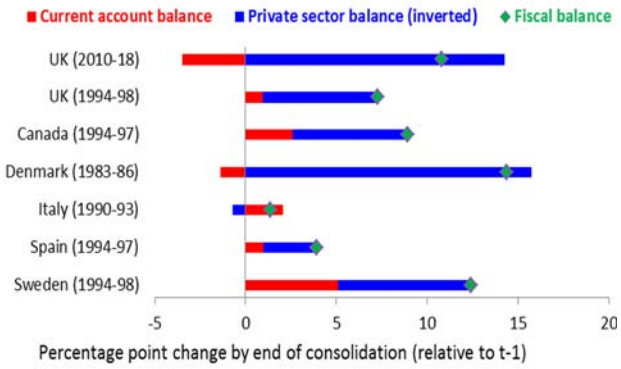
In previous forecast rounds we have spent a lot of time discussing whether our consumption and investment forecasts are too strong and whether the expenditure forecast looks "stretched" – often motivated by the level of household saving. Given the consolidation, though, and without a substantial improvement in the current account, you could argue that private demand *has* to appear stretched to deliver trend GDP growth and close the output gap. The key question for how plausible you find the forecast is whether you buy the mechanisms, described below, that we think explain the strength of private demand growth.

In this context, our judgement at Benchmark to lower the path for household non-labour income can be seen as a judgement about how the burden of dis-saving is shared between the households and firms. In the May IR firms were running down savings much faster than households, partly by paying out non-labour income to households. In the Benchmark forecast both financial balances fall at broadly similar rates.

In some ways, our forecast just represents a continuation of the past few years. GDP growth and private domestic demand growth have been above average since late 2013 despite the ongoing consolidation. And the private financial balances have been falling since about 2010 as the government financial balance has risen.

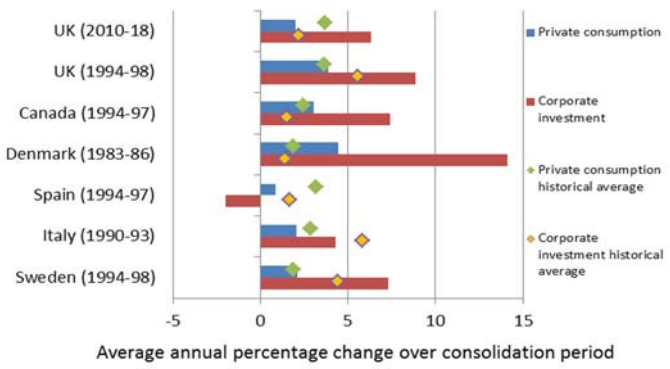
These features of the forecast are also not out of line with previous consolidations. The charts below update earlier Bank work that compared the consolidation to previous fiscal consolidations.[5] Given that these only show a small sample of case studies, there are limits to the strength of the conclusions that can be drawn from them. Nevertheless, it is interesting the extent to which they share features in common with the current UK consolidation and with our forecast.

Chart 9: Changes in financial balances over fiscal consolidation periods



Note: Q4 2018 growth is assumed to equal growth over previous three quarters

Chart 10: Consumption and business investment over fiscal consolidation periods



Note: Bars show growth during consolidation period. Averages are for the 10 years preceding the consolidation (t-12 to t-3). Italy and Spain include government investment. Q4 2018 growth is assumed to equal growth over previous three quarters.

Five of the six case studies considered saw the increase in the government financial balance largely offset by a fall in private saving, as in the forecast, with relatively little of the increase offset by an improvement in the current account position (**Chart 9**). Probably not unrelatedly, the exception, Italy, was also the only country in the sample where monetary policy was not loosened over the consolidation period. Interestingly, at the time this work was

[5] See

originally done we expected a relatively large contribution from a current account improvement compared with previous consolidations. But continued euro area weakness and the appreciation of sterling meant the current account actually widened, while the private sector financial balance fell faster than we had expected; if anything the counterpart to the current consolidation has been more private sector-focused than the historical experience rather than less.

On the expenditure side, GDP growth was typically stronger than average – that may be unsurprising, since, again excepting Italy, these consolidations typically followed a recession and were accompanied by a stimulative monetary policy response. In four of the six case studies consumption grew at around average pre-consolidation rates, while investment grew above its average rate (**Chart 10**), again broadly as in the recent past and in our forecast.

What mechanisms explain these facts?

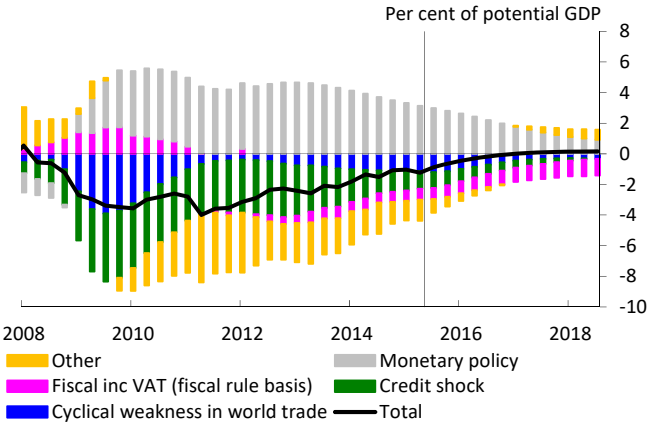
While the strength of private domestic demand and falls in the private sector balances in the forecast are not out of line with recent experience of past consolidations, none of this explains *why* these things are happening despite the consolidation. To do that we need to spell out the mechanisms that are supporting private demand growth and facilitating the falls in the private sector financial balances.

We think there are two broad factors that can account for these facts in terms of underlying economic forces:

1. The unwinding of other headwinds. The increasing drag from the consolidation on the level and growth rate of GDP is partly offset by the declining drag from other headwinds to demand (**Chart 11**). In particular the drag from the credit shock, which still lingers at the start of the forecast, dwindles to nothing by the end. The easing of credit conditions also plays a role in encouraging private financial balances to fall back.[6] Similarly, the cyclical drag from world trade decreases in size over the forecast horizon, approaching zero by the end.[7] The decreasing drag on the level of GDP from these two factors contributes an average of 0.7pp per year to growth – more than enough to offset the drag to growth from the fiscal consolidation.

2. Monetary policy. By themselves, the unwinding of the drag from earlier rounds of consolidation and from the other headwinds to demand do not explain why the output gap is *already* almost closed – collectively, we think that weak world trade, the remaining drag from credit and the consolidation are dragging by around 3pp on the output gap at the start of the forecast. Offsetting this, though, we think that monetary policy – both the low level of Bank Rate and the remaining boost from QE – are supporting the output gap by around 3%. And although that boost declines over the forecast, as the effects of QE continue to wane and the yield curve starts to rise, it is still enough to keep the output gap above zero even despite the continued drag from the fiscal consolidation.

Chart 11: Decomposing the output gap into demand headwinds



Seen this way, the big picture story of the demand forecast is a simple one. External demand is weak, with continued weakness in world demand compounded by a large and protracted fiscal consolidation. And there are also still lingering domestic headwinds caused by the

[6] See .
[7] This reflects the narrowing of the world output gap over the forecast: see

shock to credit supply over the financial crisis. In the long run we expect the headwinds from the world and credit to diminish and the economy to naturally adjust. But in the short and medium run the gap is filled by looser monetary policy stimulating domestic demand, keeping the output gap closed and inflation at target.

Section 3: What are the risks to this narrative?

Risks to these assumptions

Since our fiscal multipliers are based on empirical estimates, they are naturally uncertain. This uncertainty stems as much from our imperfect knowledge of the world as from the different assumptions and approaches adopted in the literature[8]. Furthermore, any estimate will capture the average effect of all possible transmission channels over the past, so to the extent that the present and forecast differ from the past, some or all of these channels might behave differently. It's reasonable, and of course important for our forecast, to ask whether and how the fiscal consolidation being implemented since 2010 might have affected (and affect) the economy differently from the average of the past: after all, the consolidation was announced against the backdrop of the deepest financial crisis and activity slowdown in recent history.

We explore this possibility by briefly reviewing recent evidence on state-contingent fiscal multipliers and outlining a risk based on unusually tight borrowing constraints interacting with the fiscal consolidation. We also consider a risk stemming from the fact that the fiscal consolidation was both announced before being implemented and a large shock by historical standards, meaning that anticipation effects might be more important than in previous episodes. Finally, we consider the GDP effect of the fiscal consolidation under the extreme assumption that our fiscal multipliers are much less persistent than in the central case, and more in line with the degree of persistence assumed by the OBR.

Borrowing constraints

There are three circumstances highlighted in the recent literature in which fiscal multipliers might be unusually large: when there is a large output gap; when the financial system is stressed; and when the ZLB is binding. In a 2012 study for example, the IMF found that fiscal multipliers in G-7 economies can be around 50% larger than implied by a linear model when there's a negative output gap. A threshold VAR analysis conducted in 2011 suggested that fiscal tightening in times of financial stress depressed output much more than in normal times, whereas fiscal expansions appeared to be more powerful in normal times over a three-year horizon. These studies, however, only suggest that something *is* different in times of crisis, but do not help identify which transmission channels behave differently.

One explanation offered for why fiscal multipliers might be larger in the latest episode is the incidence of the zero lower bound on interest rates[9]. In our forecast, however, we generally assume that QE and other unconventional policies are good enough substitutes for Bank Rate that the MPC are not constrained by the lower bound. Of course we could be wrong about this – but then we would expect that to affect not just the fiscal consolidation but the transmission of any shock to the economy.

An alternative channel is that credit conditions in a downturn or in times of financial stress might interact with a fiscal shock. Borrowing constraints on households and firms, for example, could reduce their ability to increase private demand in the face of lower government demand, or to smooth through the effect of lower transfers and higher taxes. We already include an estimate of the effect of credit spreads in the forecast, and the credit spread measure reflects credit availability to some extent[10]; in addition to that, some households in COMPASS and in our

---

[8] A note by surveys the recent literature on fiscal multipliers).

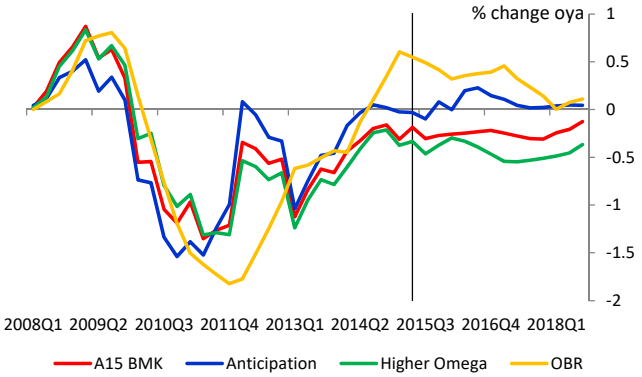
[9] A recent ECB Occasional Paper) provides a useful review of the literature.

[10] That's because spreads and availability tend to be positively correlated, so a reduced-form model such as MASD's sectoral model, mapping the effect of spreads on activity, will implicitly capture the effect of credit availability in its parameter estimates. A note by provides more details on credit constraints and the credit spreads adjustment.

fiscal DSGE model are unable to save or borrow (and thus to smooth consumption)[11]. One would therefore have to believe that tighter credit conditions could have an additional effect on the transmission of other shocks over and above the mechanisms we already include.

To illustrate the sensitivity of our forecast treatment of the fiscal consolidation to this channel, we ran a simple experiment in which we doubled the share of households unable to save or in our fiscal DSGE model (which we use to flesh out our empirical multipliers). This is motivated by the proportion of respondents to the NGM survey who said they put off spending due to credit limit concerns, which has also more or less doubled since before the crisis. [12] This increases the drag of the fiscal consolidation on annual GDP growth by around 0.2% in each year of the forecast of the forecast (**Chart 12**).

Chart 12: GDP growth effect of the fiscal consolidation: A15 Benchmark and scenarios



Anticipation

Another reason why fiscal multipliers could be different in the latest episode is anticipation effects. The fiscal consolidation is not only large in GDP terms, but the 2010 Budget and subsequent budgets all detailed fiscal measures to be implemented beyond even the current forecast horizon. To the extent that the measures are credible and economic agents are both forward-looking and reasonably unconstrained in their borrowing and saving decisions, some of the announced measures could be affecting economic outcomes even before they're actually implemented. Again, empirical estimates of fiscal multipliers will include an "average" anticipation effect, so one would need to believe that the scale and scope of the consolidation warrant a deviation from that average.

To mimic this effect, we assumed that the effect of the fiscal consolidation in each fiscal year be driven by the peak effect of each measure over the entire consolidation, as projected in 2010 and subsequent budgets. In other words, we hit agents in the model with a larger shock than implied solely by the fiscal measures announced for a given year to proxy more forward-looking behaviour. This is a crude calibration but can be thought of as an upper bound for what might happen with a more detailed and realistic treatment. This experiment yields to a more pronounced drag in 2010 and 2011, but more importantly**,** eliminates any further drag over the forecast, when the fiscal impulse actually begins to unwind, boosting GDP growth (Chart 12).

OBR multipliers

Fiscal multipliers used at other institutions can provide an additional sense-check on our forecast treatment. As detailed in , the OBR use a range of 'impact multipliers', the immediate impact on GDP of changes in a range of fiscal instruments. They estimate these to be 0.3 for tax changes, 0.6 for current spending and 1.0 for capital spending, parameters broadly consistent with our empirical results and those in the wider literature. They assume that the effects of policy unwind fully over five years, faster than our empirical estimates, which they motivate as an offsetting effect from monetary policy, real wage adjustments and increased private sector investment[13].

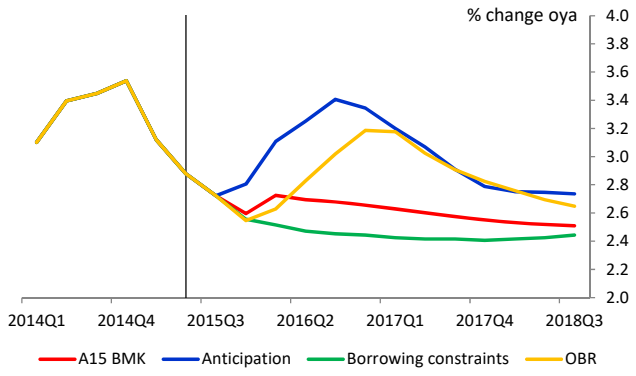
Chart G plots the contribution of the fiscal consolidation to GDP growth using the OBR's impact multipliers and persistence assumptions, but on a comparable basis (i.e. holding Bank Rate and the exchange rate fixed). The main

[11] The proportion is pinned down by the estimation of COMPASS.
[12] The peak change during the crisis was even larger, and has come down since then.
[13] The OBR set out their approach in detail in their June 2010 *Budget Forecast* and Oct 2013 *Forecast Evaluation Report*

feature that stands out is that the lower persistence implies that more of the consolidation measures to date unwind over the forecast, pushing up on GDP growth by up to 0.7% more than in our standard treatment over the forecast.

Chart 13 shows the August Benchmark forecast and the alternative annual growth profiles that would result if you were to let the three risks to our fiscal treatment flow through to GDP. The anticipation and OBR scenarios represent sizeable upside risks: growth peaks at 3.4% and 3.2%, respectively, is 0.4% and 0.2% higher on average than in the Benchmark over the forecast, and the level of GDP is 1.3% and 0.8% higher by Year 3; furthermore, they both imply fairly stark turning points in annual growth over the projection. The tighter borrowing constraints risk implies a lower growth projection throughout: growth troughs at 2.4%, and is on average 0.2% lower than the Benchmark; the level of GDP is 0.5% lower by Year 3.

Chart 13: GDP growth: A15 Benchmark and alternative treatments of fiscal policy



Other risks

Clearly, these are not the only risks to our treatment of fiscal policy in the forecast. Additional risks that could potentially be relevant include:

- The effect of shrinking benefits on labour participation: some of the fiscal measures, in particular lower transfers, might affect the choice to enter the labour force (or to participate for longer) above and beyond the factors explicitly or implicitly captured by our forecast for equilibrium labour participation.
- Our treatment assumes that the fiscal consolidation does not itself have an impact on potential output (besides the usual channels we assume via investment and U*). But in principle if government spending is wasteful or taxes are distortionary, changes in the tax system or the overall tax burden could change the level of potential output permanently.
- Unusually pronounced announcement and confidence effects of the consolidation on government yields and other asset prices. This might be the case if you think markets became particularly sensitive to fiscal positions after the financial crisis and in light of the sovereign debt crisis in Europe.
- The details of how government consumption is measured and imputed to changes in volumes and prices. The composition of the consolidation plans means that the government consumption deflator falls by much more than (directly measured) real government consumption. This might break the historical relationship between (nominal) government spending and (nominal) GDP, which is what the empirical estimates of fiscal multipliers currently embedded in our forecast treatment are based on.

At the moment we don't have a good way of quantifying these risks, though we could investigate them further if you thought they were likely to be particularly relevant.

Risks to the forecast narrative

Even if you buy our treatment of fiscal policy, the range of other things that are required to happen for our forecast to come true suggests a number of other risks.

It may be that we have been overly pessimistic about the extent to which credit and the world continue to drag on demand, in which case growth could be stronger than we expect and the output gap could become much more positive. Conversely we may have overestimated the extent to which monetary policy can continue to support

demand – maybe global factors have pushed down r*, implying less support than we had thought from the current yield curve, or maybe we have been too optimistic about how long the effects of QE will persist for.

The strength of private domestic demand and the rate at which the private financial balance falls also suggest risks. On the demand side we have worried before about whether consumption and investment can sustain the strong growth rates required to keep the output gap closed. And on the financial side, while we think there is evidence that the improvement in credit conditions will be reflected in lower saving rates, households or firms may still turn out not to be willing to run down savings at such high rates as we expect them to. As well as posing downside risks to domestic demand, that would require more of the consolidation to be funded through a closing current account deficit – which, absent a sudden reversal in investment income or a rapid increase in world demand, could require a substantial depreciation.

Conclusion

In our central case, the fiscal consolidation continues to act as a growing headwind to demand over the whole forecast horizon: the total drag on the level of GDP at Year 3 is 2 ¾%. But its effects are offset by strong private domestic demand and a falling private sector balance. We think this can be explained by a declining drag from other headwinds to demand, in particular world trade and credit spreads, as well as by continued support from monetary policy. Of course our estimates of the effects of the consolidation are highly uncertain, and there are a number of risks to our treatment. And even if you buy our treatment of fiscal policy, the range of other things that are required to happen for our forecast to come true suggests a number of other risks.