ESSENTIAL READING

Key Issues Meeting 1: The private domestic demand outlook

(SEAD & CAPD)[1]

At Key Issues Meeting 1, we plan to discuss the outlook for the main components of private domestic demand in the context of the broader factors driving your growth narrative. In light of this, we will ask whether you would like to change either the central projection for growth, and hence inflation, or how you view the balance of risks.

Section 1: GDP growth in the November Benchmark forecast (pages 2-4)

- Beyond the near term, GDP growth is projected to be at, or slightly in excess of, its pre-crisis average of 2¾%. In an accounting sense, that is driven by strong consumption and particularly strong private investment growth.
- In terms of sectoral balances, the counterpart to an ongoing fiscal consolidation is a deterioration in the private sector net financial balance, with both household and corporate balances falling back.
- Medium term growth will in large part be determined by supply prospects. But, given recent in-depth discussions of the labour market, this note focuses on other factors driving domestic demand, taking supply as given.

Section 2: The outlook for household consumption and saving (pages 5-12)

- Consumption growth remains around its current rate for most of the forecast, easing slightly towards the end. The saving ratio ends the forecast materially lower than in the August *IR*, at just above 2% - a historically low level – rather than 4%. But saving out of disposable income looks somewhat less stretched.
- Movements in the saving ratio since the crisis can be broadly explained by changes in uncertainty, credit conditions and the desire to delever, but further material easing in these headwinds is unlikely over the forecast.
- Running down stocks of precautionary saving and other forms of wealth, and strength in the housing market could explain some of the fall in the saving ratio in the forecast, but we judge that the risks to the saving ratio projection are probably to the upside.

Section 3: The outlook for housing investment (page 13)

- Annual growth in total housing investment picks up to over 6% in 2016 before falling back to around 4%.
- Although there are risks to the forecast in both directions, an error in the projection would need to be quite large in order to have a material impact on GDP given the relatively small size of this expenditure component.

Section 4: The outlook for business investment (pages 14-19)

- Following the Blue Book revisions, the real business investment-to-GDP ratio rises to a lower level than in the August *IR*, but at a similar pace. It is striking that that scale of projected increase in the investment-to-GDP ratio has only previously been seen in the UK in the late 1980s boom and in the late 1990s recovery.
- Recent trends in business investment can be explained by models that put weight on the low real cost of capital, low macroeconomic uncertainty and the low level of corporate gearing. Those models point to some upside risks around the near-term investment growth forecast but clear downside risks in the medium term – and hence downside risks to the investment-to GDP ratio by the end of the forecast.
- A shock-based decomposition also points to downside risks to investment growth in the medium term.
- Overall, we judge that there are downside risks to the Benchmark investment profile in the medium term, but we also set out a scenario in which there is a chance that 'animal spirits' lead to a stronger recovery in investment.

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[1] With thanks to: .

Introduction

The November 2015 Benchmark forecast projects GDP growth of 0.7% per quarter beyond 2015 Q3. So, against a backdrop of ongoing fiscal consolidation, subpar global growth and the past appreciation of sterling, that rate of GDP growth is reliant on strong household consumption and, in particular, business and housing investment growth. At Key Issues 1, we plan to: discuss the outlook for and risks around the Benchmark private domestic demand profile; and then show how alternative judgements would affect the GDP and inflation projections. **In light of this, we will ask whether you would like to change either the central projection or how you view the balance of risks.**

The first section of the note recaps the narrative for GDP growth in the forecast and highlights the role of private domestic demand within that. The second section considers prospects for consumption and, in particular, whether a further fall in the household saving ratio is likely over the forecast. The third and fourth sections consider the risks around our housing and business investment projections, respectively. Scenarios which deliver both weaker and stronger spending profiles individually are discussed at the end of these sections. And we will bring to the Key Issues meeting a scenario that weakens both consumption and investment to deliver the same inflation profile as in the August *IR* (as requested at Monday's Benchmark meeting).

Section 1: GDP growth in the November Benchmark forecast

Summary: Beyond the near term, GDP growth is projected to be at, or slightly in excess of, its pre-crisis average of 2¾%. In an accounting sense, that is driven by strong consumption and particularly strong private investment growth. In terms of sectoral balances, the counterpart to an ongoing fiscal consolidation is a deterioration in the private sector net financial balance, with both household and corporate balances falling back.

After picking up from early-2013 to mid-2014, annual GDP growth (including the backcast) has slowed over the past year from a peak of 3.4% in 2014 Q2 to 2.7% in 2015 Q2.[2] And, over that same period, annual growth in private final domestic demand has fallen back by more, from 4.1% to 2.8%. Within that, annual consumption growth has remained around 3%, highlighting a slowdown in private investment and particularly housing investment growth.

Annual GDP growth is expected to fall back slightly further over the second half of 2015, while private final domestic demand is assumed to rebound quite strongly. This note does not discuss the near term risks around GDP growth, but a full update of output indicators and the news in the ONS's Q3 GDP estimate will be provided at pre-MPC.

Over the rest of the forecast period, GDP growth is at, or slightly in excess of, its long-run pre-crisis average of 2¾%. As discussed at the Benchmark meeting, this is materially stronger than in the August *IR* given the monetary stimulus associated with the recent fall in the yield curve (**Chart 1**). In terms of expenditure accounting, GDP growth is driven by strong consumption and particularly business and housing investment growth (**Chart 2**). That is unsurprising as:

- In an accounting sense, real government spending contributes almost zero to overall GDP growth and so materially less than was the average of 0.5% per year prior to the crisis. The *total* effect of the fiscal consolidation will of course be larger than this given the impact of welfare and tax measures on private spending.
- Subpar UK-weighted global growth and sterling's appreciation since 2013 mean that external demand for UK goods and services is expected to be weak. That is reflected in a fairly consistent drag from net trade of around 0.4pp on annual GDP growth over the forecast period.

Private final domestic demand therefore needs to be strong in order to deliver GDP growth around trend (**Chart 3**).[3]

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[2] This is slightly weaker than our expectation at the time of the August 2014 *IR* as discussed in the 2015 Forecast Evaluation note

[3] A key question when thinking about the plausibility of the overall demand forecast is whether we should simply look at GDP growth or the split of expenditure components within it. An update of past work by Bank Staff) continues to find the conclusion that we have been better at forecasting overall GDP growth than the individual expenditure components. That has an important implication: even

Chart 1: GDP growth

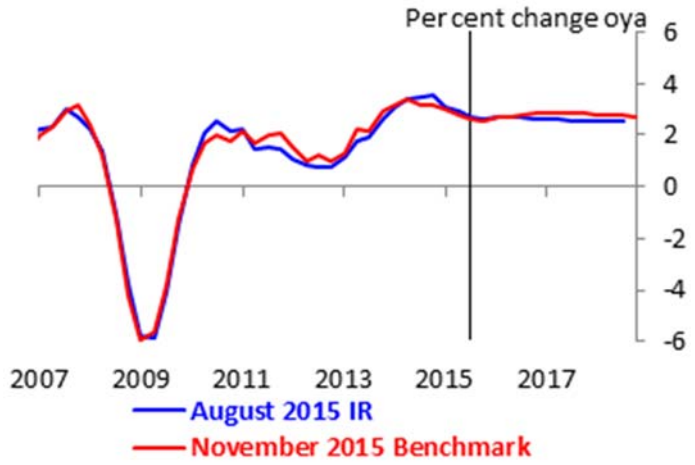
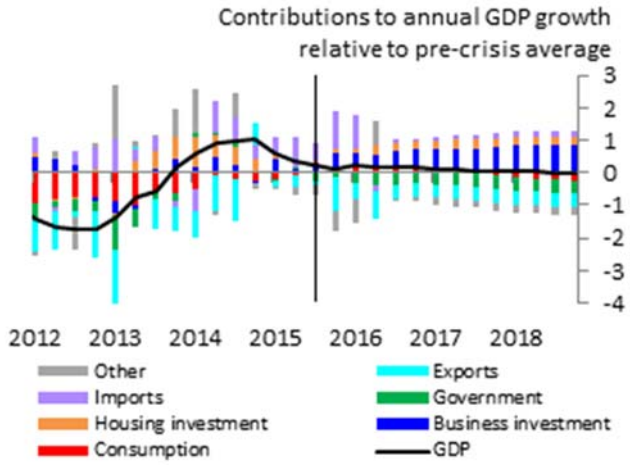


Chart 2: Expenditure contributions to GDP growth relative to pre-crisis average



Sectoral balances provide an additional lens through which to examine the demand forecast and how spending is financed (**Chart 4**). As has been the case in the forecast for some time, the counterpart to an ongoing fiscal consolidation is a deterioration in the private sector net financial balance, with both household and corporate balances falling back. (The private sector balance falls back from around 0% at the start of the forecast to around -5½% at the end of 2018.) The current account deficit meanwhile averages around -5% over this period.[4] Within that, the nominal trade balance deteriorates by around 1pp over the forecast, while the non-trade deficit remains broadly flat at just under 3% of nominal GDP (locking in the recent small improvement in the primary income balance).

Chart 3: Private final domestic demand

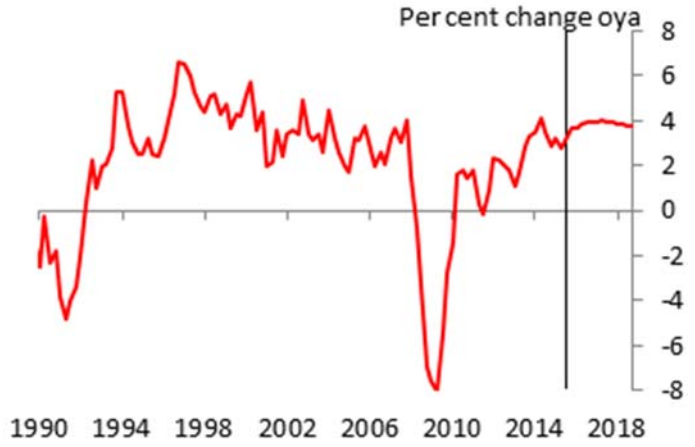
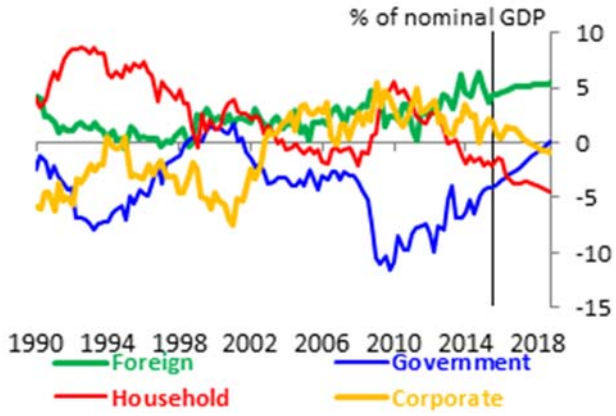


Chart 4: Sectoral balances



One limitation of the sectoral balances framework is that it cannot identify exogenous factors driving GDP and so this section briefly summarises our standard shock-based demand decompositions, shown in **Charts 5 and 6**[5]. Similar decompositions of consumption and business investment are then discussed in later sections.

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though you may not believe the projection for a particular expenditure component, you may still believe the overall GDP profile and want to adjust a forecast for another expenditure component instead.

for an extensive discussion of the current account and possible policy options open to the MPC and FPC.

[5] Basebuilding is an ongoing project where we use our modelling infrastructure to try to account for all the variables in the forecast in a general equilibrium manner. In particular, we seek to separate the role of 1) COMPASS' interpretation of shocks to the economy over the past (and how it treats/unwinds them over the forecast); 2) the effects of some important economic channels that we know are not well captured by COMPASS (credit and fiscal policy) and 3) the role of conditioning paths (yield curve and exchange rate) to see how far they can account for the absolute forecast. The remainder that is not accounted for by these three factors will therefore loosely represent some combination of shocks that we cannot easily explain or, implicitly, MPC/Staff judgement. for more details.

Over the past, negative demand shocks from credit, the world and fiscal policy have pushed down on the output gap (**Chart 5**). And though monetary policy was loosened significantly to provide a large boost to the level of output, it has not been sufficient to offset the various headwinds such that the output gap has been and continues to be negative. As reflected in the yellow 'other' bars, these factors cannot entirely explain the weakness of demand relative to supply. While the 'other' bars will capture any misspecification in our assessment of the effect of shocks, we think they capture the effect of uncertainty, deleveraging and other non-trade spillovers from the rest of the world related to the financial and euro-area crises.[6] Both the drag from the headwinds and the boost from monetary policy have faded over the past four years. The former has outweighed the latter so that the output gap has closed rapidly. Over the forecast that continues such that the output gap goes slightly positive, ending at +0.5%.

Looking at **Chart 6** suggests that the slowing in GDP growth over the past year represents a fading of past shocks: the easing of credit conditions, dissipation of uncertainty and strong labour supply growth are no longer providing as much impetus to growth. The drag from sterling's appreciation has been relatively consistent over the past year.

Over the forecast, the drag from subpar productivity growth and sterling's appreciation fade a little, but are offset by further waning of the boost from low uncertainty, credit spreads and labour supply. Monetary policy remains a drag on *growth* as its impact on the *level* of GDP continues to fade.

A key judgement within the forecast is that the 'other' bars continue to support *growth*. One argument in favour of this assumption is that the bars simply represent a (further) unwind of the negative effects that emerged during the crisis on the level of GDP. That would be consistent with the view that the some of the shocks associated with the crisis – particularly uncertainty – should have no permanent impact on output. And so the continuing support to growth over the forecast simply represents 'pay back' from the past.[7] But on the other hand, they could be signalling that the forecast for GDP growth is too optimistic. These 'other' bars are concentrated in private domestic demand, motivating the focus on consumption and investment in the remaining sections of this note.

Chart 5: Output gap decomposition

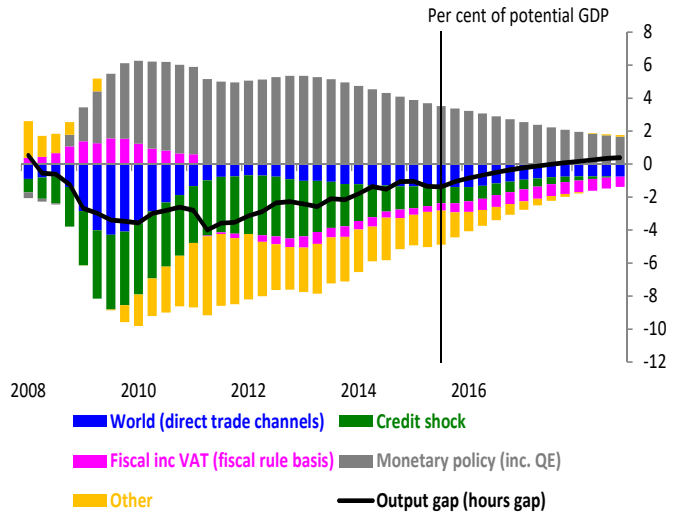
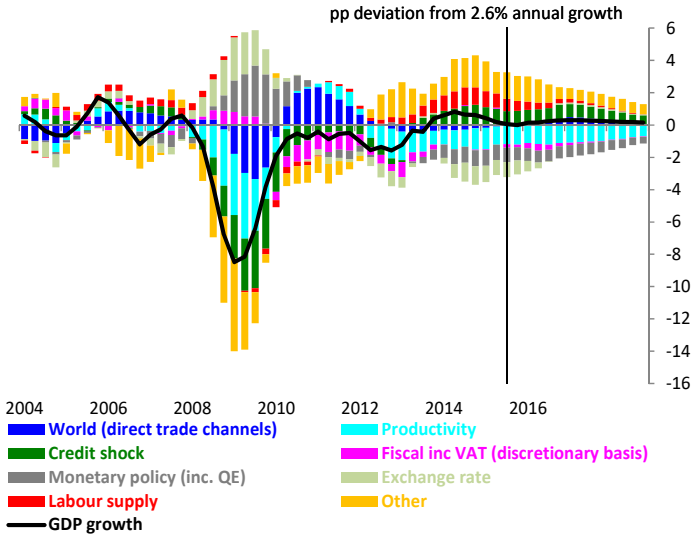


Chart 6: GDP growth decomposition



[6] The simple correlation between the 'other' bars and uncertainty effect from is 0.75.

[7] The 2013 Q2 Quarterly Bulletin article also finds that changes in uncertainty have no permanent impact on the level of GDP.

Section 2: The outlook for household consumption and saving

Summary: Consumption growth remains around its current rate for most of the forecast. The saving ratio ends the forecast materially lower than in the August *IR*. But saving out of disposable income looks somewhat less stretched. Movements in the saving ratio since the crisis can be broadly explained by changes in uncertainty, credit conditions and the desire to delever, but further material easing in these headwinds is unlikely over the forecast. Running down stocks of wealth, and strength in the housing market could explain some of the fall in the saving ratio in the forecast, but we judge that the risks to the saving ratio projection are probably to the upside.

Overview of the consumption forecast

Household consumption growth has strengthened gradually since 2011, and is now at around its pre-crisis average (**Chart 7**). The pickup in consumption growth since 2011 reflects a falling saving ratio, and more recently, a pickup in real income growth as wages have strengthened and inflation has fallen (**Chart 8**). The saving ratio was revised down over the recent past in the Blue Book and at around 5% in 2015 H1, has been at its lowest level since the early 1960s (**Chart 9**). The saving ratio does, however, look less stretched once the higher saving required to maintain the real value of nominal assets eroded by inflation – i.e. prior to the inflation targeting era – is stripped out.[8]

Chart 7: Annual consumption growth

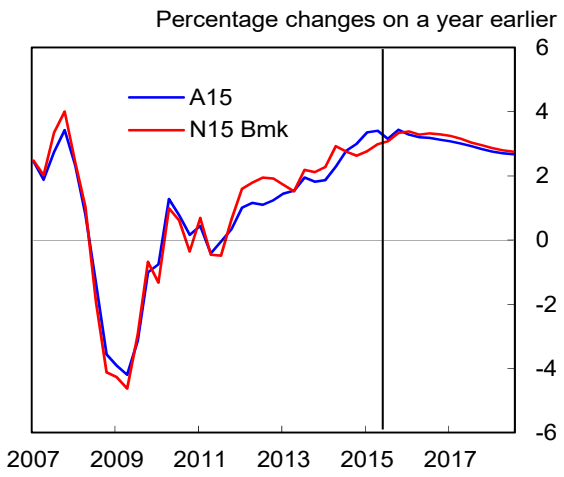


Chart 8: Contributions to real income growth

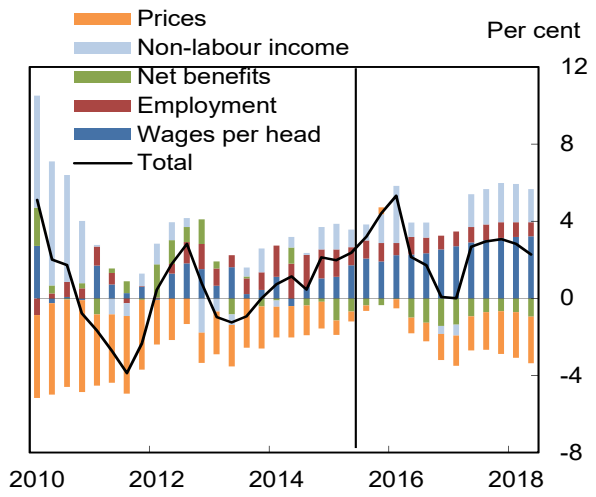


Chart 9: Saving ratios

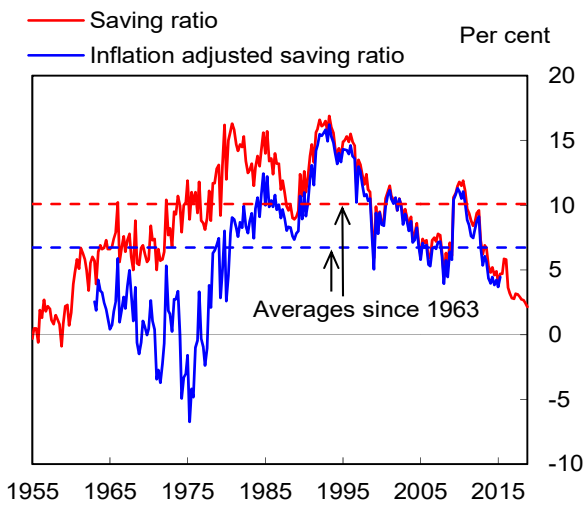
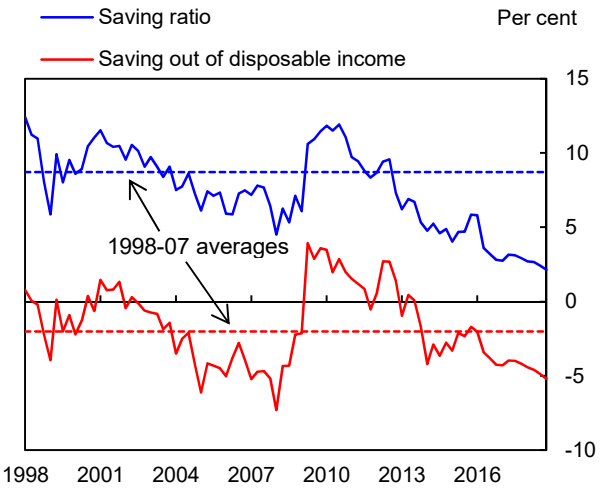


Chart 10: Measures of saving relative to disposable income



[8] It has not been possible to fully update this measure of the inflation adjusted saving ratio. Before 1987, the version shown takes the difference between the headline and inflation adjusted measures from the previous vintage and applies that to the latest saving ratio data.

Consumption growth remains around its current rate for most of the forecast, easing slightly towards the end (**Chart 7**). The saving ratio continues to fall at a similar pace to over the past five years or so and the recent pickup in income growth is sustained, albeit with some volatility around dividend forestalling (**Chart 8**). But the saving ratio ends the forecast materially lower than in the August *IR*, at just above 2% rather than 4%.

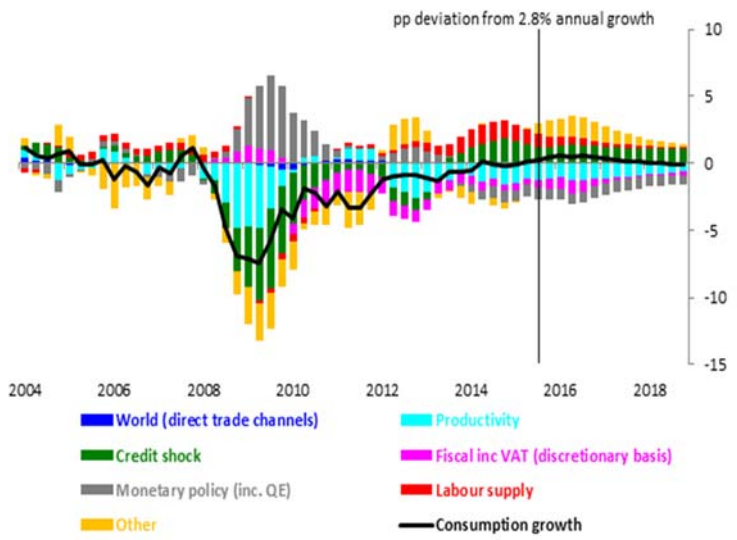
The saving ratio is the main measure of household saving used in the forecast and is one of the variables on which the MPC make a Key Judgement. The saving ratio measures spending relative to the widest possible measure of income, including both income received directly by households and income received on their behalf within pension funds. That may provide the best guide to the future value of savings, but it might not be the best measure for understanding saving decisions today, particularly as since Blue Book 2014, changes in the discounted value of future defined benefits pensions are measured as income, with a mechanical link to gilt yields. It may therefore be useful to also consider spending in relation to a measure of disposable income which takes out all forms of pension income except for the benefits being paid to today's pensioners.[9]

Using a measure of saving out of disposable income tells a slightly different story to the saving ratio on two counts (**Chart 10**). First, saving out of disposable income is relatively close to its pre-crisis average, whereas the saving ratio is at a low level in historical terms. Second, saving out of disposable income has not fallen over the past year, whereas the saving ratio has continued to decline. The fact that the gap between the two measures has narrowed since the financial crisis, and again over the past year, reflects the fact disposable income has grown faster than total income as the benefits paid out by pension funds have continued to increase whilst income received has stagnated, and particularly the form of income associated with changes in the value of future DB pension entitlements. Over the forecast, the change in spending relative to income is not sensitive to the measure used: the headline saving ratio and saving out of disposable income are both expected to fall at a relatively similar rate (**Chart 10**).

We plan to focus the discussion in the Key Issues meeting around the Key Judgment on the saving ratio. There are also a number of risks to consumption that relate to the outlook for incomes, but many of these stem from productivity and the labour market which have been discussed in depth in recent forecast rounds. The issue of consumption relative to income, which is more heavily affected by other economic factors affecting households' spending decisions, has been discussed less. The section below assesses a number of factors that may have affected saving recently and considers how they might evolve over the forecast.

Risks to income and spending relative to income are not independent of each other and the general equilibrium nature of the links should not be forgotten, e.g. the paradox of thrift. And while we publish the saving ratio as a Key Judgement, it is of course an endogenous variable. These general equilibrium relationships are captured by shock-based decompositions (**Chart 11**). They suggest that weak productivity growth and tight credit conditions dampened consumption during the crisis. More recently, looser credit conditions and a positive labour supply shock are the biggest factors that can explain why consumption growth has risen

Chart 11: Shock-based decomposition of consumption



[9] For more details on this measure of saving out of disposable income,

since 2012, although it is not possible to separate this into effects on saving and income. Over the forecast, the boost from credit conditions fades, as does the drag from weak productivity. The overall forecast for consumption is a little stronger than the other determinants of this decomposition can account for. But, as with GDP, these 'other' bars largely represent catch-up in the *level* of consumption from the effects of other shocks that emerged during the crisis.

Influences on household saving

Over the period since the financial crisis as a whole, we have a reasonably clear narrative that can help to explain movements in the household saving ratio (and other measures). We think there were three important factors that contributed to the rise in saving: an increase in uncertainty (**Chart 12**), a tightening in credit conditions (**Chart 13**), and concerns about balance sheet positions leading indebted households to make larger cuts in spending than other households (**Chart 14**). These three factors will all have been offset to some extent by the easing in monetary policy. Since the crisis, saving has fallen back as uncertainty has declined, credit spreads have fallen and balance sheet positions have improved.

Chart 12: Measures of household uncertainty

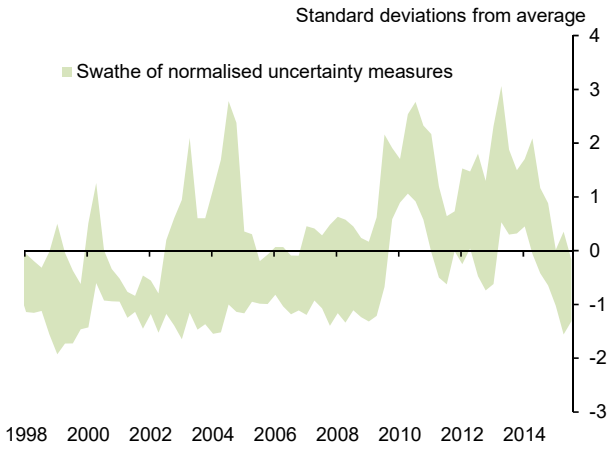


Chart 13: Household credit spread adjustment

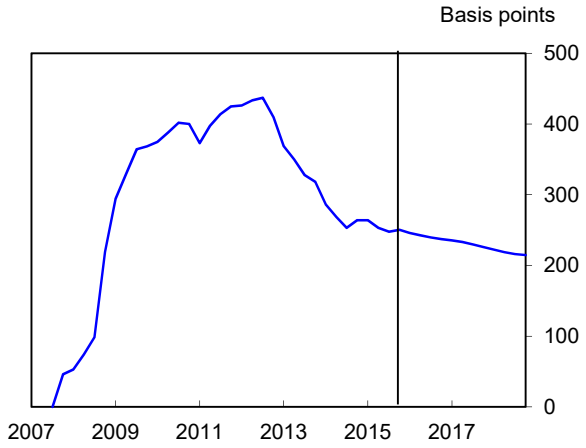
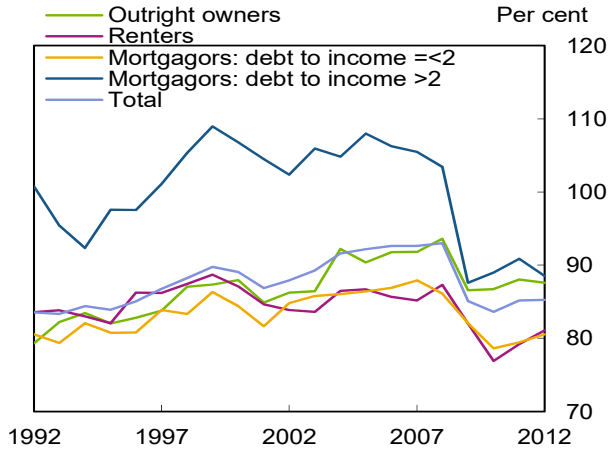


Chart 14: Non-housing consumption as a share of income



We have a bit more trouble singling out the factors that might best explain more recent movements in saving, however. Empirical work has tended to focus around the crisis period and there are no consumption micro data currently available beyond 2013. The rest of this section goes into more detail on what evidence we have on the factors that may have driven consumption and saving decisions more recently and it considers how they might evolve over the forecast. These are summarised in **Table 1**.

Table 1: Factors affecting household saving

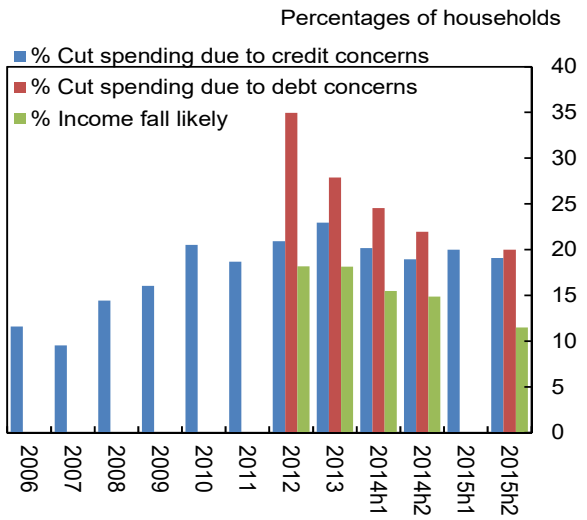
	Could explain falling saving ratio over	
	Recent past	**Forecast**
i) Further easing in headwinds of credit, uncertainty and balance sheet concerns	Yes	No
ii) Running down stocks of precautionary saving	Yes	Yes
iii) Increases in net financial wealth	Yes	Yes
iv) Improved income expectations	Yes	No
v) Recovery in the housing market	Yes	Yes

i) Further easing in the headwinds of credit, uncertainty and balance sheet concerns

There is evidence of some modest further easing in uncertainty, credit conditions and balance sheet concerns over the recent past, and that could have helped to push down saving. Uncertainty has fallen further to below average levels (**Chart 12**) and credit spreads have continued to decline (**Chart 13**).[10]

A further fall in uncertainty is consistent with the data from the latest NMG survey where fewer households reported they thought it was likely that their income would fall over the next year (**Chart 15**). There was not much change in the proportion of households who saw credit constraints as a factor holding back their spending, but fewer households reported that balance sheet concerns were weighing on spending, continuing the downward trend seen since 2012.

Chart 15: Evidence on headwinds to spending from the NMG Survey



Over the forecast, it seems unlikely that the headwinds of credit, uncertainty and balance sheet concerns will continue to ease at the same rate as over the past. Measures of uncertainty are generally below average levels (**Chart 12**), and to the extent that there may be some modest further easing in credit conditions (**Chart 13**), that is likely to be offset to some extent by a gradual tightening in monetary policy. There may be scope for balance sheet concerns to ease further, but the overall pace of any further easing in headwinds seems likely to be slower than before.

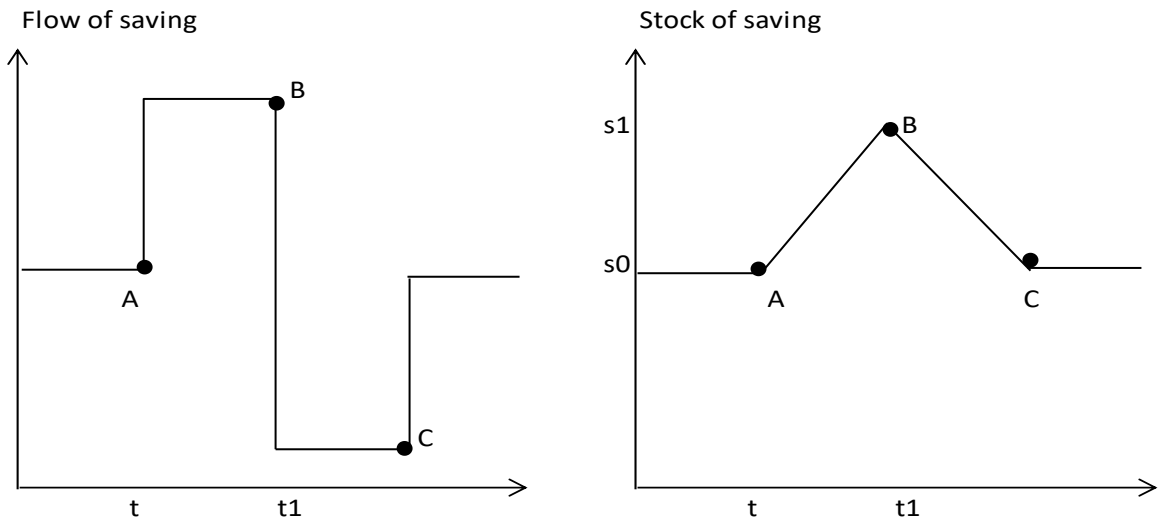
ii) Running down stocks of precautionary saving

Even if there had not been any further easing in headwinds over the past 18 months, it is possible that there may have still been some downward pressure on saving from households continuing to run down stocks of precautionary saving built up during the crisis. Models incorporating precautionary saving (e.g. Carroll (1997)) typically assume that households hold a stock of saving to guard against emergencies or falls in income. When faced with a rise in uncertainty about future income that implies an increase in a household's target stock of saving and a rise in the flow

for more on credit spreads in the November Benchmark forecast.

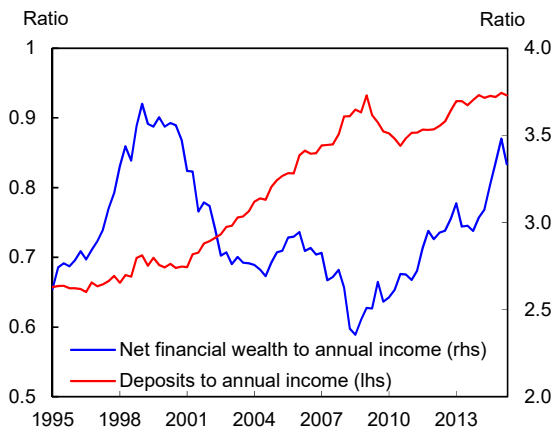
of saving for a period while the stock reaches that new target level (i.e. the household moves from point A and B on **Figure 1**). But, if that rise in uncertainty proves temporary, the target stock of precautionary saving returns to its original level, and the household needs to run down its stock of saving by reducing the flow of saving for a period to below its steady state rate (moving from B to C).[11]

Figure 1: Stylised response of saving to a temporary uncertainty shock



If desired changes in stock are large in relation to the flows of saving, it is possible that the adjustment to the desired stock could take some time. Households could therefore still be adjusting to the easing in headwinds over the whole period since the crisis as well as just the easing over the more recent period. It is hard to judge which has been most important recently, but it will matter more once the easing in headwinds comes to an end. Aggregate stocks of deposits have not fallen, and are at relatively high levels, which might suggest this channel has not been particularly important (**Chart 16**). But given how skewed wealth is towards the wealthiest households, it is possible that these aggregate data may not be particularly informative about precautionary buffers.

Chart 16: Net financial wealth and deposits to income



It is quite plausible that households could continue to run down their stocks of precautionary saving over the forecast with a sustained low flow of saving. However, that low flow of saving wouldn't necessarily continue forever; only until stocks of saving had been sufficiently run down back to their desired levels, at which point we might expect the flow of saving to rise.

iii) Increases in net financial wealth

An extension of the argument that households may want to run a low flow of saving to reduce their stock of precautionary savings is that they may also be willing to run a low flow of saving if they also want to run down assets held for non-precautionary reasons. That could happen if net financial wealth increased by more than expected or if wealth holdings are high relative to desired levels. Net financial wealth has increased by around 30% since the start of 2010 and by 15% since the end of 2013, and now looks historically high relative to income (**Chart 16**). That could

[11] This stylised example assumes the change in uncertainty is instantaneous and occurs at point A, it then reverses at B. In practice, changes tend to take place more gradually than that.

have put downward pressure on saving over the recent past. Some of this could reflect QE and so may also be thought of as part of the impact of monetary policy rather than a separate channel.

It is possible that higher wealth could have been a factor pushing down on saving over the recent past, and it could continue to do so over the forecast. We have a range of estimates for the impact of higher net wealth on consumption which offer different interpretations on the relative importance of this channel (**Chart 17**). The sectoral model used to derive the QE multipliers suggests that a 10% increase in the value of equity and securities and is estimated to raise consumption by almost 1.5%, but the impact is smaller and takes longer to come through in our consumption suite ECMs, particularly if housing is included in the model.

Chart 17: Impact of a 10% rise in net financial wealth in consumption suite

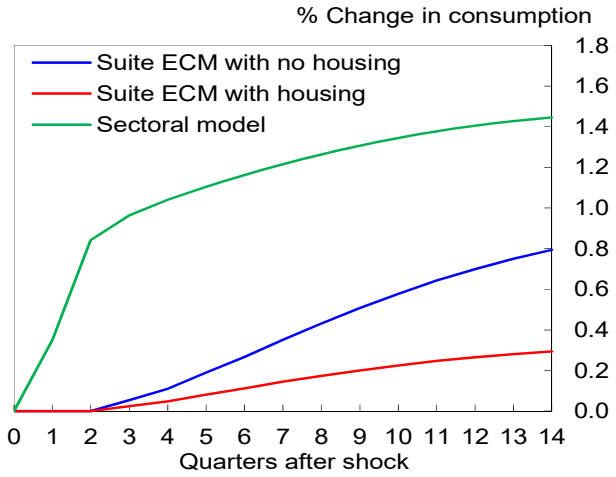
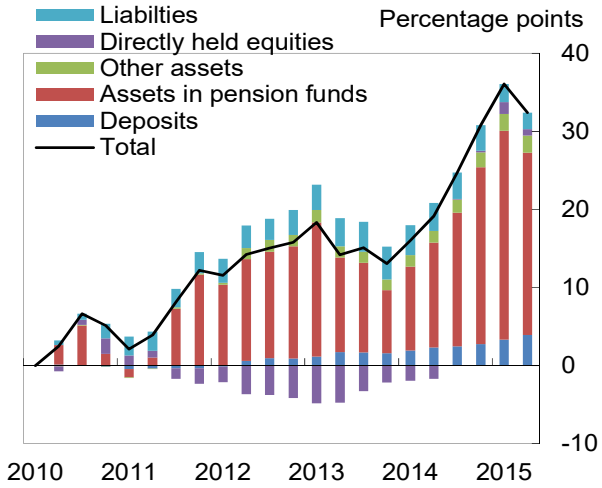


Chart 18: Contributions to rise in net financial wealth from 2010 Q1

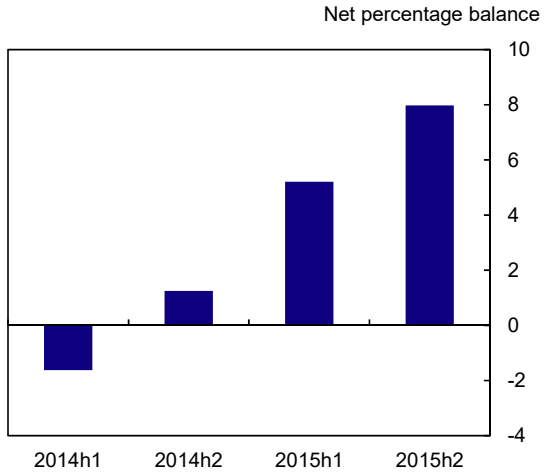


The extent to which higher wealth boosts consumption could also depend on which component of wealth accounts for the increase. The rise in net wealth since 2010 largely reflects increases in the value of assets held in pension funds (**Chart 18**), at least partly as a result of lower gilt yields increasing the value of securities held, and this may not be as likely to influence spending as much as, for example, increases in the value of equities held directly would, particularly where these assets are held in defined benefit funds.

iv) An improvement in income expectations

An improvement in income expectations as the economy has recovered may have encouraged households to bring forward spending ahead of income growth actually picking up. That could lead households to spend a greater share of their current income and so save less until the point at which their income reaches that new higher level. It is difficult to measure income expectations, but questions recently introduced into the NMG survey suggest that the net balance of households expecting their income to increase over the next year has risen over the past 18 months, which may have put some downward pressure on saving (**Chart 19**). However, part (but not all) of this reflects fewer households expecting income to fall (shown in **Chart 15**), so some care is needed not to double count this with lower uncertainty.

Chart 19: NMG income expectations



While a pickup in income expectations could have led households to increase spending relative to income recently, once income has risen to that higher level you might expect saving to rise back to its previous rate. Income growth

has risen materially over the past 18 months or so, but it is not expected to rise further over the forecast, and so that rise in saving back to more of a steady state rate could take place over the forecast horizon.

v) A recovery in the housing market

Since 2013, there has been some strengthening in both prices and activity in the housing market. That could have helped to support consumption and should have shown up in a lower saving ratio. In our standard forecast treatment developments in the housing market only have a relatively small impact on consumption. Although house prices and consumption are well correlated at the macro level, micro level evidence for the UK suggests that much of that correlation is due to common factors such as income expectations.[12] There is little evidence of a large distributional wealth effect where older households made better off by higher prices increase spending by more than younger households, who are made worse off, reduce it. But there is some evidence of a collateral effect where higher house prices create additional equity against which homeowners can borrow. The final way in which the housing market affects consumption is through activity: there is evidence that households are more likely to buy certain types of durable good when they move house.

Based on our standard forecast treatment, developments in the housing market since the start of 2014 may have boosted consumption by around 0.3% via a collateral effect and increased durable spending. If you did take the view that the housing market has bigger effects on consumption it could potentially account for more of the fall in saving, although recent data relating to these channels are consistent with the effect being small. Housing equity withdrawal has been very weak since the financial crisis, suggesting the collateral channel may not have been very powerful recently (**Chart 22**). There has been some pickup in the components of consumption that may be most closely related to housing market activity, but they have only added about 0.1pp to annual consumption growth since the start of 2014 (**Chart 23**), although wider durables spending has also risen.

Chart 22: Housing equity withdrawal

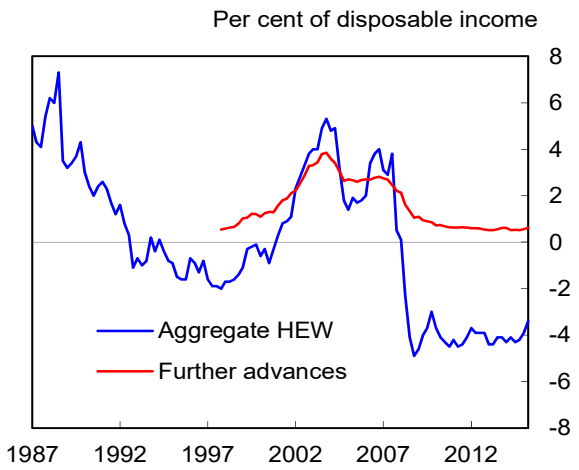
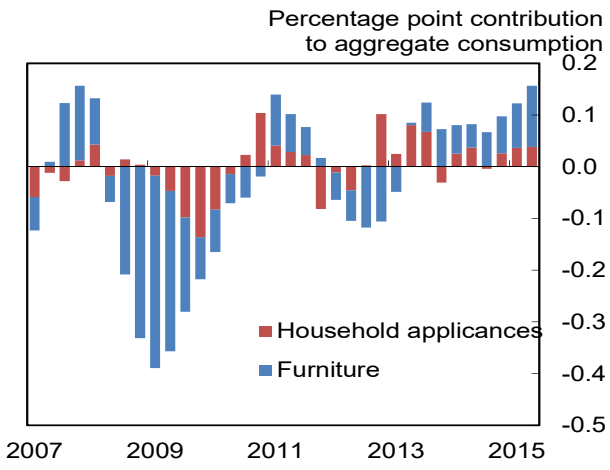


Chart 23: Contributions to aggregate consumption growth



A continued recovery in the housing market might also push down on saving over the forecast. Prices are expected to continue to grow by somewhere in the region of 6% and a further pickup in activity is also expected. Although that would only have a small impact in our standard treatment, it could be larger if you think there is more of a causal link between the housing market and spending and/or if equity withdrawal were to increase significantly.

[12] For example,

Summary of risks to consumption

There are reasons to think that the saving ratio could fall further and be very low for a period, for example because households continue to run down their stocks of saving/wealth. But, on balance, the risks to the saving ratio forecast are probably to be the upside, as at least some of the factors that may have pushed down on saving more recently may not persist.

To illustrate the impact of alternative views on consumption (and the saving ratio) on growth and inflation, we consider a downside risk to consumption where the saving ratio is broadly flat (**Charts 24-27**). Consumption growth slows materially, leaving the level of GDP 1.3% lower than in the Benchmark at the end of the forecast. The wider output gap reduces inflation to 2.0% at Year 2 and 2.1% at Year 3. For completeness, the charts below also show a symmetric upside consumption scenario, although based on the analysis above it is much difficult to motivate that variant, which would imply the saving ratio falling to zero by the end of the forecast.

Chart 24: Consumption

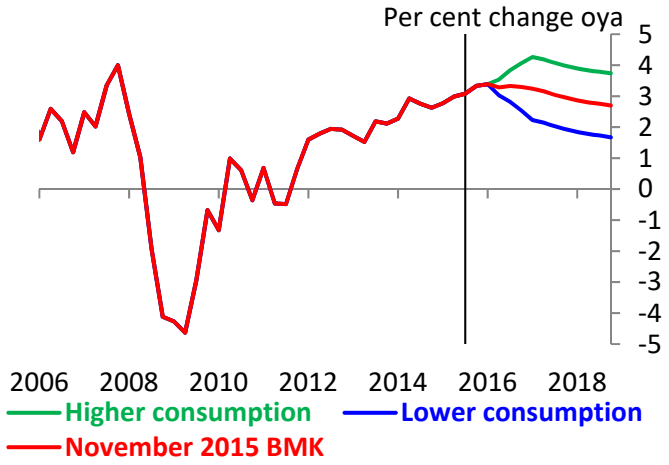


Chart 25: Saving ratio

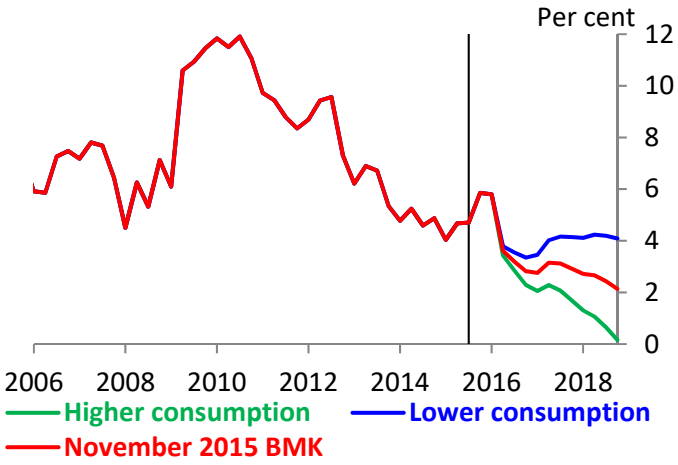


Chart 26: GDP growth

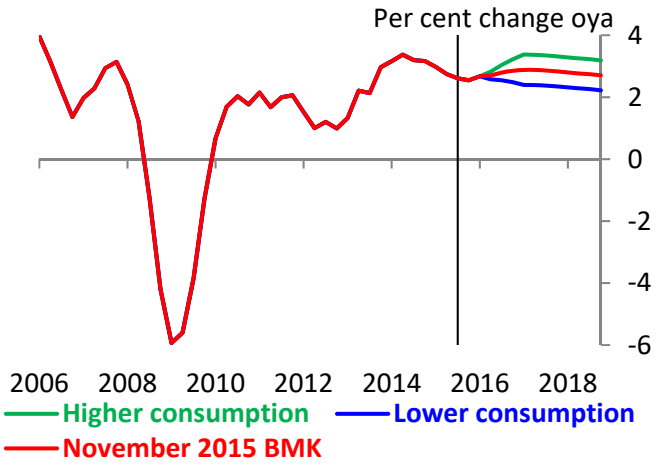
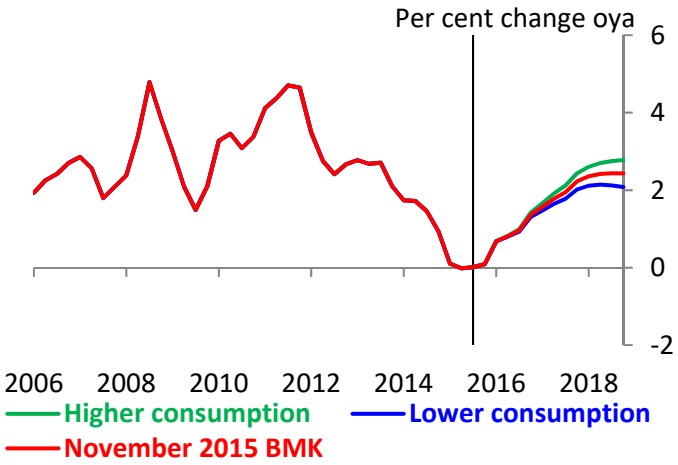


Chart 27: Inflation



Section 3: The outlook for housing investment

Summary: Annual growth in total housing investment picks up to over 6% in 2016 before falling back to around 4%. The error in this projection would need to be quite large in order to have a material impact on GDP.

Housing investment grew strongly between mid-2013 (around the time that the broader housing market picked up strongly) and 2014 Q1 (**Chart 28**). Since then growth has slowed markedly. Although both components of housing investment – dwellings investment and 'other' investment including transactions costs – contributed to the slowdown, dwellings investment fell by 3.5% on a year earlier in 2015 Q2. The slowdown in dwellings investment also looks sharper following the Blue Book. Supply constraints may be one factor that has prevented a sustained pickup in dwelling investment growth. For example, the percentage of respondents to the Home Builders Federation survey considering labour and material costs and availability a 'major constraint' increased sharply since mid-2013.

Chart 28: Housing investment

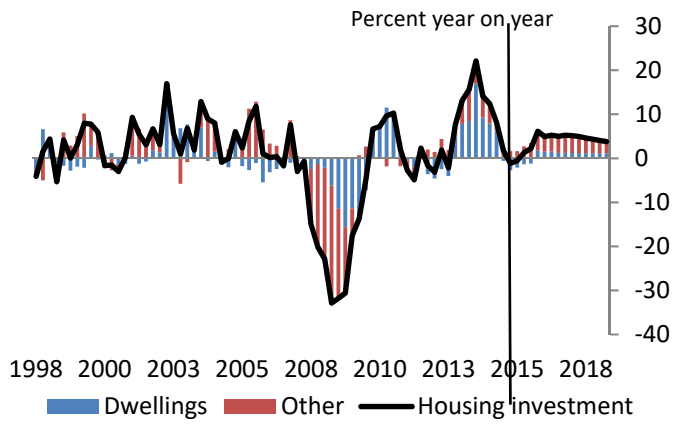
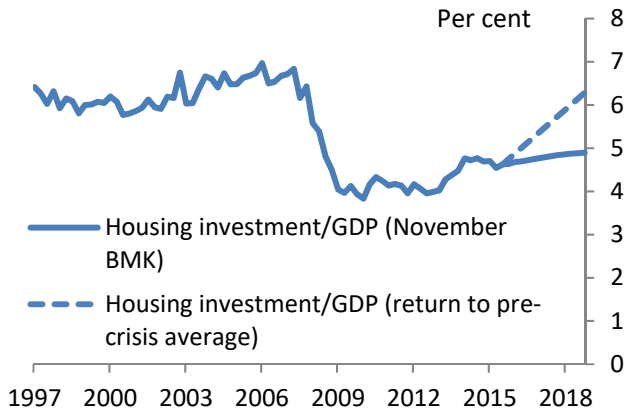


Chart 29 Housing investment-to-GDP ratio



Lead indicators of house building activity – private housing starts and construction new orders - suggest only limited growth in dwellings investment over the next few quarters. But intelligence from the Agents suggests that the outlook for private house building is fairly strong: for example, the availability of land and materials has improved. Dwellings investment grows at an average of 1.6% per year over the second half of the forecast. Combined with ongoing strength in 'other' investment – in line with the expected pickup in transactions – annual growth in total housing investment picks up to over 6% in 2016 before falling back to around 4%.

Since housing investment accounts for only a small proportion of GDP, changes to the forecast need to be quite large to have a significant effect on GDP. Risks to the upside include the possible impact of the government's house building targets. In particular, the government is committed to building 200,000 starter homes for first-time buyers by 2020. House builders are now able to commit to building a certain number of these starter homes in order to gain planning permission, rather than being required to build a certain number of affordable houses to rent. This is likely to make the 200,000 commitment easier to achieve. Annualised private housing starts in England were 112,000 in 2015 Q2, so assuming that the 200,000 extra houses were built evenly between now and mid-2020, this would equate to 36% more starts per year. But, because new builds make up only just over one-third of housing investment, this is unlikely to have a large impact on GDP. (As a guide to the size of upside risk to housing investment needed in order to generate a large impact on GDP, it would take a return of the share of housing investment to GDP to its pre-crisis average (**Chart 29**) to raise the growth rate of GDP by over 0.1pp per quarter.)

Downside risks are that labour constraints fail to ease or transactions are weaker than we have assumed. But halving housing investment growth over the forecast would only reduce GDP growth by 0.03pp per quarter.

Section 4: The outlook for business investment

Summary: Following the Blue Book, the real business investment-to-GDP ratio rises to a lower level than in the August *IR*, but at a similar pace. It is striking that that scale of projected increase in the investment-to-GDP ratio has only previously been seen in the UK in the late 1980s boom and in the late 1990s recovery. Recent trends in business investment can be explained by models that put weight on the low real cost of capital, low macroeconomic uncertainty and the low level of corporate gearing. Those models point to some upside risks around the near-term investment growth forecast but clear downside risks in the medium term – and hence downside risks to the investment-to GDP ratio by the end of the forecast. A shock-based decomposition may also point to downside risks to investment growth in the medium term. Overall, we judge that there are downside risks to the Benchmark investment profile in the medium term, but we also set out a scenario in which there is a chance that 'animal spirits' lead to a stronger recovery in investment.

Recent developments and investment metrics

Business investment has grown at an annual rate of around 5% over the past two years, following downward revisions in the Blue Book (**Chart 30**). The level of business investment was also revised lower in earlier periods, although this largely reflects a classification change: investment by Network Rail and TfL has been switched from business to government investment. The service sector still accounts for most of the growth in business investment since 2013, whereas the energy sector has made a negative contribution. In fact, extraction investment (which is included in the energy sector) was 24% lower in 2015 Q2 than a year ago, and was pulling down the annual growth rate of business investment by 1.9pp.

Survey data on suggest that investment intentions are a little weaker than over 2013 and 2014 (**Chart 31**). Both the surveys and the official data suggest that investment growth did not pick up until the second half of 2013, a little later than the recovery in GDP growth. More recently, all the major surveys of investment intentions have fallen from their 2014 peaks, but almost all remain above their historic averages[13] (**Chart 31**). Our latest projection of annual growth in 2015 Q3 is 4.6%, consistent with the survey steer.

Chart 30: Real business investment

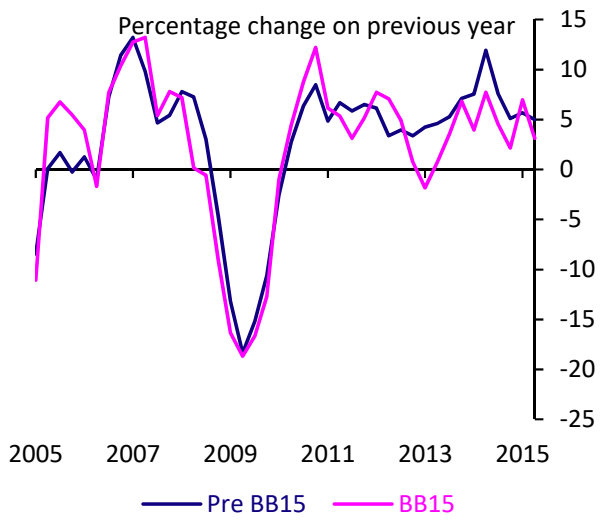
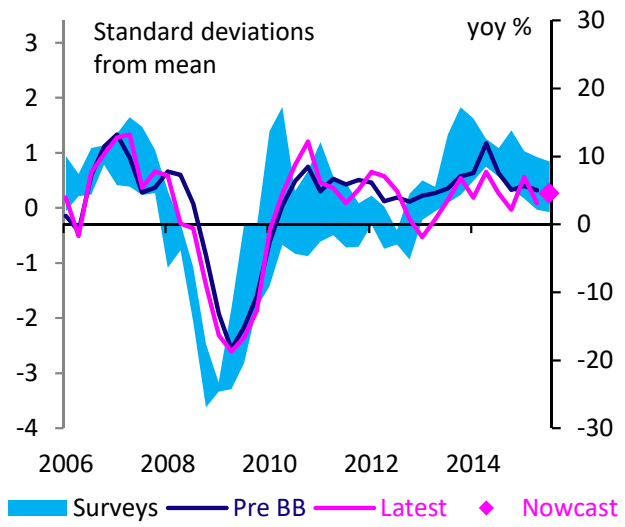


Chart 31: Investment intentions



Blue Book revisions to the level of business investment have lowered its share of GDP significantly in the latest data (**Charts 32 and 33**). In the November Benchmark forecast, the nominal business investment to GDP ratio is projected to increase to its highest level since 2002, and the real ratio to its highest level since the series began. Some of the long run upward trend in the real ratio can be attributed to the continuing downward trend in the relative price of

[13] This includes surveys of investment intentions from the BCC, CBI, Agents and a survey of manufacturing orders for investment goods by Markit/CIPS.

investment goods – discussed further later on in the context of the real cost of capital – but this is unlikely to explain all of the pickup in the ratio over the forecast[14]. And, looked at another way, it is striking that the projected increase in the real investment to GDP ratio is of the same order of magnitude as seen in the late 1980s boom and in the late 1990s recovery (around the time of the marked appreciation in sterling and the lead-up to the dot-com boom.)

Chart 32: Real business investment/GDP

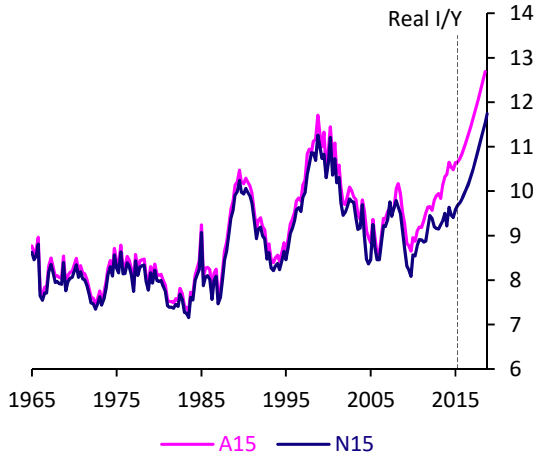
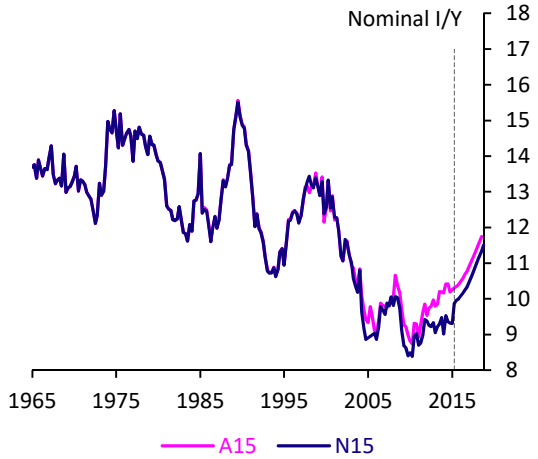


Chart 33: Nominal business investment/GDP



Corporate profits and cash holdings are also potentially important indicators for business investment, especially in light of the accumulation of holdings of financial assets by UK firms in recent years. However, recent data do not give a strong signal for investment going forward; ratios of cash and profits to business investment have remained steady over the past few years, while the growth of cash and profits have weakened recently. Furthermore, recent suggests that there may be good reasons why corporate cash holding are structurally rather than cyclically high, including a preference to hold cash instead of inventories as a buffer to deal with shocks.

Drivers of investment

Our investment suite models are based on a relatively small number of exogenous variables. This section sets out how they are constructed and what they suggest about the outlook for investment individually, while the following section discusses the models we put weight on based on these variables.[15]

The factors are (in order of empirical importance – see also **Charts 34-35**):

- **Real cost of capital (RCC).** This is constructed from the weighted average cost of capital (WACC), relative investment prices, depreciation and a tax adjustment factor[16]. The role of the RCC is particularly important for investment growth, both from a theoretical and empirical perspective. **Chart 35** shows that the variation in the WACC is the main driver of the RCC, although the downward trend in relative prices has also been an important longer term factor. The majority of the WACC is accounted for by the cost of equity, as this has a high weight reflecting the relative stocks of the different types of external finance. Currently, the WACC is

[14] Although GDP does not add up prior to the 2012 reference year due to chain linking, that discrepancy does not distort the real ratio significantly.

[15] For more on the foundations of investment modelling, see this QB article. The list of variables covered here is not exhaustive; other factors, like for example (expected) rate of return (RRR) as well as the large pension deficits of UK PNFCs can also affect investment decisions. However, RRR does not appear to be as important as RCC when estimating investment models (and the implications for investment forecasts is largely similar), and the evidence on the effects of pension deficits on investment in the UK is mixed so these factors are not highlighted in the analysis going forward. One additional factor, the capital stock, is considered for some of the analysis – see more details in the next section.

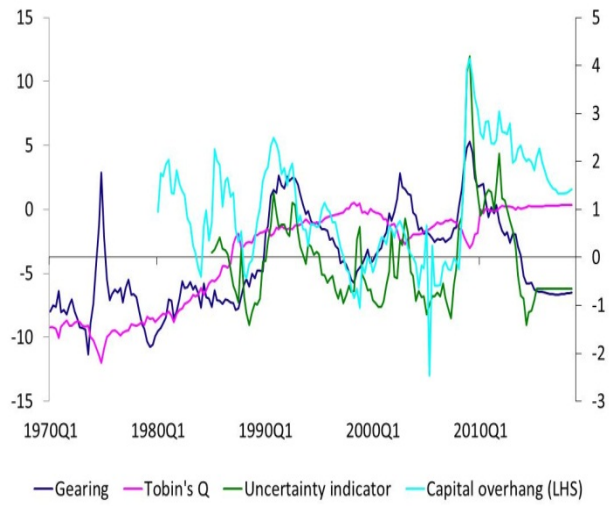
[16] The RCC gives the implicit rental cost of one unit of capital per unit of time and consists of: (i) the relative price of the capital stock, p; (ii) the physical and economic depreciation of the capital stock δ; (iii) taxes less investment allowances; and (iv) the opportunity cost of capital, approximated by the WACC. The weights for the different components of the WACC (equity, bonds and bank finance) are measured at market value of the stocks. Stocks, rather than flows, are relevant for weighing the assets, as they are more stable and reflect the true riskiness of a firm. For the real rates and the inflation rate, internal forward rates are used. For the cost of loans, projection for the corporate CSA is used. For the cost of bonds, forward rates on corporate bonds are used. For the cost of equity, we assume that the equity risk premium will converge to its long-term average over the forecast horizon.

expected to resume its decline after a small increase in 2015 Q3, boosting investment. However, there is significant uncertainty around the path of the WACC, particularly depending on future dynamics of the equity risk premium (which increases the cost of equity through a dividend discount model relationship).

- **Capital overhang**. This is not an exogenous variable for investment, but is included in some investment models. It is driven by difference between actual capital stock and a long-term relationship between the equilibrium capital stock, output and the RCC. Although a large capital overhang dragged on investment during the financial crisis, this overhang, and its effect on investment, has become smaller recently.
- **Gearing**, defined as the difference between the ratio of the net debt to market value of UK PNFCs and its equilibrium value. The level of gearing is currently low compared to its equilibrium value (driven by past long-term trends in gearing) in our investment models (see next section), hence leaving room for debt-financed investment to pick up. Gearing is also assumed to remain low throughout the forecast period.
- **Macroeconomic uncertainty**, measured as the first principal component of eight measures based on financial market volatility, economists' forecasts, consumer and business surveys, and media searches. Uncertainty showed signs of increasing following the recent period of market turbulence[17] (in particular, the Deloitte CFO Survey uncertainty indicator not included in this set increased significantly in 2015 Q3). But the principal component remains at a relatively low level and part of the pickup has reversed at the beginning of Q4, as financial market volatility has gone back down. This indicator is assumed to remain at its current level during the forecast horizon, supporting investment.
- **Tobin's Q**, measured as the market value of UK PNFC assets divided by their capital stock (book value). This has drifted higher in the past and has not proved useful for modelling investment in recent years. In practice, the effects of equity prices appear to be better captured via the cost of equity capital. And this is also the approach taken in the sectoral model that underpins the monetary policy multipliers in the MPC's forecast.

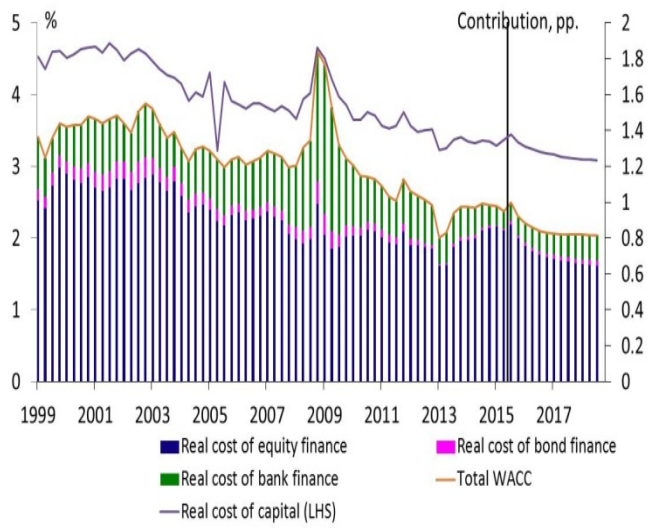
Overall, these drivers have tended to be supportive of investment recently and most are expected to continue to have a positive effect over the forecast period.

Chart 34: Investment factors



Deviations from long-term average in number of standard deviations (RHS) and percent gap for capital overhang (LHS).

Chart 35: Decomposition of real cost of capital



[17] As discussed at the Benchmark meeting, an uncertainty judgement has been imposed on the forecast – pushing down GDP growth – using a VAR model based on the same uncertainty indicator.

Models of business investment

Vector error-correction models

The following analysis focuses on different specifications of the investment suite's vector error-correction models (VECMs). Over the full sample period (1988 Q1 to 2015 Q2)[18], four drivers are relevant: the RCC, capital overhang, gearing and uncertainty. To examine the robustness of the results, these variables are used in three different VECM specifications.[19] The results of the analysis from the three models point to a relatively strong near-term pick-up in annual investment growth[20], but the pace then decelerates to around 5% towards the end of the forecast period, lower than in the Benchmark forecast (**Charts 36-37**). Given the nature of the VECMs, the forecasts depend on the dynamics of the models towards a long-term "equilibrium" value for the level of investment. Currently, the level of investment is below the equilibrium for all three models, and the forecast path converges slowly towards this level.

Chart 36: Business investment growth

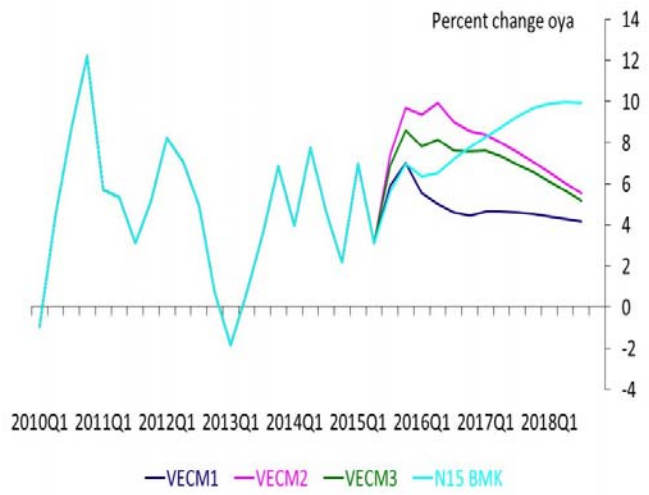
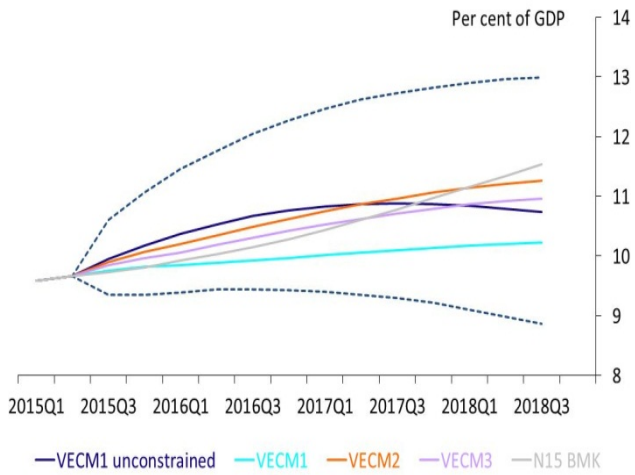
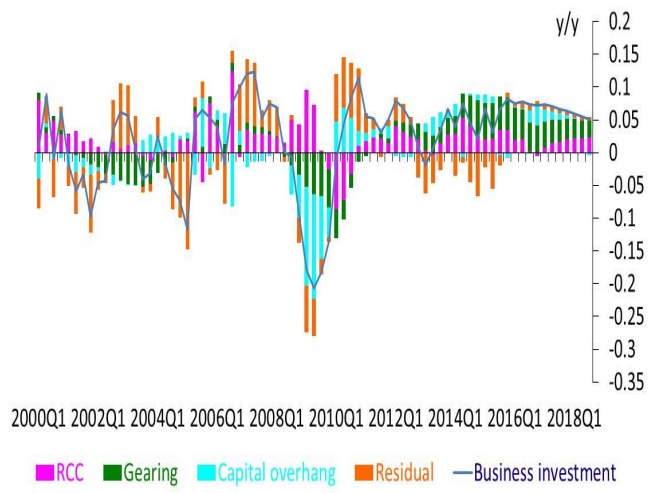


Chart 37: Investment-to-GDP and forecast uncertainty



The dotted lines indicate the 95% confidence intervals for the unconstrained VECM1.

Chart 38: Decomposition of VECM3



The investment growth path in the VECMs can be decomposed into contributions from the different variables. This is shown for VECM3 in **Chart 38**, but the results of the other two models are broadly consistent. The decompositions imply significant roles for the low level of macroeconomic uncertainty, real cost of capital and gearing. A capital overhang was an important drag on investment during the heights of the financial crisis, but less so recently. The VECM framework can also highlight the uncertainties in forecasting business investment. **Chart 37** plots the error bands of an unconstrained (i.e. without including forecasts of the other variables) forecast of VECM1. All other forecasts, including Benchmark, fit within these error bands.

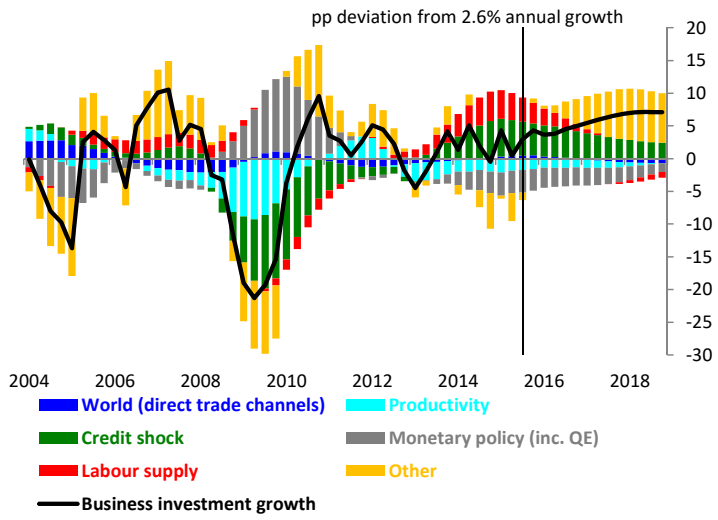
[18] The forecasts are sensitive to the sample period; if one excludes the post-financial crisis period and only estimates the models up to 2007 Q4 and then uses these estimates for the forecast period, the range of forecasts would look larger than in Chart 13.

[19] The variables used in the models are, in addition to business investment, RCC and uncertainty (VECM1), RCC and gearing (VECM2) and RCC, gearing and capital overhang (VECM3). There is one lag and one cointegrating equation in every model, apart from VECM2, which has two cointegrating equations.

[20] The near-term forecast is also consistent with recent MFAD work on equity analysts' expectations on capital expenditures of UK public firms.

Shock-based decomposition

Chart 39: Shock-based decomposition of investment



As with GDP and consumption, we can attempt to decompose business investment into its exogenous drivers. Given its volatility, we would not expect a DSGE model to account for all its movements. That said, we can explain investment growth fairly well since the crisis (**Chart 39**). Weak productivity dragged on investment during the crisis by depressing the rate of return on capital, with tight credit conditions also dampening investment. Monetary policy supported investment significantly during the crisis, but that effect has faded and is now dragging on growth. We expect policy to continue dragging on growth over the forecast. The two key spurs to investment since 2014 have been looser credit conditions and stronger labour supply. And, although credit conditions boost growth, we need to appeal to other factors to account for the strength of the forecast, as shown by the yellow 'other' bars. That may imply a downside risk to the central projection.

Time series diagnostics and models

Simple calculations suggest that business investment is much more volatile than other demand components, and the most recent data are still slightly below the long-term average (**Chart 40**). This implies that there could still be room for upside surprises in investment growth in a purely statistical sense at least.

Chart 40: Time series distributions for annual growth rates

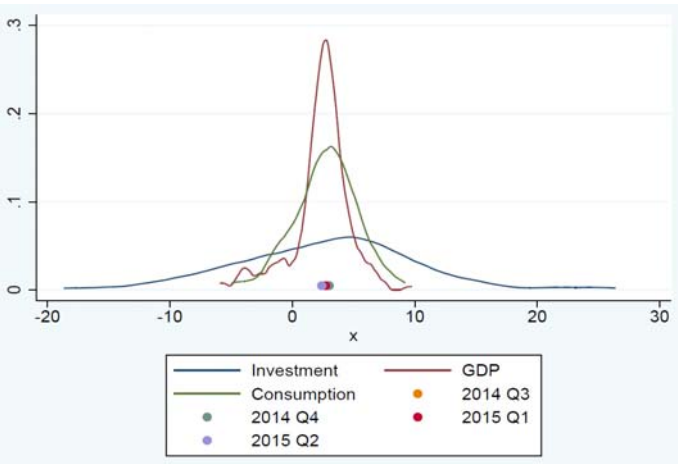
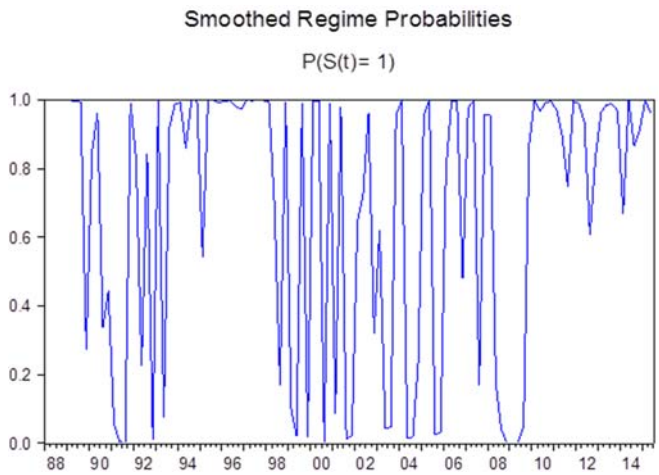


Chart 41: Markov-switching model for business investment



In addition, we have estimated a Markov-switching model (with two autoregressive terms).[21] The results suggest that there are two statistically different states of the world. Currently, investment is in a 'high' growth state (**Chart 41**), which tends to be relatively persistent (whereas the model stays in the low growth state for only short periods of time). The results are also robust to including the forecast period in the model, possibly suggesting that the forecast is not inconsistent with the pattern of growth in previous episodes.

[21] The model allows the constant to vary based on which state of the world (high versus low growth) prevails in each period. The probability of being in either state is dependent on the previous state and, specifically for this model, the lagged CBI investment intentions series.

Summary of risks to investment

Overall, we cannot easily explain the strength of the forecast with either the VECM models or with a shock-based decomposition. This is despite the fact that nearly all of the factors driving investment are at very favourable levels. This might indicate that our models underplay the role of these factors, but it could also point to downside risks to the central projection, especially towards the end of the forecast horizon. In addition, a further escalation of global risks could lead to different paths for the cost of capital and uncertainty, dampening investment further. To motivate a weaker business investment scenario, we remove half the increase in the yellow 'other' bars from **Chart 39** over the forecast (**Charts 42-45**). That takes annual business investment growth to around 5-6% over the forecast period and so is roughly in line with the prediction from the suite equations. That scenario results in GDP growth being a little weaker over the forecast, averaging around 2.6%, as opposed to 2 ¾% in the November Benchmark, with the level of GDP 0.8% lower at Year 3. Inflation is a little weaker, reaching 2.1% at Year 2 and 2.3% at Year 3.

The best narrative for a symmetric upside risk is a further boost to 'animal spirits', similar to what happened in the late-1980s and late-1990s, or a view that the recent downward revisions in the latest Blue Book facilitate the possibility of higher catch-up growth over the forecast. Specifically we show a stronger investment scenario where the ratio of investment to GDP returns to the 12.7% level at Year 3 as in the August *IR*. In that scenario, business investment growth averages around 10% over the forecast period. Stronger demand is associated with inflation reaching 2.3% at Year 2 and 2.6% at Year 3.

Chart 42: Business investment

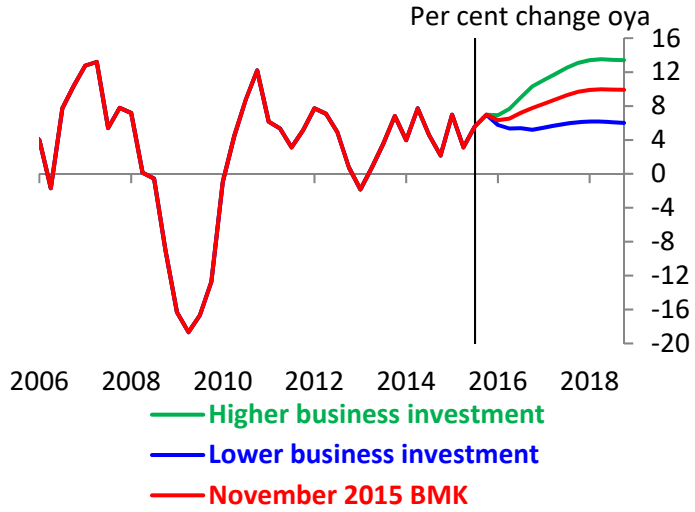


Chart 43: Business investment to GDP ratio

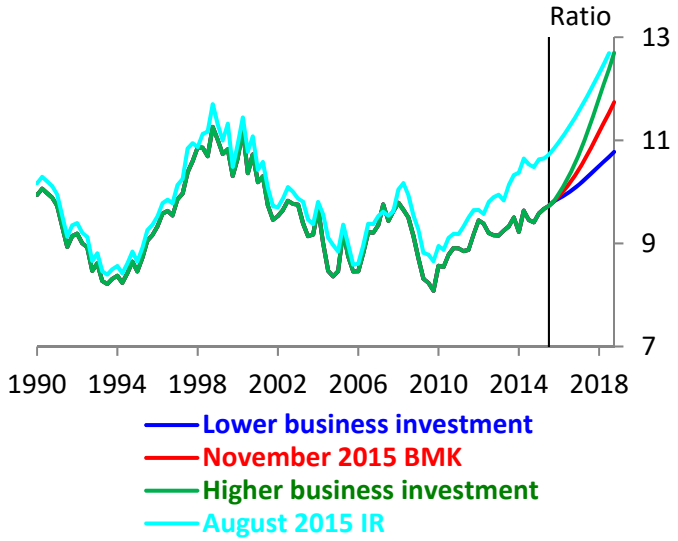


Chart 44: GDP growth

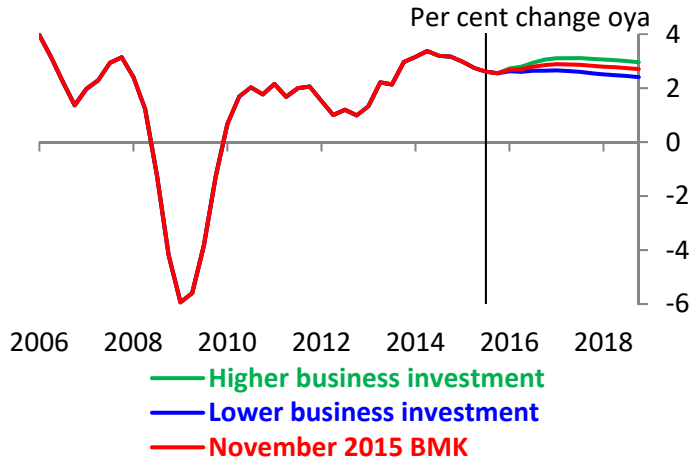
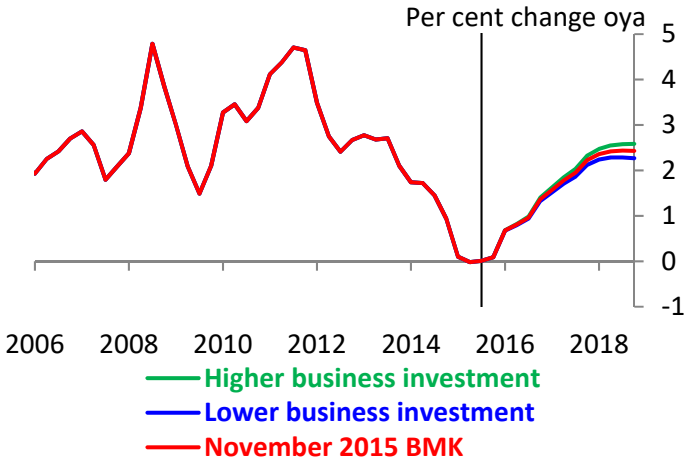



Chart 45: Inflation