



BANK OF ENGLAND

Speech

The economic outlook

Speech given by

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I would like to thank Clare Macallan, Kate Reinold, James Talbot, Alex Tuckett and Matthew Waldron for their help in preparing this speech. The views expressed are my own and do not necessarily reflect those of the other members of the Monetary Policy Committee.

I would like to thank the Institute of Directors for hosting this lunch and also to thank John Young - the BoE's excellent regional agent for the North-West – for his help in arranging this and other meetings. The regional agents are a highly valuable source of information for the Bank of England, and I would like to thank them and the many companies around the UK who help keep us up to date with the latest developments in the economy.

I aim to discuss three main things today. First, the MPC's recent monetary easing in August, and the policy trade-offs underlying that decision; second, my own views on some key issues in the economic outlook; third, the MPC's policy options if the economy turns out significantly stronger or weaker than the Committee's central forecast.

Following the June 23rd referendum vote to leave the EU, the MPC in early August faced a significant trade-off between the prospect of weaker growth and higher inflation.

The exact nature of the UK's long-term arrangements with the EU and other countries remains uncertain at this stage. A few studies even suggest net economic benefits – especially if EU exit is accompanied by greater economic flexibility or a rapid expansion of trade from new agreements with other economies. But most analysis, including the IMF and OECD, judge that EU exit is likely to have a modest adverse effect on UK potential growth over time (the next 15 years or so) - perhaps larger effects on some individual sectors – with considerable uncertainty over the scale and timing of these effects.

Possible factors at work include reduced trade openness, reduced competition in some sectors, lower net inward migration, reduced inward investment, and the need to reallocate resources between different sectors. The same factors, along with the UK's persistent current account deficit, probably also imply a lower equilibrium level for sterling's real exchange rate. Indeed, sterling's trade-weighted exchange rate is roughly 15% lower than a year ago, with about three-quarters of that move occurring after the referendum¹. Of course, estimates of the long-run effects of EU exit may well change markedly as the details become clearer.

The long-term often affects the near-term. At the August meeting, the MPC in their central forecast judged that this weaker long-run outlook for incomes and profits – plus elevated uncertainties over the UK's trade relations after EU exit - is likely to weigh quite heavily on near-term growth, especially business and housing investment, so that the economy slows markedly in the next few quarters while probably avoiding a recession. The MPC expected this slowdown to lift the jobless rate from just below 5% now to around 5½% late next year, somewhat above the 5% level that the Committee believe is the equilibrium jobless rate, implying renewed spare capacity in the economy.

¹ The TWI averaged 91.2 in October 2015, and was 87.3 on 23 June 2016.

At the same time, the MPC's central forecast was that sterling's recent depreciation is likely to produce substantial upward pressure on inflation over the next three years or so, reflecting the direct effect on prices of imported items and indirect effects on UK-made items whose prices are affected by external costs. With this boost, the MPC's central forecast, assuming interest rates followed the market-implied path and given the package of asset purchases, was for inflation to rise to the 2% target during 2017 and close to 2½% in 2018 and 2019. This currency effect is likely to fade further out. But the inflation path over the next 2-3 years probably will be lifted by the adjustment of the exchange rate to the process of EU exit, and thereby overstate the UK's medium-term inflation prospects once that initial adjustment is past.

This is really the first time that the MPC has clearly faced the prospect of an inflation overshoot amidst continued slack at the 2-3 year horizon². There have been several episodes in which the MPC has tolerated a major deviation of inflation from target in the next year or so because they expected inflation to be back to target 2-3 years ahead. But (on the "market rates" path) the MPC has not forecast such a large inflation overshoot versus the target 2 years ahead since 1999³. The Committee has never previously forecast such a large inflation overshoot three years ahead.⁴

At first glance, the decision to loosen policy at the August meeting might seem surprising given this inflation forecast and the MPC's 2% inflation target.

But it has long been accepted that the MPC should not aim for 2% inflation in every single month. And, as well as encouraging the MPC to look through temporary shocks to inflation - which typically might be expected to fade well before the MPC's usual 2-3 year forecast horizon - the MPC's remit also appropriately recognises that in "exceptional circumstances" the economy may be affected by a large and persistent shock that requires the MPC to trade-off the speed with which it aims to bring inflation back to target and the variability of output.⁵

The MPC judged that the immediate aftermath of the vote to leave the EU falls into this category. The easing package sought to balance the desire to limit the prospective inflation overshoot 2-3 years ahead against the aims of supporting the economy against possible near-term weakness and avoiding a renewed

² Of course, there have been occasions since 1997 when one might argue that, with the information available at the time, the MPC *should* have forecast that inflation would markedly exceed the target 2-3 years ahead, and hence should have had to confront the need to accept a persistent trade-off between hitting the inflation target and stabilising output. But, in practice, the MPC in those earlier episodes judged that inflation would be close to the target 2-3 years ahead and hence that any trade-off between inflation and output would fade before then.

³ Of course, there have been occasions since 1997 when one might argue that, with the information available at the time, the MPC *should* have forecast that inflation would markedly exceed the target 2-3 years ahead, and hence should have had to confront the need to accept a persistent trade-off between hitting the inflation target and stabilising output. But, in practice, the MPC in those earlier episodes judged that inflation would be close to the target 2-3 years ahead and hence that any trade-off between inflation and output would fade before then.

⁴ The MPC did not publish forecasts for inflation three years ahead until August 2004.

⁵ The remit also acknowledges that "*Circumstances may also arise in which attempts to keep inflation at the inflation target could exacerbate the development of imbalances that the Financial Policy Committee may judge to represent a potential risk to financial stability. The Financial Policy Committee's macroprudential tools are the first line of defence against such risks, but in these circumstances the Monetary Policy Committee may wish to allow inflation to deviate from the target temporarily, consistent with its need to have regard to the policy actions of the Financial Policy Committee.*" These considerations have not played a dominant role in monetary policy decisions so far.

inflation undershoot further ahead. With that easing, the MPC judged that inflation is likely to return to the 2% target over time, just off stage after the 3-year forecast horizon, as the currency effect fades.

If, at the August meeting, the MPC had sought to anchor their inflation forecast at the 2% target 2-3 years ahead - a period when sterling's depreciation (largely triggered by the EU referendum vote) probably will still give a substantial lift to inflation - they would probably not have loosened policy, hence producing a forecast of even higher unemployment over the next 2-3 years plus the prospect of a renewed inflation undershoot further out. Conversely, had the MPC sought to boost the economy enough to return the forecast jobless rate to 5% 2-3 years ahead, they would have eased even more than they did and thereby probably have produced a larger inflation overshoot 2-3 years ahead, with risks that inflation expectations might be destabilised. The MPC took the view that either of these alternative trade-offs would be undesirable.

The need to consider such trade-offs is fully consistent with the MPC's inflation targeting remit and does not in any way represent a softening of the MPC's commitment to keep inflation at the 2% target over time. If the UK faces renewed bouts of heightened uncertainty and currency weakness, the MPC also may face an even greater trade-off between output variability and the speed with which it aims to bring inflation back to the target. I stress that the MPC are not doing "Woodfordian" guidance, whereby the central bank commits to allow inflation to overshoot the 2% target on a persistent basis as a means of providing more stimulus by lowering ex ante real interest rates.⁶ And it is reassuring to note that household long-term inflation expectations have remained relatively low so far.

I was not a member of the MPC at the August meeting but, without necessarily agreeing with every aspect of the MPC's forecast, I largely share their view that the economy is likely to see somewhat lower growth and higher inflation in the next year or two. I also agree with the decision to loosen monetary policy in August to support the economy against near-term downside risks and to reduce risks of a renewed inflation undershoot over time.

There are a number of risks around the outlook, and I wish to discuss two that carry considerable weight for me: the labour market and the near-term growth outlook.

First, I expect that the labour market will behave rather differently to the MPC's central forecast, with more subdued growth in pay and unit labour costs. The MPC's central forecast assumes that the equilibrium or natural jobless rate - the rate consistent with keeping inflation on target over time, once import price effects fade - is about 5%. With the jobless rate now at 4.9%, this view implies that labour market slack is largely exhausted. Hence, even with higher unemployment, the MPC expects average earnings growth to pick up from below 2½% now to 3% in 2017 and 3½% in 2018.

⁶ See Woodford 2012.

I suspect that the economy's equilibrium jobless rate probably has fallen below 5%. The relation between the jobless rate and pay growth has shifted markedly over the last few decades, with each economic cycle seeing lower wage growth for a given jobless rate: in other words, the wage Phillips curve has shifted steadily downwards.⁷ The same seems to have happened again in recent years. For example, over 2001-07, the jobless rate averaged 5.1% and average earnings ex bonuses averaged 4.0% YoY, with unit labour cost growth at 2.7% YoY (and CPI inflation very close to 2.0%). The jobless rate now has been around 5% for several quarters, but pay growth is just 2.3% (2.1% ex bonuses). Pay growth has repeatedly undershot consensus and BoE forecasts in recent years, despite lower-than-expected unemployment.

It is a similar pattern in terms of real wage growth: compared to the median for expected inflation in the year ahead, real wage growth is down from 1.6% YoY on average in 2001-07 to 0.2-0.3% in 2015-16.

As a result, unit labour cost growth has remained below the pace that is likely to be consistent with the inflation target over time. The wage Phillips curve in recent years seems to be flatter than in the 1980s, but the most striking change since then is the series of downward shifts in this relation.

The recent shift in the UK's wage Phillips curve probably reflects various factors, including lower inflation expectations, the greater availability of migrant workers to meet specific labour shortages⁸, the broadening in educational attainment over recent decades, and rising participation rates among older workers. Changes to the tax and benefit system, notably the expansion of tax credits coupled with the low level and tighter availability of jobless benefits, have increased the incentives and pressure for people to be in work even if low-paid, rather than be unemployed or out of the workforce. The UK spends relatively little on jobless benefits compared to the level of unemployment, but has a very low tax wedge on people in low-paid work (especially people with children), and indeed the tax wedge is negative for people (with children) that earn less than 62% of average earnings.

In addition, the expansion of more flexible work patterns, such as self-employment and temporary work, may have reduced job security. There probably also is continued slack in terms of under-employment, evident for example in people working part-time that would like to work full-time or graduates working in non-graduate jobs. Composition effects - such as the shift from public sector jobs to private sector employment, or the expansion of employment among younger or less well-skilled people whose pay levels typically are relatively low - have played a role at times in recent years, but less so recently.

These factors may impact the labour market differently in different regions of the UK. For example, here in the North West, 16% of people that work part-time report that they would like a full-time job, up from 8% ten years ago. The share of involuntary part-time workers here is above the UK average (14% now, 9% ten years ago), and has risen faster than most other regions of the UK. The East Midlands and Northern Ireland

⁷ For discussion on this issue see Ormerod et al 2009, Broadbent 2014, Haldane 2015, Forbes (2016).

⁸ See Holman and Pike (2016).

have seen exceptionally large rises in the share of people in temporary jobs that would like more permanent jobs. South West England has seen a sharp rise in the share of people in self-employment.

Recent weakness in pay growth may also partly reflect soft productivity growth, which has averaged 0.8% YoY over the six years to the middle of this year, versus its 50-year average of 1.8% YoY. But the causality between pay growth and productivity growth probably goes both ways. The weakness in nominal and real wage growth has probably lifted the demand for labour, for example by encouraging the substitution of labour for capital as well as the expansion of labour-intensive sectors and sectors with relatively low levels of value added per head. This shift in the labour/capital mix may also reflect above-average uncertainty, given that it is usually less costly to reverse hiring decisions rather than capital spending decisions. So the economy has ended up with a mix of higher employment, lower productivity growth and relatively sluggish pay growth, rather than just lower pay growth. These trends may well be reinforced if the economy slows. This view does not preclude the possibility that productivity growth will pick up longer term, especially if and when the labour market is tight enough to generate more substantial upward pressure on pay.

The balance between these factors depressing pay growth, and the extent to which they will persist, is an open question. The rise in workforce participation rates among older people may well have further to go, given the higher figures seen in various other Northern European countries. Conversely, the availability of EU nationals to work in the UK may well decline in coming years, and this reduction in labour supply could create upward pressure on pay even if the jobless rate is stable. But, for now, labour market slack - and the restraining effects on the growth of pay and unit labour costs - is probably greater than one would have previously expected with a 5% jobless rate. In my view, we should not set monetary policy in a way that seeks to preclude a somewhat lower jobless rate unless we see signs of a clear pickup in average earnings growth, for example to persistently above 3% or 3½% YoY.

The second issue is that I suspect the economy will not slow as much over the next year or two as implied by the MPC's central forecast published in August. I broadly share the Committee's view that Brexit is likely to have a modest adverse effect on long-run UK potential growth. Moreover, economic growth in Q3 probably did slow relative to the 0.7% QoQ gain in Q2. There appears to have been a marked dip in some sectors for at least a week or two after the Brexit vote. Also, Q2 GDP growth was lifted by sharp and probably erratic gains in output of oil and gas, pharmaceuticals, and household energy - sectors that often are quite volatile from quarter to quarter. The early signs are that part of this Q2 strength (notably pharmaceuticals and household energy) has unwound in Q3.

However, there are some offsetting positives. Unlike previous episodes of heightened uncertainty such as 2007-08 and 2011-12, financial conditions now seem to be relatively loose and have loosened further recently following the MPC's easing. It may be difficult to fully disentangle the extent to which economic weakness in those earlier episodes reflected uncertainty as opposed to broader financial channels and

balance sheet vulnerabilities, especially as all these are difficult to measure.⁹ Currently, interest rates on new loans (mortgages, consumer credit, corporate loans) are at or close to record lows. Private sector credit and money growth has been picking up, with deposits held by households and private non-financial companies up 6.6% YoY – the highest for eight years. Business surveys suggest that the lower pound is boosting export orders.

Moreover, the possible adverse effects on spending of Brexit-related uncertainty may be partly offset by a further reduction in the hangover from the 2007-09 crisis in terms of uncertainty regarding economic prospects, credit availability and job opportunities. The share of the population (aged 16-64 years) in work has risen to a record high, while UK economic growth has outpaced the OECD average in each of the last three years and in the first half of this year. Indeed, we may eventually find that the UK's recent outperformance has been greater than the current vintage of official data show, given that UK GDP growth rates tend to be revised up more over time than most other advanced economies. It is notable that, unlike 2007-09 and 2011-12, consumer confidence has rebounded quite promptly, with little change over recent months in consumers' expectations for their own finances or unemployment.

Housing activity, in particular, may well be less vulnerable to heightened uncertainty than the MPC's August forecast implies, especially given the substantial backlog in housing demand and record-low level of mortgage rates. The UK's home ownership rate is the lowest since the late 1980s, among the lowest in Europe and the decline in recent years has been among the steepest of any European country. Even in July (a relatively weak month for consumer confidence), the share of consumers that intend to buy or build a new house over the next 12 months was far above average. The widely-watched RICS survey has seen most of its balances - prices and activity, actual and expected - recover somewhat in August. Of course it is still early days, but the fact that bank funding conditions look healthy is a big positive. If falls in the yield curve are passed on to lower mortgage rates, and employment proves resilient, as I am cautiously optimistic will be the case, these factors will provide solid support to the housing market.

And while not dismissing Brexit-related uncertainties, we should not lose sight of the UK economy's considerable supply-side advantages, with relatively flexible labour and product markets, openness to foreign investment, low-ish tax rates, strength in knowledge-intensive services and hi-tech manufacturing, commitment to property rights, and global use of the English language.

There is tentative evidence that supply-side factors are becoming more important in cross-country disparities in economic growth. For example, taking rolling 4-year averages across a wide range of advanced economies, the correlation between economic growth and the OECD's indices of labour market regulation was around zero in the period from 1996-2007 but has risen to about minus 40% now.¹⁰ In other words,

⁹ See Caldara et al, 2016

¹⁰ The trend is similar using 3-year averages, or 5-year averages. I exclude Ireland, because of the erratic boost to the country's published GDP growth in the last year, but the correlation would be greater if Ireland is included.

more flexible economies seem to have been better at weathering the volatile post-crisis environment. Of course, this association between flexibility and growth may in part reflect other factors, including policy flexibility. But the UK is also fairly well placed in this regard, with a flexible exchange rate plus transparent multi-year frameworks for monetary and fiscal policies that combine medium-term targets with near-term scope to respond to economic shocks.

To be sure, risks for growth are not all to the upside. The process of EU exit may be lengthy and bumpy. It is certainly possible that anticipation of EU exit will have a greater near-term adverse effect on the economy than the MPC expect, especially if EU nationals currently working in the UK decide to leave or business investment weakens really markedly.

But, unless Brexit-related uncertainties rise sharply and/or global conditions disappoint markedly, I suspect that the UK economy will be not too bad in the year ahead, with growth in 2017 more likely to be clearly above 1% rather than (as the consensus expects) below 1%. Hence, especially if productivity growth remains modest, there may be little or no rise in unemployment in the UK over the coming year, although the current degree of slack would remain unless growth is strong enough to cut unemployment further.

At the August meeting, a majority of MPC members considered it likely that the MPC would ease further, if the economy turns out broadly in line with the MPC's forecast. At the September meeting, I voted for no change in policy, preferring to wait for more post-referendum evidence on the economy and the fuller economic assessment that the BoE will prepare for the November meeting. I am not going to give you a forecast of how I will vote then. It will depend on the data. Compared to the central forecast of the August IR, my views imply that the economy has more slack but will also grow more strongly. My policy vote will probably depend on which of these factors is dominating.

I want to talk about one final thing, the MPC's policy options to respond to further economic surprises on the upside or downside. With Bank Rate at just 25bp, and the MPC's stated reluctance to go into negative territory¹¹, there has been some speculation that the MPC is nearly out of scope for stimulus if the economy weakens sharply, especially given the long-term global decline in neutral real rates.

To be sure, the MPC's actions probably would provide more effective stimulus if neutral real rates and the economy's growth potential were higher, eg via structural reforms. But, even though there is only limited scope to cut Bank Rate before being constrained by the zero bound, substantial scope remains for stimulus through asset purchases if needed. Research by the BoE and others over recent years suggests that asset purchases have provided extra stimulus¹², and the recent experience suggests that asset purchases still have traction.

¹¹ See the August 2016 Inflation Report.

¹² See, Kapetanios et al (2012), Weale and Wieladek (2014), Cloyne et al (2015), Churm et al (2015).

To illustrate the MPC's options, I want to show some stylised simulations using one of the BoE's economic models.¹³ The starting point is to outline a possible path for monetary policy if the economy turns out in line with the MPC's August base case, ignoring, for the moment, the downside risks to pay growth and upside risks to economic growth discussed previously. As mentioned earlier, the August IR projected that, if interest rates follow the "market path", then 2-3 years ahead the UK will have inflation slightly above target and a modest amount of spare capacity.

Given that forecast, we can use simulations to compute an "optimal" path for interest rates. In these scenarios, the "optimal" interest rate path is defined to be one that balances equally the deviation of inflation from target, the deviation of real GDP from potential (ie the output gap) and with interest rate smoothing.¹⁴ I assume that the QE gilt purchase programme announced in August is implemented over two quarters with the corporate bond purchases spread over six quarters. In this case, this model suggests that the optimal monetary policy path is to loosen near-term by cutting Bank Rate to the zero lower bound¹⁵ and then to start to hike Bank Rate roughly two years out - rather earlier than markets price in - with a slightly steeper ascent than markets imply. This path would produce a slightly smaller near-term downturn in the economy than the "market rate path" and hence, for the policymaker that puts roughly equal weight on the output gap and inflation, would be slightly superior to the "market rate" path.

I stress that this is not necessarily the interest rate path that the MPC will choose. The Committee will make its decisions at the November meeting and thereafter. For example, MPC members might have a different view on the economic outlook, put a different weight on the appropriate trade-off between inflation, the output gap and interest rate smoothing, or have different views on the effectiveness and costs of any potential monetary policy moves. And the properties of these models are not to everyone's taste. But this simulation is consistent with the view expressed in the August and September Monetary Policy Statements that a majority of MPC members expect to support a further cut in Bank Rate to its effective lower bound before year-end if the outlook at that time is judged to be "broadly consistent" with the August Inflation Report projections.

From that start point, I then impose a negative shock to the domestic demand outlook, capturing factors like higher uncertainty and a tightening in credit conditions, which causes a 2 percentage point shortfall in GDP growth over the next four quarters. This would be a less severe downturn than that of 2008-09, which saw real GDP fall by over 6% despite a dramatic policy response. But it is in line with the median UK recession of the last 60 years, and similar to the 1990-91 recession. For the sake of illustration, I assume there is no

¹³ The Bank uses a range of models to support the production of the Inflation Report forecasts and when conducting simulation analysis.

¹⁴ The policymaker commits to an interest rate plan which is chosen to minimise a loss function defined in terms of deviations of annual CPI inflation from target, the output gap and the quarterly change in Bank Rate (the 1-1-1 loss function). The model used for the simulations is the Bank's forecasting model, COMPASS. I assume that the policymaker can commit to an interest rate plan, but constrain the extent to which they can 'fine-tune' outcomes via interest rate expectations at the long end of the curve. The forecast has been extended beyond the standard 3-year Inflation Report horizon using some mechanical assumptions. This does not represent the MPC's judgement about how the economy will evolve over that period.

¹⁵ This simulation assumes that the lower bound is at zero. In practice, the MPC has said that the effective lower bound at present is slightly above zero. This makes little difference to the simulations.

change in the economy's potential growth.¹⁶ Such an outcome would imply considerable slack in the form of higher unemployment or under-employment, and a large rise in the output gap.

All this would probably merit sizeable monetary stimulus, in order to prevent a sustained inflation undershoot over time. If we keep the zero bound on Bank Rate but implement an additional £280bn of QE, concentrated in the first six quarters¹⁷ (mostly of gilts, with a small amount of ongoing corporate bond purchases thereafter), the simulation suggests that the optimal policy would be to cut Bank Rate to the zero bound near term and signal the likelihood of holding it there for longer than in the previous simulation, only starting to hike (very slowly) in 2020.

In this simulation, anticipation of future easing gives some near-term support to growth. Even so, monetary policy would not entirely prevent the downturn, but would then generate a compensating period of stronger growth in 2018-19 that leaves the economy in 2019 with little or no spare capacity and inflation somewhat above target. In this simulation, the policymaker compensates for the greater near-term slack by allowing a slightly larger overshoot of normal capacity levels further ahead. The level of GDP will eventually converge with the blue line and inflation returns to target, beyond the chart horizon. The economy would have gone through a turbulent period, but after a few years would be more or less back on track. Of course, if the policymaker is less willing to allow inflation to overshoot at the end of the forecast period, then the optimal approach would be to do less monetary easing and accept a somewhat slower recovery.

Conversely, if we impose a 2 percentage point upside surprise in GDP over the next four quarters (triggered by a collapse in risk premia), the model indicates that the optimal strategy is to start to hike rates during 2017 and into 2018, considerably earlier than markets price in. In the BoE's models, this anticipation of tighter policy occurs very rapidly as risk premia fall and weighs on near-term output. For a quarter or two, the economy is actually a little weaker than the August IR forecast but then overtakes it. As tightening kicks in fully, the economy slows again in late 2017 and 2018. Again, this leaves the economy in much the same place by 2019-20.

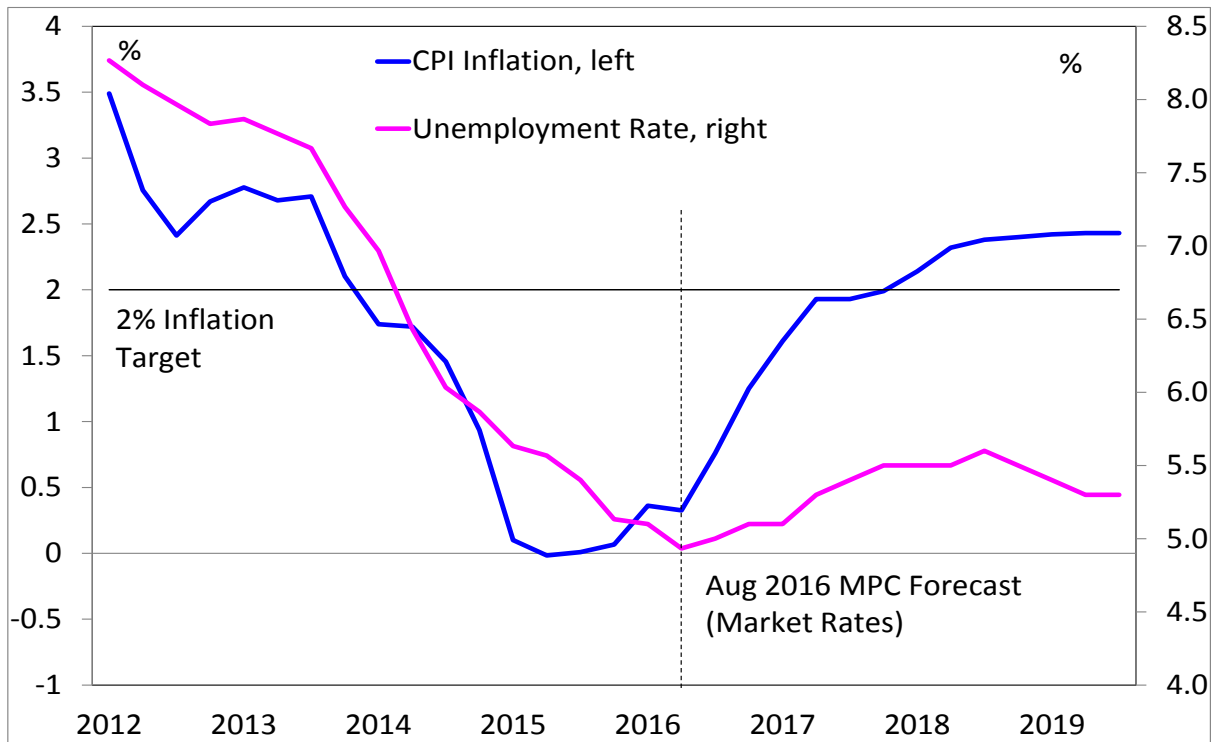
I stress again that the actual path of policy is a choice for the MPC at the time - policy decisions are not set by a computer model but are taken after extensive analysis and debate at the Bank of England. Moreover, these are just simulations: the economy's response to monetary policy changes may well turn out to be greater or smaller, faster or slower, than these models imply. The potential cost of monetary easing, for example via higher pension fund deficits, also is something that we keep an eye on.

¹⁶ In reality, if such a scenario transpired, the MPC would be looking for any evidence that the supply-side of the economy had been affected by this shock.

¹⁷ I assume that a £40bn rise in QE lowers 10-year yields by about 10bp. This is in line with BoE research on the effects of the second round of QE (see Churm et al, 2015), but smaller than estimates of the effects of the first round of QE (see Joyce et al 2010). At present, the 10-year gilt yield is at 70-80bp. If one assumes that QE has reduced effectiveness when yields reach zero then, with the current level of gilt yields, there is "room" for around £300bn of QE. If one assumes that QE can continue to provide stimulus by pushing gilt yields below zero, or that the quantity of QE matters even if yields do not change, then the scope for stimulus through QE would be substantially greater. Applying the BoE's existing self-imposed purchase limits, there are roughly £330bn of conventional gilts currently available to purchase in addition to the current £60bn programme, not allowing for future gilt issuance or the possible extension of QE to index-linked gilts.

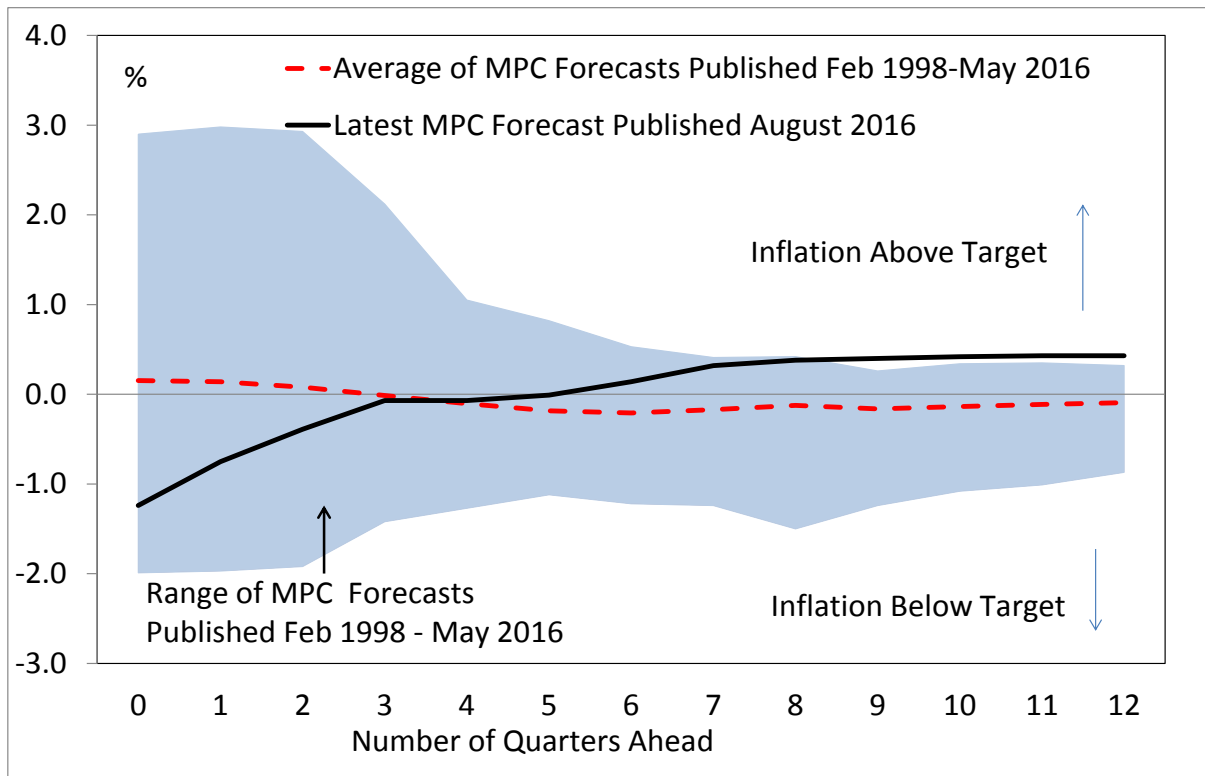
I certainly do not want to give the false impression that monetary policy can immediately cushion the economy against any shock. Even with the recent monetary stimulus, the economy probably will slow over the next year or two. But, my key point is that the MPC does still have considerable flexibility to respond to economic developments, in either direction, in order to help stabilise the economy and anchor inflation close to target over time, even if not exactly at 2% every month.

Figure 1. MPC August 2016 Forecasts for CPI Inflation and Unemployment, 2012-19F



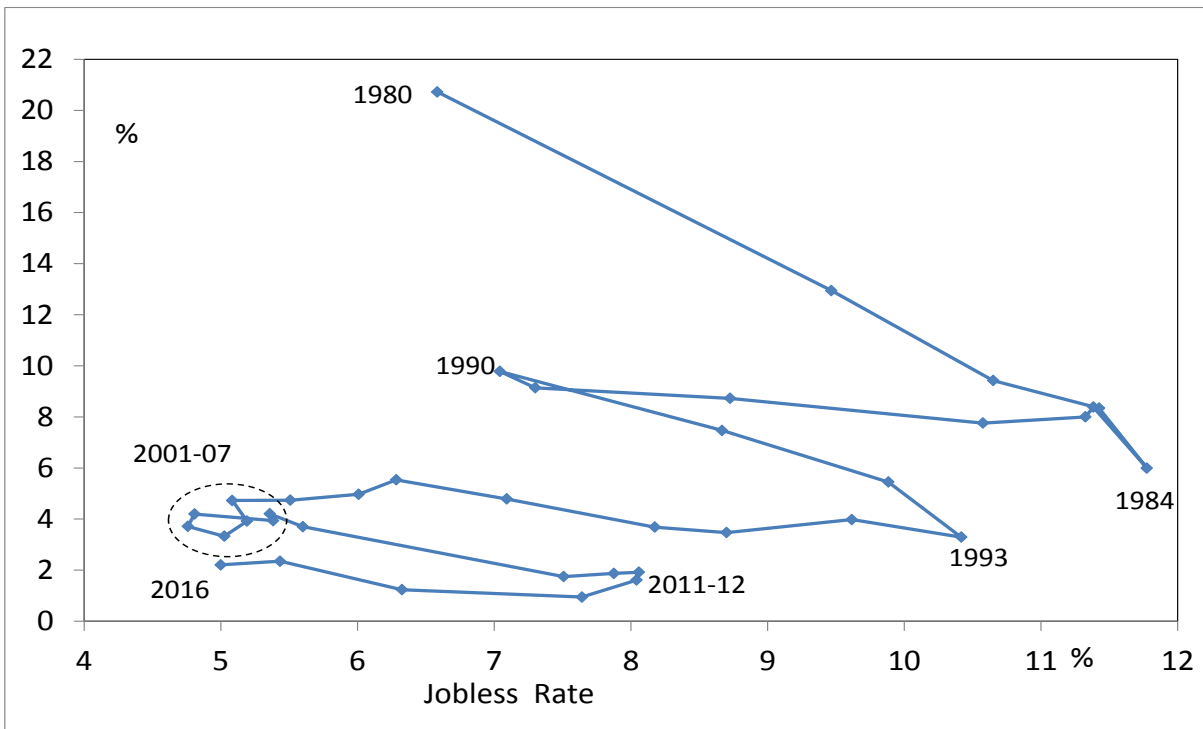
Source: Bank of England and ONS

Figure 2. UK – MPC Forecasts for Deviation of Inflation from Target over Next 12 Quarters, Forecasts Made 1998-2016



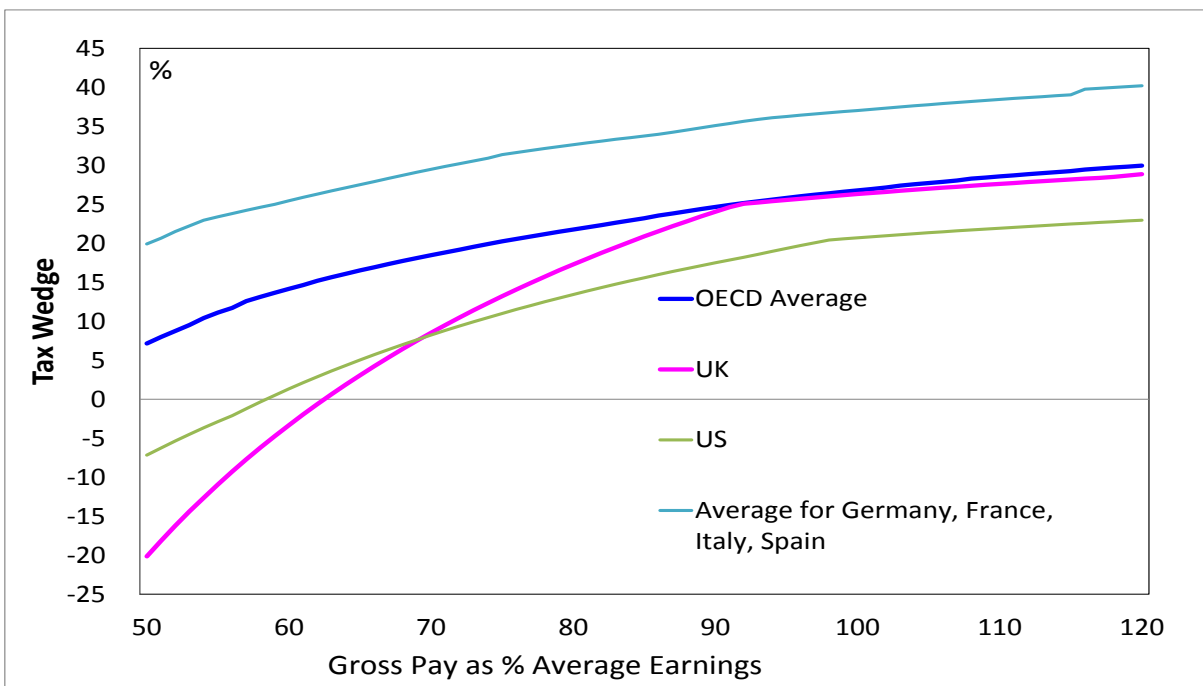
Source: Bank of England

Figure 3. UK -- Scatter Point of Unemployment and Wage Growth, 1980-2016



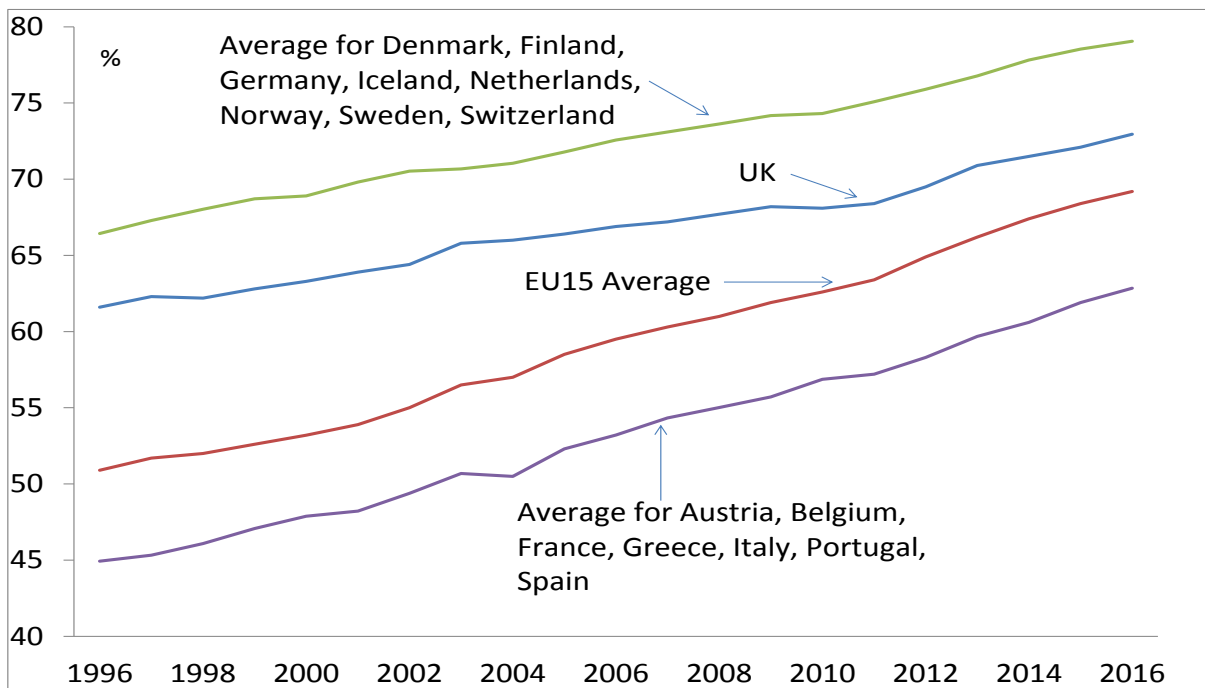
Note: 2016 figure is for year to date. Source: ONS

Figure 4. Tax Wedge (including tax credits) for Single Earner Couple with Two Children, 2015



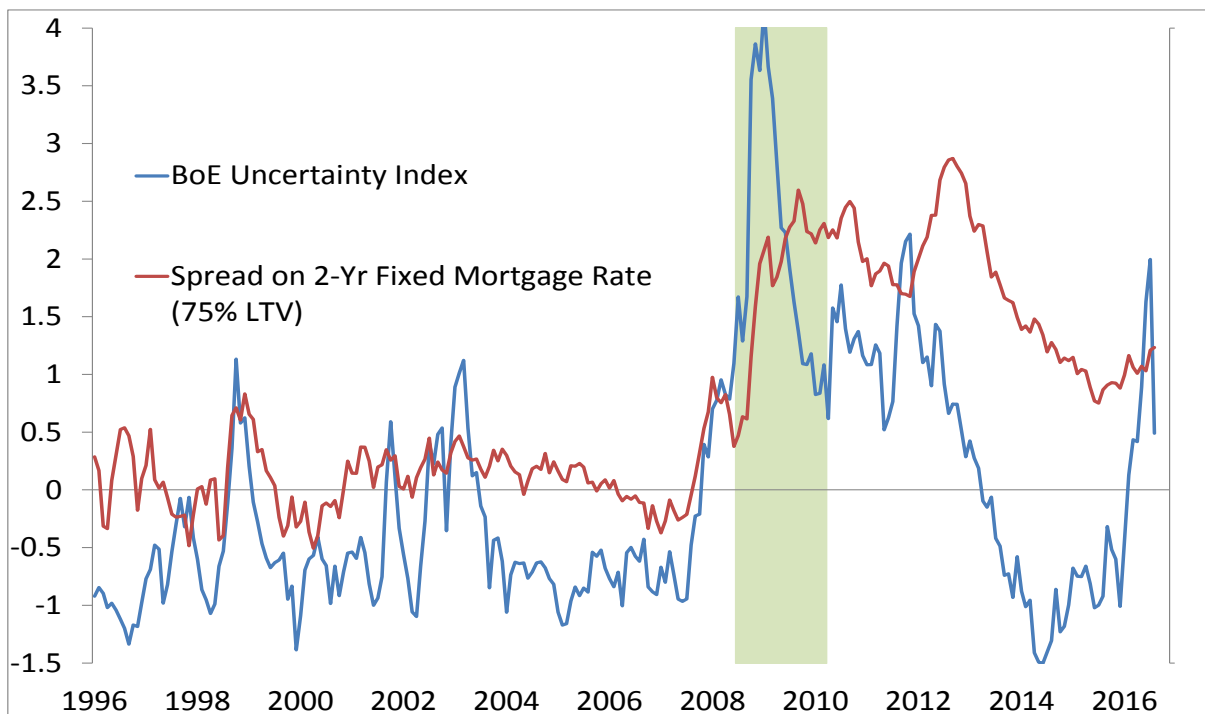
Note: The tax wedge is defined as the difference between total labour costs and take-home pay, as a percentage of total labour costs. A negative tax wedge implies that take-home pay exceeds total labour costs for the firm. Source: OECD

Figure 5. Workforce Participation Rates Among People Aged 50-64 Years, 1996-2016



Note: 2016 data are for year to date. Source: Eurostat

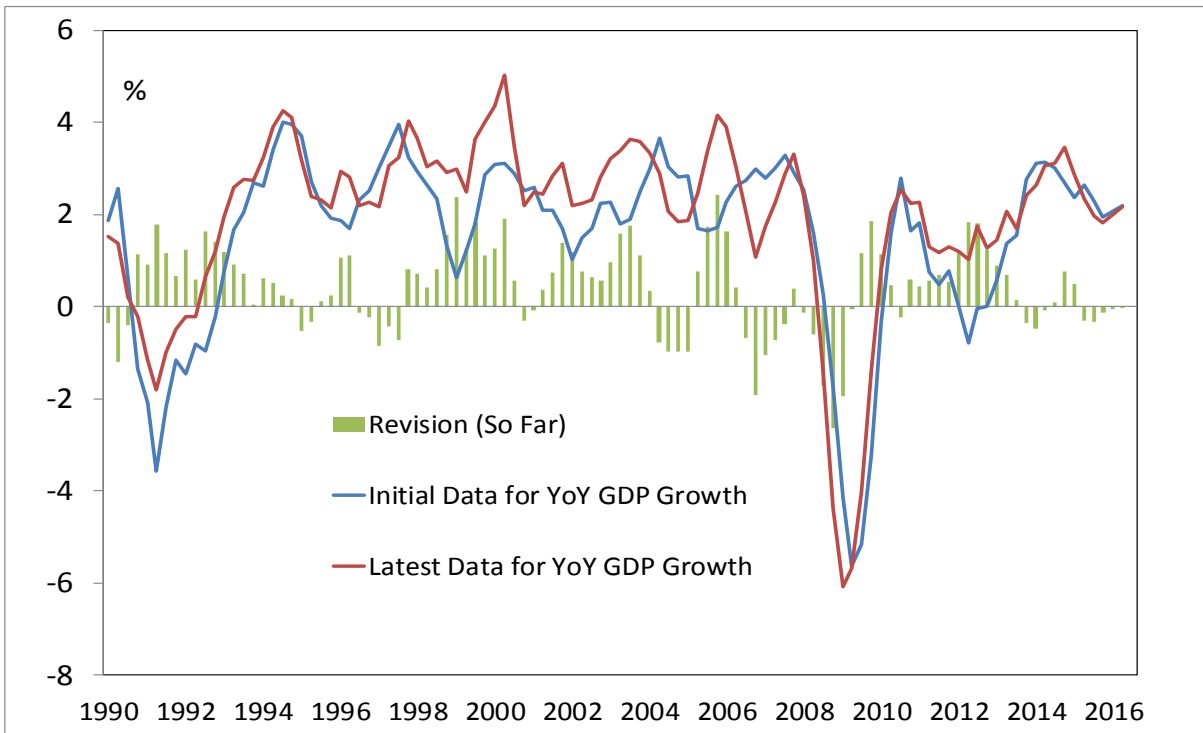
Figure 6. UK – Uncertainty and Bank Lending Spreads (Shaded Period Show When YoY Real GDP Growth Below 1%), 1996-2016



Note: Mortgage lending spread is compared to 2-year swap rates.

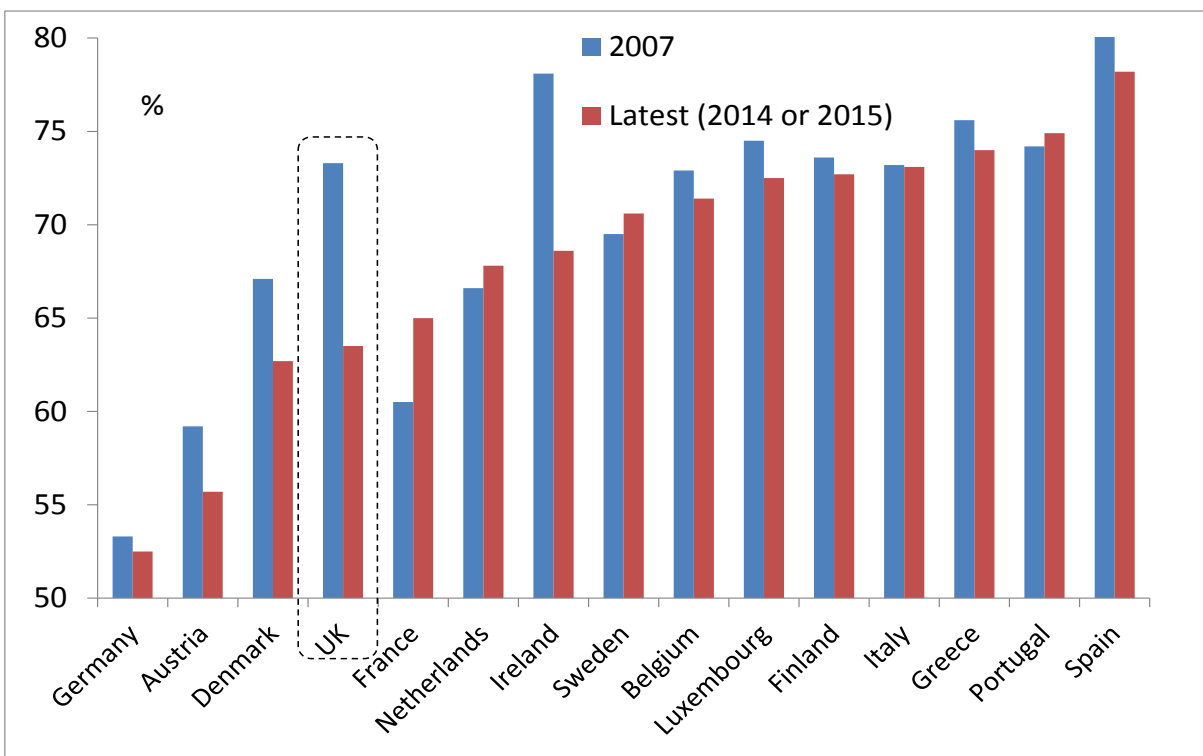
Sources: Bank of England and ONS

Figure 7. UK – Initial Data and Latest Data for YoY Real GDP Growth, 1990-2016



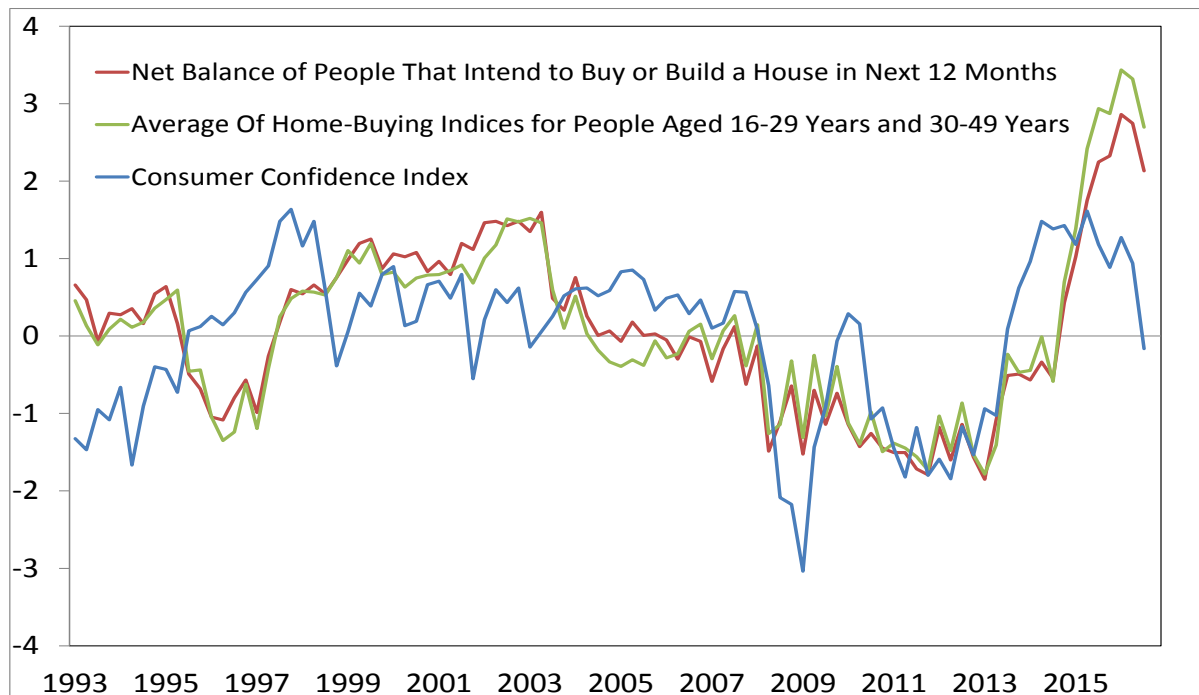
Sources: OECD and ONS

Figure 8. EU15 Countries – Home Ownership Rates, 2007-15



Note: The first figure for Germany is 2005 not 2007. Source: Eurostat

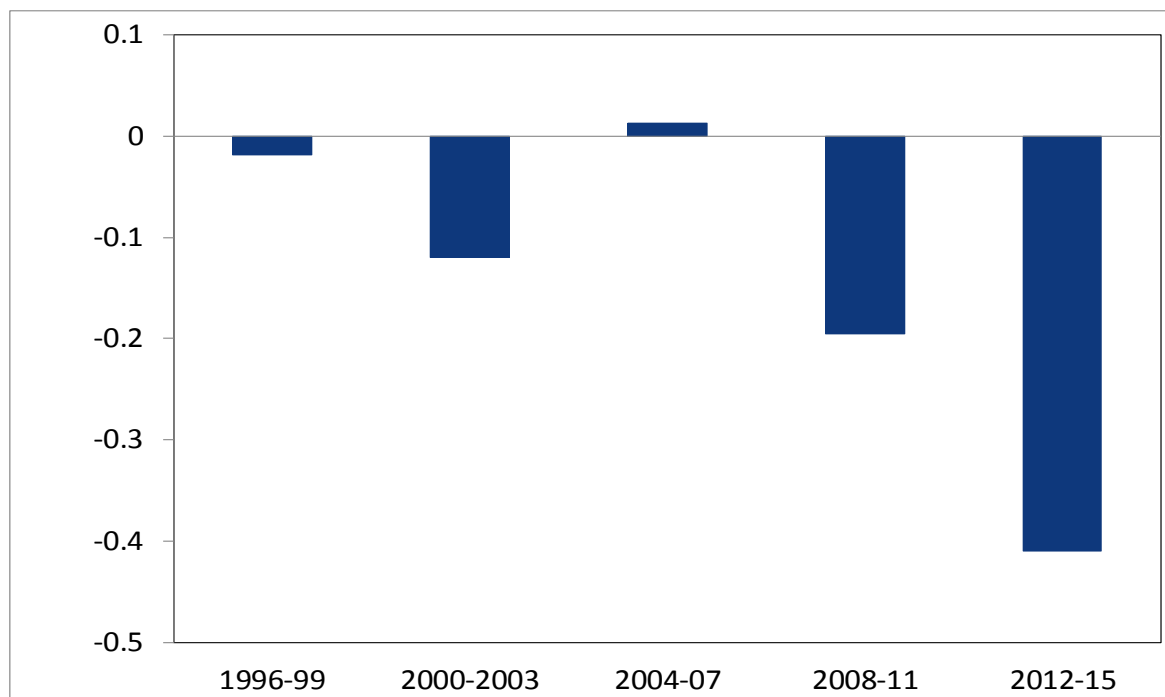
Figure 9. UK – Consumer Confidence and Net Balance of People Who Intend to Buy or Build a House in the Next 12 Months (Standard Deviations from 1993-2015 Average), 1993-2016



Note: Data are in January, April, July and October. Latest data are July 2016.

Source: European Commission

Figure 10. OECD Countries – Cross-Country Correlation Between OECD Labour Market Regulation Indices and Real GDP Growth, 1996-2015



Sources: OECD and national government sources

Figure 11. UK – BoE’s Economic Forecast in the August 2016 Inflation Report, and Simulation With “Optimal” Monetary Policy Path

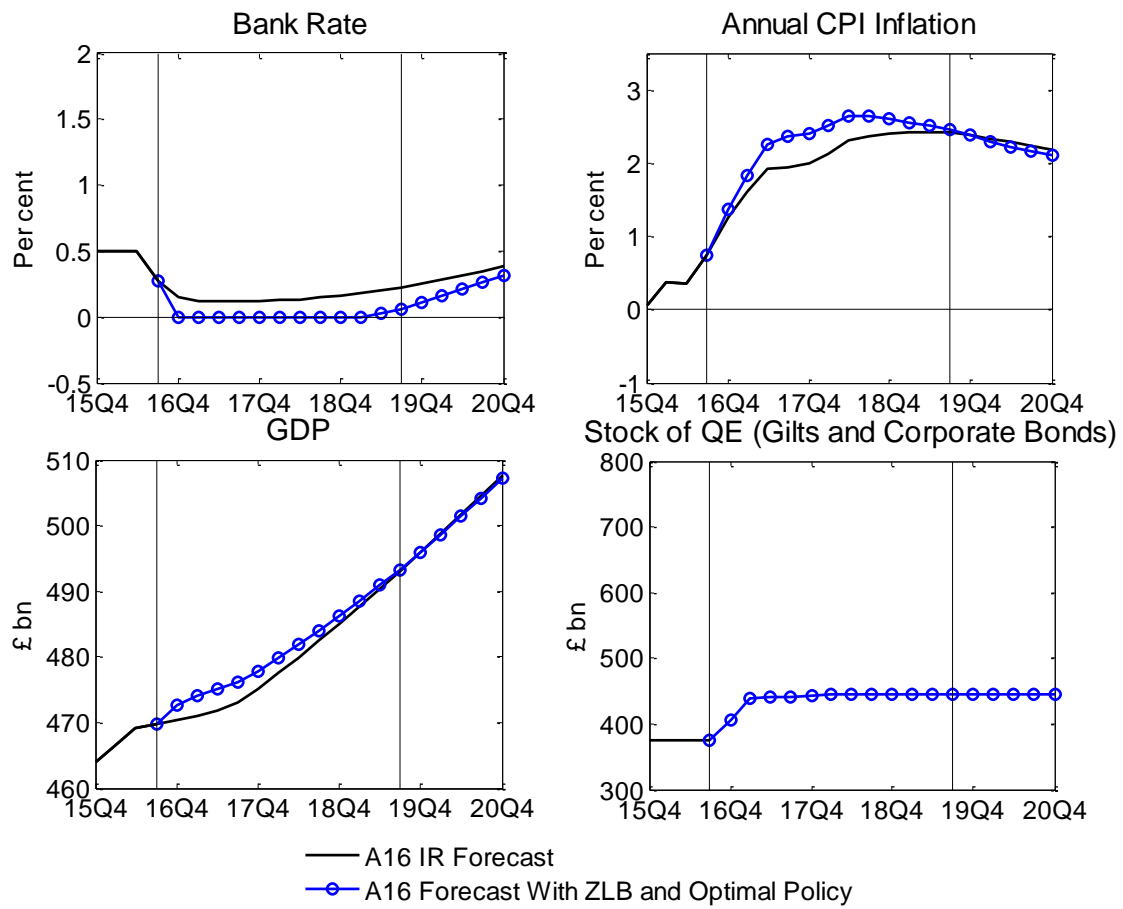
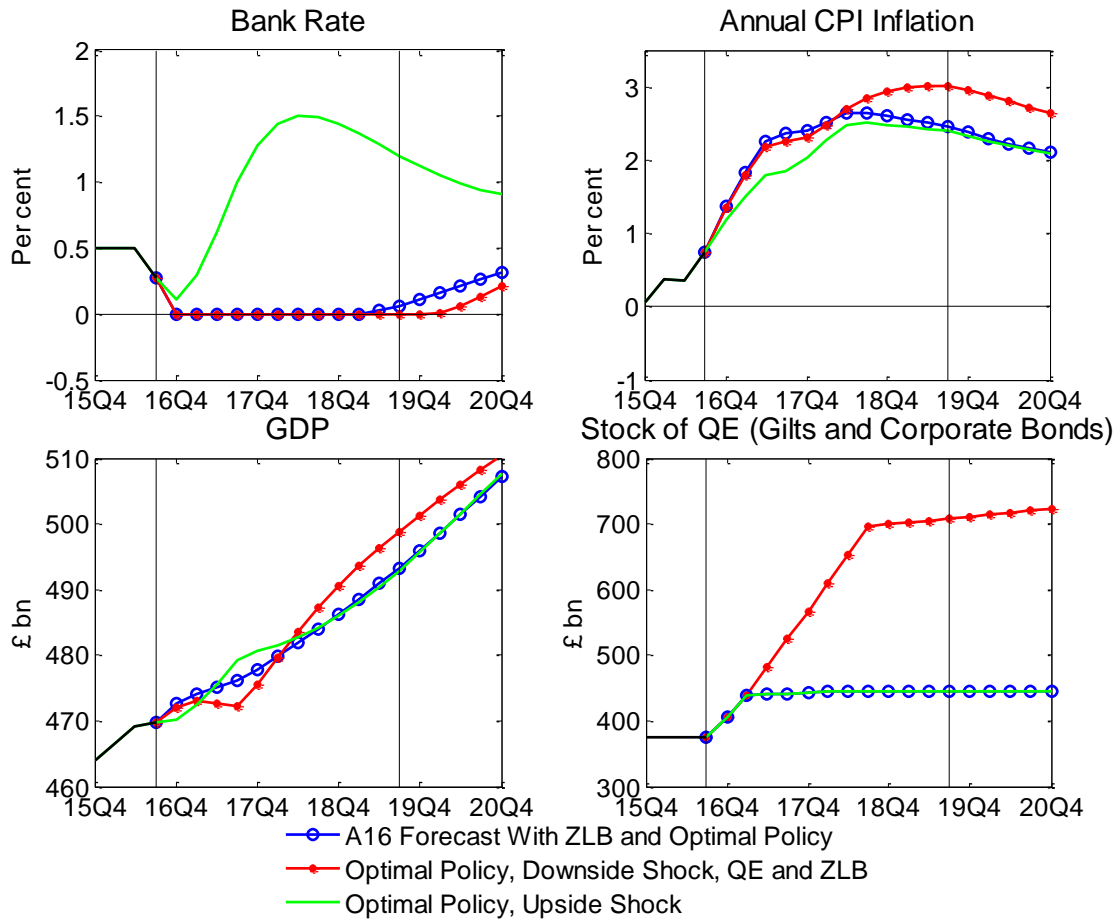


Figure 12. UK – Simulations of Economic Outlook With 2% Upside and Downside Shocks to Real GDP



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