Essential Reading

Forecast primer: The treatment of fiscal policy

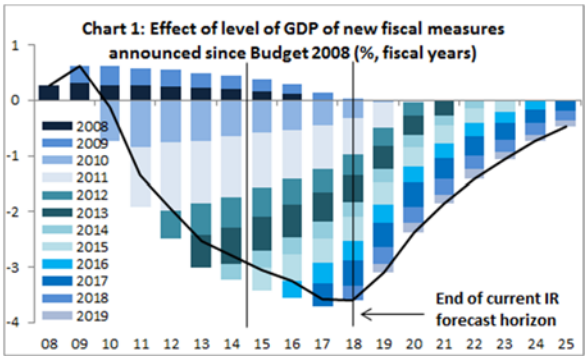
(CAPD)

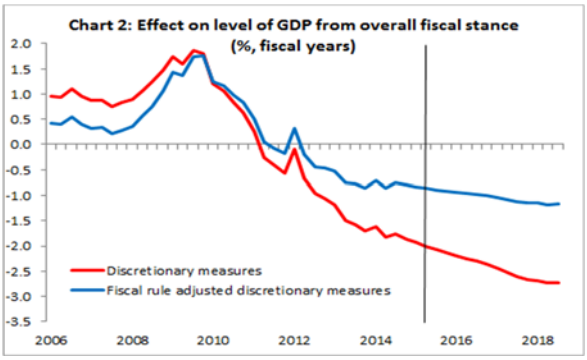
Ahead of Key Issues Meeting 2 on Thursday to discuss the impact of the fiscal consolidation, this primer sets out how we treat fiscal policy in the forecast and addresses a number of questions MPC Members have had on it. Please do not hesitate to contact us ahead of the meeting with any further questions and if you would like to discuss anything contained in the note beforehand.

- There are two key building blocks to our assessment of the impact of fiscal policy on GDP:

1. **How we measure a change in discretionary fiscal policy.**
2. Our **estimates** of those changes' **initial impact** on GDP and how **persistent** their effects are – so-called **'fiscal multipliers'**. As with monetary policy, in general, we do not think changes in fiscal policy have long-run effects on output. Consequently, as the effects of, say, a fiscal tightening on the *level* of GDP unwind over time, they push *up* on GDP *growth*. The more persistent the fiscal multiplier, the slower this subsequent boost to growth will be.

- We use IFS estimates of all new discretionary tax and spending measures in each Budget/Autumn Statement to **measure changes in fiscal policy**. The IMF and OBR also use this **'discretionary measures'** approach as it is increasingly judged to be superior to the more familiar approach of using changes in the cyclically-adjusted fiscal balance since: it allows us to apply the most appropriate multiplier to different fiscal measures; cyclical adjustment is fraught with difficulty and prone to revision; and the cyclically-adjusted fiscal balance can move around independently of new discretionary fiscal measures.
- We then estimate the effect of the tax and spending measures using our assumed **fiscal multipliers**. Estimates of fiscal multipliers from the literature vary widely and, so, are very uncertain. Our multipliers, based on in-house VAR estimates, imply an average multiplier of c0.5 on *impact* from the Government's fiscal tightening plans. That is similar to the OBR, but smaller than US studies - the latter given the UK is a more open economy and how the ONS measure real government spending. Importantly, though, our estimates of fiscal multipliers are **more persistent** than the OBR's, fading to zero over 8 years rather than their assumption of 5 years.
- Taken together, we think the fiscal consolidation will drag on GDP growth by around 0.2-0.3pp in each of 2016 and 2017. That is smaller than the impact from **new** measures alone, as: i) our multipliers are less than 1; and b) the effects from previous fiscal tightening measures are unwinding (Chart 1). Because the OBR assume less persistent fiscal effects than us, they judge that the consolidation has and will actually push *up* growth.
- Much of the consolidation was in response to the hit to the economy's supply potential from the financial crisis – just as consumers cut back their spending in response to the lower trajectory for their productivity and incomes – and was a key mechanism through which demand responded to weaker supply. We therefore think that, first-order, it is only the degree of fiscal tightening **over above that** which is pushing down on the **output gap** (blue line in Chart 2, calculated using the fiscal rule in COMPASS) and - to the extent that you agree with that - which monetary policy needs to offset.
- If so, Bank rate needs to be c1pp lower than otherwise at year 3 to offset the effect of the consolidation. If, on the other hand, you think monetary policy should also offset the part of the consolidation that was required by the hit to the UK's supply potential (red line in **Chart 2**) then Bank rate needs to be 2½pp lower than otherwise. [i]





INTRODUCTION

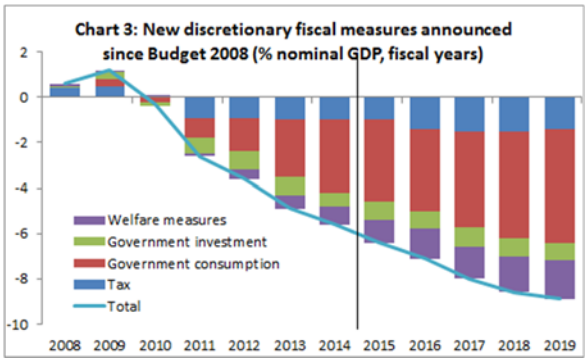
This note sets out how we treat fiscal policy in the forecast and our latest assessment of the effects of the ongoing fiscal consolidation on the economy.

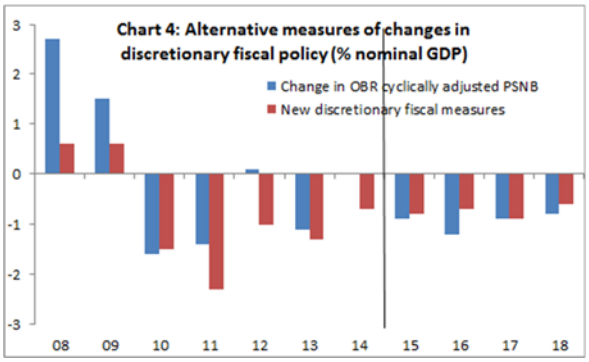
Section 1 gives an overview of the Government's current fiscal plans following this month's Budget. Second 2 sets out how we arrive at our assessment of the impact of fiscal policy on the economy. That involves two key building blocks: how we measure a change in fiscal policy; and the multipliers we use, both in terms of their initial impact on GDP and how persistent their effects are. Given those, Section 3 sets out latest assessment of the impact of the consolidation on GDP. To the extent that much of the consolidation was the response to the large hit to supply following the financial crisis, Section 4 discusses how an estimate of the impact over and above that necessitated by the erosion of supply may be a better guide to what monetary policy needs to offset to close the output gap. Section 5 sets out how our estimates change depending on whether we assume a monetary and exchange rate response.

SECTION 1: THE GOVERNMENT'S CURRENT FISCAL PLANS

Public Sector Net Borrowing (PSNB) was 5% of GDP in financial year 2014-15, down by one-half from its peak in 2009-10. The Government's latest fiscal plans, as set out in the recent Summer Budget, embody further tightening to a fiscal deficit of around zero by 2018-19. The vast majority of that tightening comes from **structural tightening measures**: the OBR judge that the output gap was -0.6% in Q1 (slightly narrower than our own estimate of -0.9% embedded in the August 2015 Benchmark forecast) and thus that there is only a moderate amount of **cyclical** support to the public finances yet to come.

Since Budget 2008, the Government has announced **discretionary fiscal tightening measures** of around 9% of GDP (**Chart 3**). Around 65% of that reflects lower government consumption and investment, with the remainder split roughly equally between tax rises and welfare cuts. The tightening has two main aims. Firstly, to put the public finances on a sustainable path given the much lower trajectory for potential GDP following the financial crisis. And secondly, to aim for a tighter **cyclically-adjusted fiscal position** over the medium-term: the Government is now aiming for a cyclically-adjusted deficit of close to zero in 2018-19, compared with running cyclically-adjusted deficits of around 3.5% of GDP immediately prior to the financial crisis. Thus far, the Government has implemented around 6pp of the aggregate 9% of GDP discretionary tightening planned over 2008-09 to 2019-20. Further cuts to government consumption account for just over 50% of the fiscal tightening yet to come, with welfare cuts accounting for another 25-30%.





SECTION 2: HOW WE COME UP WITH OUR ASSESSMENT OF THE IMPACT OF FISCAL POLICY ON THE ECONOMY

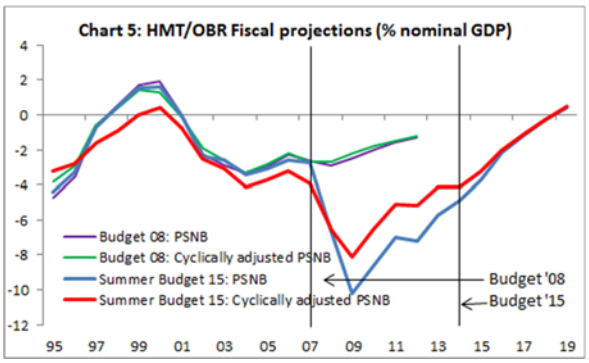
There are two key building blocks to our assessment of the impact of fiscal policy on GDP:

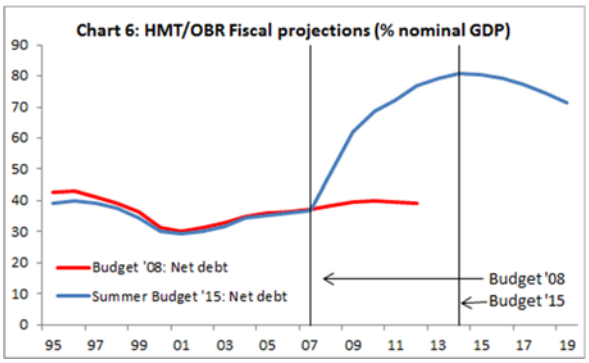
- **How we measure a change in fiscal policy**, whose effects we then try to estimate (**Section 2a**).
- Our assumptions about both its initial impact on GDP and how persistent those effects are – so-called '**fiscal multipliers'** (**Section 2b**). As with monetary policy, in general, we do not think changes in fiscal policy have long-run effects on output. Consequently, as the effects of, say, a fiscal tightening unwind over time, they push *up* on GDP growth. The more persistent the fiscal multiplier, the slower this subsequent boost to growth will be.

Section 2a: How we measure a change in fiscal policy

We **measure changes in discretionary fiscal policy** by taking all new discretionary tightening/loosening measures announced by the Government – as detailed by the IFS after each Budget and Autumn Statement.

To capture the full extent of the consolidation, we also need to choose a **baseline** relative to which to cumulate all announced discretionary measures. We use the March 2008 Budget as our baseline as it predates the big shocks that hit the economy and triggered the consolidation, and is also the last year before the height of the crisis when fiscal policy was on a broadly sustainable path: at that time, PSNB had been around 2.5-3.0% of GDP in the preceding couple of years, but it was due to be tightened to around 1.5% of GDP over the medium-term, with Government debt/GDP expected to level off at around 40% (**Charts 5 and 6**).





The IMF and OBR also use this **'discretionary measures approach'** as it is increasingly judged to be superior to the more familiar approach of using **changes in the cyclically-adjusted fiscal balance** since:

- This 'bottom-up' approach allows us to apply the most appropriate multiplier to different fiscal measures.
- Cyclical adjustment is fraught with difficulty and prone to revision.
- The cyclically-adjusted fiscal balance can move around independently of new discretionary fiscal measures. For example, all else equal, a negative supply shock will mechanically imply a looser cyclically-adjusted fiscal position (the output gap is narrower, but the headline fiscal position is unchanged) but that may not constitute an active discretionary change in fiscal policy.
- By focusing on announced changes in policy, this approach excludes cyclical effects such as automatic stabilisers, which should already be captured elsewhere in forecast in the response to other shocks. It also captures the impact of 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 real government demand (see **Section 2b**).

Our choice to use the discretionary measures approach rather than changes in the cyclically-adjusted fiscal balance is important as they can imply materially different changes in the fiscal stance (**Chart 4**).

Section 2b: What fiscal multipliers we use

There are a variety of channels through which fiscal tightening can impact the economy. For example, there are direct effects as government consumption and government investment are components of GDP. And there are also more indirect effects on private spending from changes in government spending, taxes, benefits, public sector pay and public sector employment. The fiscal multipliers we use aim to take account of both and, in particular, how real government spending (which accounts for c20% of GDP) is measured in the National Accounts.

Until 1997, the ONS measured **real government consumption** by deflating nominal government inputs. However, that did not allow for changes in productivity in the public sector and so did not give an adequate reflection of real government spending. So, since then, the ONS have used direct output measures – such as hospital operations performed or pupil numbers taught in schools – to measure around two-thirds of government consumption. A consequence of this improved methodology is that there is now a weaker measured relationship between nominal and real government spending. Indeed, the majority of the slowing in **nominal government consumption** growth

during the consolidation has been accounted for by a slowing in growth in the **government consumption deflator** rather than real government output. As a result, the direct effects of the consolidation relating to lower nominal government spending on real GDP have been smaller than otherwise and so, all else equal, has the associated fiscal multiplier: both would have been materially larger under the old deflated-input approach.

Then, using our fiscal multipliers for each type of discretionary measure (outlined below) we then work out the indirect effects of the consolidation on private spending.

There are two important dimensions to any fiscal multiplier: first, the **initial impact on GDP** of each discretionary measure; and, second, how **persistent** its effects are. As with monetary policy, in general, we do not think changes in fiscal policy have long-run effects on output. Consequently, as the effects of, say, a fiscal tightening unwind over time, they push *up* on GDP *growth*. The more persistent the fiscal multiplier, the slower this subsequent boost to growth will be.

Over the last couple of years, Bank staff have estimated fiscal multipliers for the UK using a range of different approaches[1], for example:

- A VAR approach using a time series of Discretionary Measures to construct exogenous changes in fiscal policy.
- A VAR framework using cyclical adjustment to construct exogenous changes in fiscal policy (somewhat akin to the seminal Blanchard and Perotti[3] approach).
- Micro data estimates, examining the impact of exogenous changes in central government grants on GDP at a local authority level.

Based on these, Chart 7 shows our preferred multipliers for a range of fiscal instruments. And Table 1 shows the **initial impact** fiscal multipliers that we use compared with those of the OBR, who also use a combination of empirical estimates and judgement to inform their assumptions. Overall, they are very similar with the only notable difference being the impact multiplier for government investment. However, since cuts to government investment account for less than 10% of the total fiscal tightening between 2008 and 2018 that, in itself, should not lead to materially different estimates of the impact of the fiscal consolidation between us and the OBR.

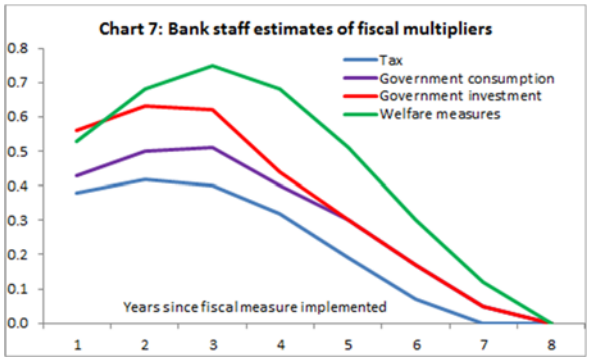


Table 1: Fiscal multipliers, on initial **impact**		
	OBR	BoE
VAT	0.35	0.4
Income taxes	0.3	0.4
Welfare measures	0.6	0.5
Government consumption	0.6	0.5
Government investment	1.0	0.6

These estimates are very uncertain, however, varying materially across different specifications of each approach. They lie within the range of estimates from the literature, but these vary very widely (see Appendix) underscoring their uncertainty. Furthermore, most studies relate to the US, where fiscal multipliers would be expected to be larger than in the UK since: a) the UK is a more open economy, and so more of any fiscal tightening would be expected to leak abroad via lower imports;[2] and b) a larger share of government output in the UK is measured using direct output measures rather than deflated inputs.

Equally uncertain are how **persistent** the effects of a change in fiscal policy are on GDP. Our in-house estimates suggest that: i) the impact of a change in fiscal policy builds after the initial impact with the maximum effects coming after a few quarters; and ii) the effects on GDP fade to zero over a period of around 8 years. The latter is longer than the **OBR**'s assumption (rather than estimate) that the effects of changes in fiscal policy fade to zero after 4-5 years. As noted above, this means they have a quicker boost to growth than we do from the unwinding of previous tightening measures and is the main reason why they think the drag from the fiscal consolidation on GDP growth will be smaller than us over the forecast (see below).

Risks around fiscal multipliers

Given the large range of estimates of fiscal multipliers from the literature, there are risks in both directions to the ones we use. For example, tighter credit conditions in the aftermath of the financial crisis could mean fiscal multipliers are currently higher if they reduce households' ability to smooth consumption in the face of tax increases or welfare cuts. That said, we may well capture this in the forecast via the credit spread adjustment, which we still think is dragging on the **level** of GDP.

Also, if the ZLB is binding and monetary policy can't respond to the fiscal tighening to the extent it has typically done in the past, then the fiscal multiplier will also be bigger. However, this is not unique to the fiscal consolidation but applies to all shocks hitting the economy and the assumption in the foreaacst is that the ZLB isn't binding as QE is assumed to be an effective subsitute to cuts in Bank rate.

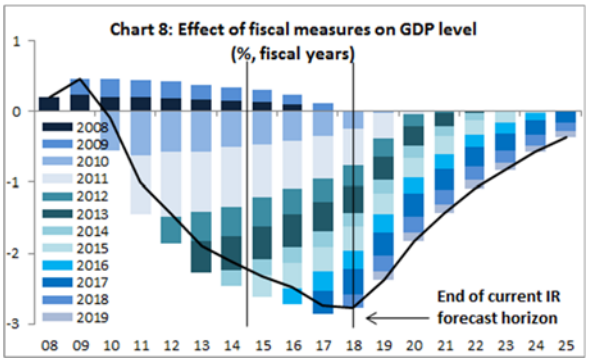
Alternatively, given that the government's multi-year fiscal tightening plans have been set out well in advance, some of the corresponding effects on the economy might have been more front-loaded than in our central projections, as households and businesses may have already factored them into their expectations. That would imply upside risks to the growth projection.

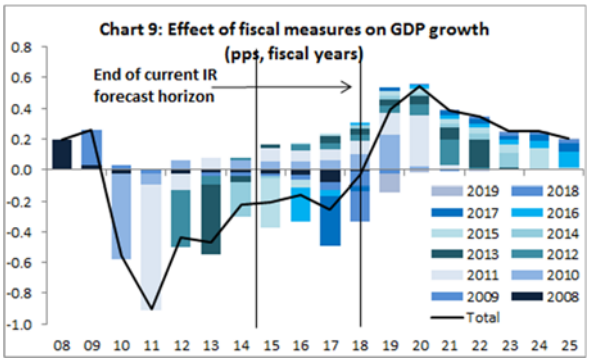
SECTION 3: OUR ASSESSMENT OF THE IMPACT OF THE FISCAL CONSOLIDATION

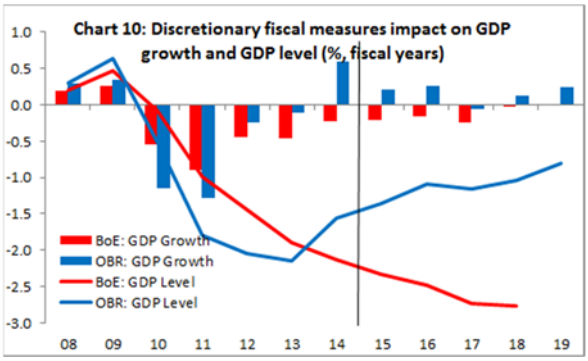
Cumulating all the discretionary fiscal measures since 2008 and applying the appropriate multipliers, the black lines in **Charts 8** and **9** show our assessment of the impact of the fiscal consolidation on the level and growth rate of GDP.

On that basis, the fiscal consolidation is currently pulling down on the **level** of GDP by a little over 2%, with the effects set to build to nearly 3% of GDP by the end of the forecast period. We judge that the peak impact on GDP **growth** was back in 2011 at nearly -1pp, with the drag lessening notably since then. Over the next couple of years, we think fiscal tightening will drag on GDP **growth** by around 0.2-0.3pps per annum.

The drag on growth in recent years and over the forecast is materially less than the size of **new** fiscal tightening measures, on their own, would imply: for example, the Government's current plans embody fiscal policy tightening by around a further 0.8% of GDP in each of 2016 and 2017. That reflects: i) our assumed fiscal multipliers being notably less than 1 (see above); and the partially offsetting boost to growth as the effects of previous measures unwind (given we don't think fiscal policy permanently affects the **level** of output). Indeed, just beyond our current forecast horizon, we think the net effect of new measures and the unwind of previous ones will be to boost growth.





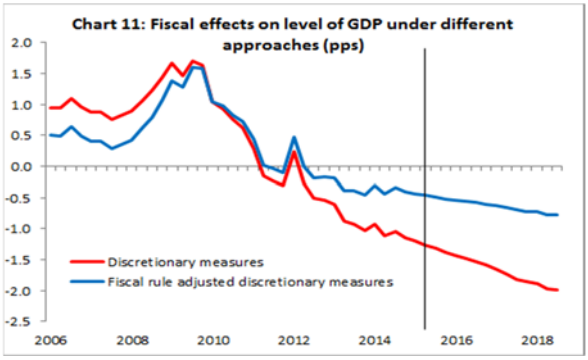


The OBR anticipate somewhat less of a drag on GDP growth from the ongoing fiscal tightening over the next few years – indeed, they think that the consolidation is already providing a *boost* to GDP growth (blue bars in **Chart 10**). That is a direct result of their assumption that the effects of fiscal tightening fade somewhat more quickly. They judge that the corresponding impact on the **level** of GDP reached its nadir in around fiscal year 2013. And with the effects from **previous** fiscal tightening measures fading notably faster than our own estimates, they judge that the net

effects from fiscal policy on GDP **growth** are moderately **positive** by an average of around 0.1-0.2pps per annum over 2015-2019 (**Chart 10**).

SECTION 4: TAKING INTO ACCOUNT THAT MUCH OF THE CONSOLIDATION WAS THE RESPONSE TO THE SUPPLY HIT

A large part of the fiscal consolidation was the response to the hit to the economy's supply potential from the financial crisis and not an exogenous shock. Just as consumers cut back their spending in response to the lower trajectory for their productivity and incomes, the Government needed to cut back its net spending in response to structurally lower tax receipts – it could not plausibly continue running cyclically-adjusted deficits of around 8% of GDP as it was in 2009-10 indefinitely. This is a key reason why we tend to think that supply shocks only have a temporary effect on the output gap: because demand, and government spending as part of that, ultimately responds to changes in supply. We think, therefore, that, first-order, it is only the degree of fiscal tightening **over above what the Government needed to do in response to the supply hit** which is pushing down on the **output gap** and - to the extent that you agree with that - which monetary policy needs to offset. We use the fiscal rule in COMPASS to calculate this. Common with most fiscal rules, it seeks to maintain the share of government spending and taxes at a constant proportion of GDP. The blue line in **Chart 11** shows our assessment of the impact on GDP of the consolidation over and above what was required given the hit to the economy's supply potential. It implies that:



- In the run-up to the financial crisis, fiscal policy was adding stimulus to the economy. That is consistent with the cyclically-adjusted fiscal deficit being around 3.5% of GDP in 2007 and, indeed, reflecting that, Budget 2008 already incorporated plans to tighten fiscal policy moderately over the medium-term.
- In addition to the stimulus already being imparted on the eve of the financial crisis, the Government subsequently loosened fiscal policy materially in fiscal years 2008-09 and 2009-10. The loosening relative to the fiscal rule was somewhat larger than on a Discretionary Measures basis, as the former suggested a tightening in fiscal policy in response to the emerging negative productivity shock was necessary.
- Since then, the Government has been tightening fiscal policy both on a Discretionary Measures basis and relative to the fiscal rule. The tightening under the former is naturally somewhat larger though, as under the latter a large part of the fiscal tightening is warranted by the erosion of supply. Nevertheless, the Government is still tightening fiscal policy by somewhat more than the fiscal rule would imply. To ensure internal consistency in the forecast we use COMPASS' fiscal rule but a simpler rule of stabilising the structural deficit at 2% of GDP (and therefore debt at 40% of GDP) offers a more intuitive 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 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.

If you buy the argument above that is only the degree of fiscal tightening **over above what the Government needed to do in response to the supply hit** which is pushing down on the **output gap** (blue line in **Chart 11**) then Bank rate needs to be c1pp lower than otherwise at year 3 to offset the effect of the consolidation. If, on the other hand, you think monetary policy should also offset the part of the consolidation that was required by the hit to the UK's supply potential (red line in **Chart 11**) then Bank rate needs to be 2½pp lower than otherwise.

SECTION 5: WHAT ARE WE ASSUMING ABOUT MONETARY POLICY?

One reason why fiscal multipliers are estimated to decline over time is because of the response of monetary policy. Hence, the estimates of the effects of fiscal tightening in Charts 8-11 above have been constructed under the assumption that monetary policy responds - as per the Taylor Rule in COMPASS - so they are comparable with the various other estimates from the OBR, VARs etc.

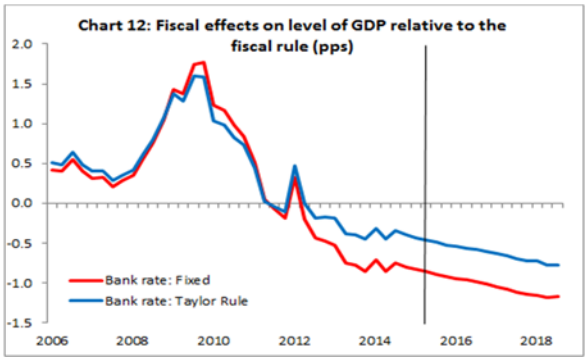
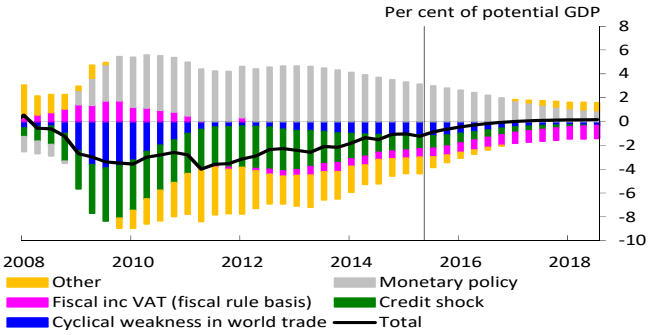


Chart 13: Decomposing the output gap into demand headwinds and the impact of monetary policy



However, our convention when discussing estimates of the headwinds to demand with you - as in our typical output gap decomposition (**Chart 13**) - is to show the effects with monetary policy held **fixed** (Chart 12). We do that so you know the impact of a particular shock that monetary policy needs to offset. On that basis, the fiscal consolidation is imparting a somewhat larger drag on the economy: **relative to the fiscal rule, it is pulling down on the level of GDP by 0.8% at present, and we expect that drag to build to 1.2% by the end of the forecast** (red line in **Chart 12**).

Footnotes

[2]

[3] See "An empirical characterisation of the dynamic effects of changes in government spending on taxes and output", Blanchard and Perotti, QJE 2002.

Appendix: Empirical estimates of Fiscal multipliers (taken from

Study	Country	Approach	Instrument	Estimate*
Bank staff	***UK***	***SVAR and narrative approach***	***Tax, Spending***	***0.4 (tax) – 0.8 (welfare)***
OBR	***UK***	***Literature review***	***Tax, Spending***	***0.3 (tax) – 1 (investment)***
Blanchard & Perotti (2002)	US	SVAR: identified by Cholesky ordering & cyclical adjustment	Tax, Spending	0.8-1.3
Alesina & Ardagna (2010)	OECD	OLS: change in structural budget >1.5% in absolute value	Structural budget	Spending stimulus is contractionary, tax stimulus is expansionary. In some cases spending consolidation has positive growth effect
Hall (2009)	US	OLS & VAR: identification depends on defence spending being exogenous	Defence spending	0.7-1
Mountford & Uhlig (2009)	US	SVAR: identified with sign restrictions	Tax, spending	0.3 (spending) 0.9 (tax)
Romer & Romer (2010)	US	OLS & VAR: narrative approach	Tax	3
Cloyne (2013)	UK	VAR: narrative approach	Tax	2.5
Favero & Giavazzi (2012)	US	VAR: narrative approach	Tax	1
Blanchard & Leigh (2013)	Advanced economies	OLS: regress forecast errors on consolidation plans	Structural budget	0.5 (pre-crisis) >1 (post-crisis)
Auerbach & Gorodnichenko (2012)	US	SVAR: Cholesky ordering with "regime-switching"	Spending	0-0.5 (expansions) 1-1.5 (recessions)
Jordà & Taylor (2013)	OECD	Local projection, IV & narrative	Structural budget	0.2 (expansions) 0.9 (recessions)
Coenen et al (2012)	US, Europe	Model-based simulations using major forecasting models	Tax, spending	0.5-1 when monetary policy offset; larger when monetary policy is accommodative; smaller when change is permanent

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