

Inflation Report

November 2016



BANK OF ENGLAND





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In order to maintain price stability, the Government has set the Bank's Monetary Policy Committee (MPC) a target for the annual inflation rate of the Consumer Prices Index of 2%. Subject to that, the MPC is also required to support the Government's economic policy, including its objectives for growth and employment.

The *Inflation Report* is produced quarterly by Bank staff under the guidance of the members of the Monetary Policy Committee. It serves two purposes. First, its preparation provides a comprehensive and forward-looking framework for discussion among MPC members as an aid to our decision-making. Second, its publication allows us to share our thinking and explain the reasons for our decisions to those whom they affect.

Although not every member will agree with every assumption on which our projections are based, the fan charts represent the MPC's best collective judgement about the most likely paths for inflation, output and unemployment, as well as the uncertainties surrounding those central projections.

This *Report* has been prepared and published by the Bank of England in accordance with section 18 of the Bank of England Act 1998.

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The *Inflation Report* is available in PDF alongside PowerPoint™ versions of the charts and Excel spreadsheets of the data underlying most of them at www.bankofengland.co.uk/publications/Pages/inflationreport/2016/nov.aspx.

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Monetary Policy Summary

The Bank of England's Monetary Policy Committee (MPC) sets monetary policy to meet the 2% inflation target, and in a way that helps to sustain growth and employment. At its meeting ending on 2 November 2016 the Committee voted unanimously to maintain Bank Rate at 0.25%. The Committee voted unanimously to continue with the programme of sterling non-financial investment-grade corporate bond purchases totalling up to £10 billion, financed by the issuance of central bank reserves. The Committee also voted unanimously to continue with the programme of £60 billion of UK government bond purchases to take the total stock of these purchases to £435 billion, financed by the issuance of central bank reserves.

At the time of the August *Inflation Report*, the Committee announced a package of supportive measures that it judged was appropriate to balance the trade-off that had emerged in the economic outlook. On the one hand, economic activity was expected to weaken and unemployment to rise, given the period of uncertainty likely to follow the referendum on EU membership. On the other hand, inflation was expected to rise to a rate above the 2% target, for an extended period, as a result of the depreciation of sterling that had accompanied the referendum result. At the August meeting, a majority of Committee members also expected to support a further cut in Bank Rate at one of the remaining MPC meetings of 2016 if the outlook remained broadly consistent with the one set out in the August *Report*.

In the three months since then, indicators of activity and business sentiment have recovered from their lows immediately following the referendum and the preliminary estimate of GDP growth in Q3 was above expectations. These data suggest that the near-term outlook for activity is stronger than expected three months ago. Household spending appears to have grown at a somewhat faster pace than projected in August, and the housing market has been more resilient than expected. By contrast, investment intentions have continued to soften and the commercial property market has been subdued.

In financial markets, the past three months have been characterised by two phases. In the first, the sterling exchange rate stabilised for a period following its initial post-referendum depreciation. Supported by the measures announced by the MPC in August and more positive activity indicators, financial conditions and other asset prices recovered from the deterioration seen straight after the referendum, accompanied by a sharp increase in corporate bond issuance. However, in the period since the beginning of October, the sterling effective exchange rate index has depreciated further. Market intelligence attributes these latter movements to perceptions that the United Kingdom's future trading arrangements with the EU might be less open than previously anticipated, requiring a lower real exchange rate to improve competitiveness and support activity. Longer-term gilt yields have risen notably, as have market-implied expectations of medium-term inflation.

The Committee's latest projections for output, unemployment and inflation, conditioned on average market yields, are set out in the November *Inflation Report*. Output growth is expected to be stronger in the near term but weaker than previously anticipated in the latter part of the forecast period. In part that reflects the impact of lower real income growth on household spending. It also reflects uncertainty over future trading arrangements, and the risk that UK-based firms' access to EU markets could be materially reduced, which could restrain business activity and supply growth over a protracted period. The unemployment rate is projected to rise to around 5½% by the middle of 2018 and to stay at around that level throughout 2019.

Largely as a result of the depreciation of sterling, CPI inflation is expected to be higher throughout the three-year forecast period than in the Committee's August projections. In the central projection, inflation rises from its current level of 1% to around 2¾% in 2018, before falling back gradually over 2019 to reach 2½% in three years' time. Inflation is judged likely to return to close to the target over the following year.

The MPC's Remit requires that monetary policy should balance the speed with which inflation is returned to the target with the support for real activity. Developments since August, in particular the direct impact of the further depreciation of sterling on CPI inflation, have adversely affected that trade-off. This impact will ultimately prove temporary, and attempting to offset it fully with tighter monetary policy would be excessively costly in terms of foregone output and employment growth. However, there are limits to the extent to which above-target inflation can be tolerated.

Those limits depend, for example, on the cause of the inflation overshoot, the extent of second-round effects on inflation expectations and domestic costs, and the scale of the shortfall in economic activity below potential. In the MPC's November forecast, the inflation overshoot is the product of a perceived shock to future supply, which has caused the exchange rate to fall, alongside a modest projected shortfall of activity. Inflation expectations have picked up to around their past average levels and domestic costs have remained contained. Given the projected rise in unemployment, together with the risks around activity and inflation, and the potential for further volatility in asset prices, the MPC judges it appropriate to accommodate a period of above-target inflation. That notwithstanding, the MPC is monitoring closely the evolution of inflation expectations.

In light of these developments, and in keeping with its Remit, the MPC at its November meeting agreed unanimously that Bank Rate should be maintained at its current level. It also agreed unanimously that it remained appropriate to continue the previously announced asset purchase programmes, financed by the issuance of central bank reserves.

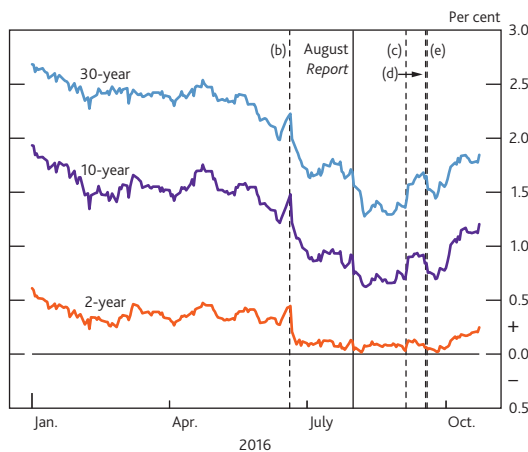
Earlier in the year, the MPC noted that the path of monetary policy following the referendum on EU membership would depend on the evolution of the prospects for demand, supply, the exchange rate, and therefore inflation. This remains the case. Monetary policy can respond, in either direction, to changes to the economic outlook as they unfold to ensure a sustainable return of inflation to the 2% target.

1 Financial markets and global economic developments

In the United Kingdom, the MPC's August policy package helped to lower interest rates and support asset prices. Since the start of October, however, UK gilt yields have risen sharply and by more than yields in other advanced economies, alongside a further depreciation in sterling. Global activity growth slowed during the first half of the year, but this weakness is expected to be temporary and growth will be supported by policy measures and financial conditions. Oil prices have risen, which will push up headline inflation rates.

Chart 1.1 Sterling gilt yields fell following the August policy announcement, but have since risen

Spot yields on UK gilts at selected maturities^(a)

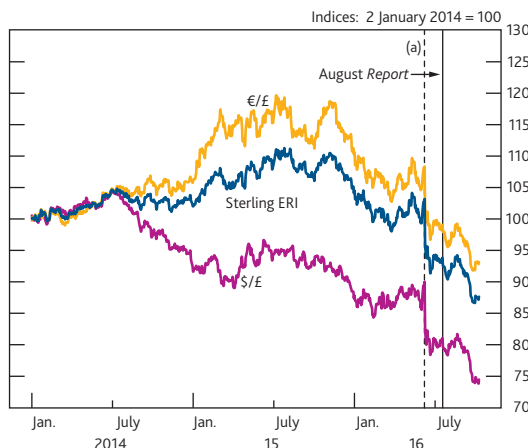


Sources: Bloomberg and Bank calculations.

- (a) Zero-coupon spot rates derived from government bond prices.
- (b) UK referendum on EU membership on 23 June.
- (c) ECB announcement on 8 September.
- (d) Bank of Japan announcement on 21 September.
- (e) FOMC announcement on 21 September.

Chart 1.2 Sterling has depreciated further since August

Sterling exchange rates



- (a) UK referendum on EU membership on 23 June.

Developments in UK asset prices and financial conditions since August can be divided into two broad phases, as set out in the box on pages 2–3. Initially, the main influence was the announcement of the MPC's policy package on 4 August (Section 1.1), which lowered interest rates (**Chart 1.1**) and boosted UK asset prices (Section 1.2). Since the beginning of October, however, UK-focused asset prices have underperformed international equivalents and some borrowing costs have risen, alongside a significant further depreciation in sterling (**Chart 1.2**). Market contacts suggest those moves were associated with increased perceptions that the United Kingdom's future trading arrangements with the European Union might be less open than previously thought likely.

Although global activity growth slowed somewhat in Q2, the near-term outlook is for global growth to strengthen a little, to a similar rate as projected three months ago (Section 1.3). The large falls in oil prices during 2014–15 had been weighing on headline inflation rates, but those effects have started to wane (Section 1.4). The rise in oil prices since the August Report will further support headline inflation rates.

1.1 Monetary policy developments

As explained in the box on pages 2–3, at its August meeting the MPC voted to implement a package of policy measures designed to support the domestic economy. The various elements of this package are expected to operate through a number of channels, including by boosting sterling asset prices and lowering the cost of finance for UK companies (Section 1.2). The MPC voted to make no changes to this package at its September meeting, as set out in the box on page 5. The details of the November decision are contained in the Monetary Policy Summary on pages i–ii of this Report, and in more detail in the Minutes of the meeting.

Developments in UK financial conditions since the August Report

Since August, developments in UK asset prices and financial conditions can be divided into two broad phases. Initially, the main influence was the announcement of the MPC's policy package on 4 August. This supported UK asset prices and lowered borrowing costs. Since the beginning of October, however, UK-focused asset prices have underperformed their equivalents internationally and some borrowing costs have risen, alongside a significant further depreciation in sterling. This box discusses the effect of these influences on UK asset markets and financial conditions in more detail.

Developments in August and September

On 4 August, and as discussed in the box on pages iii–viii of the August Report, the MPC announced a package of measures to support the UK economy, consisting of:

- A 25 basis point cut in Bank Rate to 0.25%.
- A Term Funding Scheme (TFS) to reinforce the pass-through of the cut in Bank Rate, financed by the issuance of central bank reserves.
- Purchases of a stock of up to £10 billion of sterling non-financial investment-grade corporate bonds, issued by firms making a material contribution to the UK economy, financed by the issuance of central bank reserves.
- An increase in the stock of purchased UK government bonds, financed by the issuance of central bank reserves, by £60 billion, to £435 billion.

The MPC also noted that, if the incoming data proved broadly consistent with the August *Inflation Report* projections, a majority of members expected to support a further cut in Bank Rate to its effective lower bound during the course of 2016.

The various elements of this package were expected to boost sterling asset prices and lower the cost of finance for UK companies. The initial response of financial markets was consistent with this expectation and, if anything, the impact was slightly greater than had been anticipated. The cut in Bank Rate to 0.25% had already been priced into the short end of the yield curve (Chart 1.3), but the market-implied path fell over the whole three years of the MPC's forecast period, perhaps as market participants took a signal from the guidance that Bank Rate was likely to be cut further before the end of the year. Domestic government bond yields also fell and the spreads on corporate bonds narrowed (Table 1). This lowered

Table 1 Yields fell in August, before rising in October

Financial market indicators

	Level 26 Oct.	Cumulative change between 3 August and:		
		4 Aug.	30 Sep.	26 Oct.
UK ten-year gilt yield (per cent)	1.20	-17	-11	29 bp
Sterling investment-grade corporate bond spreads ^(a) (basis points)	127	-10	-17	-11 bp
Sterling high-yield corporate bond spreads ^(a) (basis points)	494	-8	-20	-54 bp
FTSE All-Share (index)	3774	1.5	4.2	4.7%
UK-focused companies' equity prices ^(b) (index: 3 Aug. 2016 = 100)	100.5	0.9	2.2	0.5%
Five-year, five-year forward inflation compensation ^(c) (per cent)	3.53	0	32	55 bp
Sterling ERI (January 2005 = 100)	74.5	-1.3	-2.9	-6.6%

Sources: Bank of America Merrill Lynch Global Research, Bank of England, Bloomberg and Bank calculations.

(a) Non-financial companies. Option-adjusted spreads to government bond yields.

(b) As defined in footnote (a) of Chart 1.8.

(c) From inflation swaps.

the cost of issuing debt for companies with access to those markets. In addition, equity prices rose by 1½%.

Funding costs for UK banks also decreased in August (Section 1.2). One factor that may have contributed to the narrowing in spreads is the TFS. By providing funding at close to Bank Rate, with a penalty rate if banks reduce net lending, the TFS may have reduced banks' relative demand for other sources of funding, which all else equal should reduce spreads on that funding. In addition, the announcement of the Corporate Bond Purchase Scheme (CBPS) may have helped to reduce bank funding spreads. Although bank bonds are not eligible for the scheme, by reducing yields on the bonds of non-financial companies the CBPS may have indirectly increased the demand for, and reduced the yields on, bank bonds.

Throughout the rest of August, yields remained lower and many asset prices higher than before the August Report, supporting domestic financial conditions. Indeed, there are signs that these developments have already begun to affect interest rates on bank lending to households and companies. In the weeks preceding the MPC's announcement, market-implied interest rate expectations had fallen and those households taking out a fixed-rate mortgage received lower quotes as a result. For example, two-year fixed rates for new mortgages at 75% or 90% loan to value fell by around 20 basis points between May and July (Table 2). Since then, the rates on fixed-rate products have fallen further and many households with floating-rate mortgages have seen a cut to their mortgage rates as well. Companies have also started to benefit from lower interest rates: banks responding to the 2016 Q3 *Credit Conditions Survey* reported that lower wholesale funding costs were being passed through to companies, with rates on corporate lending consequently falling.

Table 2 Retail interest rates have fallen since MayRetail deposit and lending interest rates^(a)

	Level (per cent)	Change (basis points)	
	September	Since May	Since July
Households			
<i>Mortgages</i>			
Outstanding business ^{(b)(c)}			
Floating	2.62	-24	-24
Fixed up to five years	2.79	-10	-5
New business ^(d)			
Two-year fixed rate, 75% loan to value	1.59	-32	-13
Two-year fixed rate, 90% loan to value	2.42	-33	-15
<i>Deposits^{(b)(c)}</i>			
Outstanding sight deposits	0.62	-6	-7
New time deposits	1.02	-27	-22
Private non-financial corporations^(b)			
Outstanding floating loans	2.59	-16	-15
New floating loans	2.39	-12	-14

(a) The Bank's quoted and effective interest rate series are currently compiled using data from up to 19 UK monetary financial institutions. Data are non seasonally adjusted.

(b) Sterling-only average monthly effective rates.

(c) Interest rates on business with individuals and individual trusts.

(d) Sterling-only end-month quoted rates.

Developments in October

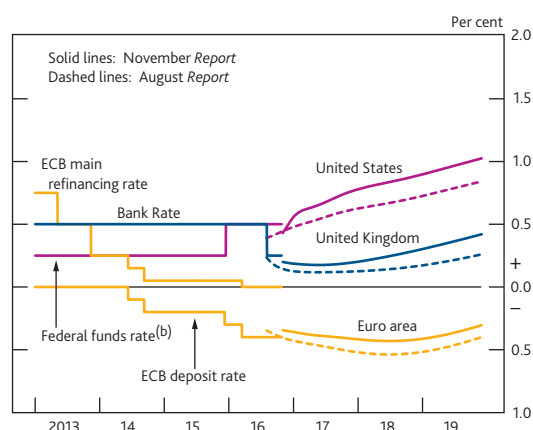
During October some of the improvement in financial conditions that had taken place during August unwound. Around the beginning of the month, UK yields began to rise (Chart 1.1). Some of that occurred alongside rises in interest rates internationally (Chart 1.4) suggesting that global factors were a driver. The increases in UK benchmark yields were, however, somewhat larger and coincided with a further marked depreciation in sterling (Table 1). In the run-up to the

November *Report* sterling was 6½% lower than at the time of the August *Report*. Market contacts largely attribute those moves to changes in perceptions of the United Kingdom's future trading arrangements (Section 1.2).

Alongside the depreciation in sterling and the rise in benchmark yields, inflation compensation increased (Section 1.2). For example, compensation for UK RPI inflation five to ten years ahead derived from inflation swaps has risen by a little over 50 basis points since August (Table 1).

The cost for some companies of issuing debt in capital markets also rose slightly over this period: spreads on corporate bonds issued by less-risky companies — investment-grade bonds — widened a little, and sterling corporate bonds more broadly have underperformed relative to their US dollar and euro-denominated equivalents (Section 1.2). While the overall FTSE All-Share index rose somewhat, it will have been boosted by the effect of the fall in sterling on the value of companies' foreign income; domestically focused companies' equity prices fell (Table 1).

The overall impact of these more recent developments on financial conditions will depend on the net effect of the moves in the exchange rate and asset prices. The rises in yields, to the extent that they persist, represent a tightening in financial conditions and are likely to feed through to the interest rates faced by households and companies. Set against that, however, the depreciation in sterling will, all else equal, support UK financial conditions by making sterling assets more attractive to foreign investors.

Chart 1.3 Market-implied paths for policy rates have risen internationallyInternational forward interest rates^(a)

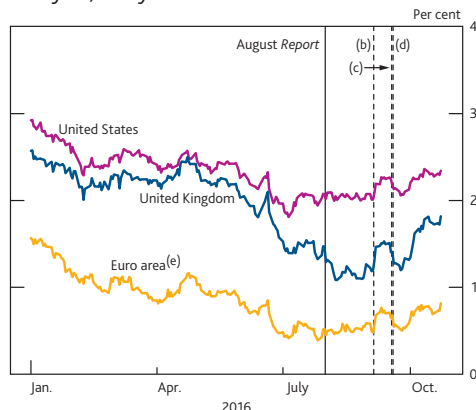
Sources: Bank of England, Bloomberg, European Central Bank (ECB) and Federal Reserve.

(a) The November 2016 and August 2016 curves are estimated using instantaneous forward overnight index swap rates in the fifteen working days to 26 October and 27 July respectively.

(b) Upper bound of the target range.

The European Central Bank (ECB) made no changes to policy in September or October. Some market participants had expected an extension of the ECB's asset purchase scheme beyond March 2017 to be announced at the September meeting and, following the announcement, bond yields rose slightly. But reports from market contacts suggest that most still expect an announcement of further easing in monetary policy in December.

On 21 September, the Bank of Japan announced a number of changes to its policy framework after a review of its 'quantitative and qualitative easing' and negative interest rate policies. These included a target for the yield on ten-year government bonds, a removal of the maturity target for purchased assets and a commitment to overshoot its 2% inflation target. The changes aimed to help to prevent further reductions in bank profitability, support lending and increase inflation expectations. While the reaction of Japanese government bond prices to these announcements was subdued, the equity prices of Japanese banks rose on the announcement. There had also been some rise in international

Chart 1.4 Longer-term yields are above their August levelsFive-year, five-year forward nominal interest rates^(a)

Sources: Bloomberg and Bank calculations.

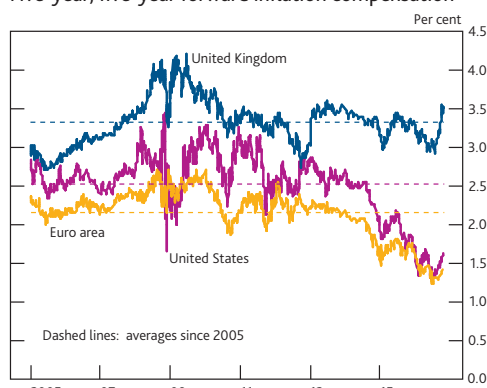
(a) Zero-coupon forward rates derived from government bond prices.

(b) ECB announcement on 8 September.

(c) Bank of Japan announcement on 21 September.

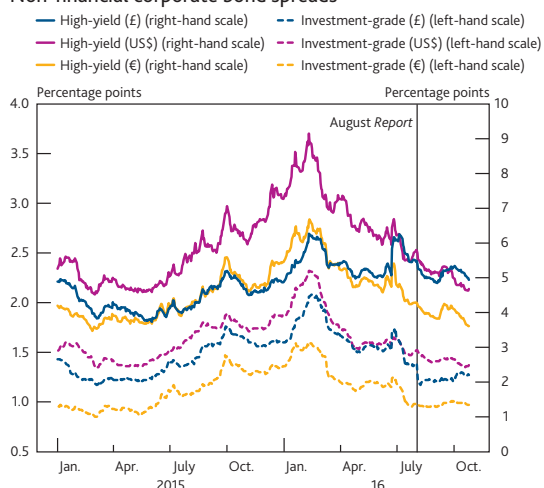
(d) FOMC announcement on 21 September.

(e) An estimate based on French and German government bond prices.

Chart 1.5 Inflation compensation has picked up sharply in the United Kingdom since AugustFive-year, five-year forward inflation compensation^(a)

Sources: Bloomberg and Bank calculations.

(a) UK and euro-area series are derived from interest rate swaps. US series is derived from nominal and inflation-protected Treasury bonds. The instruments used are linked to the UK RPI, US CPI and euro-area HICP measures of inflation respectively.

Chart 1.6 Sterling corporate bond spreads narrowed after the CBPS was announcedNon-financial corporate bond spreads^(a)

Sources: Bank of America Merrill Lynch Global Research and Bank calculations.

(a) Option-adjusted spreads to government bond yields. Investment-grade bond yields are calculated using an index of bonds with a rating of BBB3 or above. High-yield corporate bond yields are calculated using aggregate indices of bonds rated lower than BBB3. Due to monthly index rebalancing, movements in yields at the end of each month might reflect changes in the population of securities within the indices.

long-term interest rates in the run-up to the announcement, some of which subsequently unwound (**Chart 1.4**).

In the United States, the Federal Open Market Committee (FOMC) voted to keep rates on hold in September, and US, UK and euro-area yield curves flattened following the announcement (**Chart 1.4**). Subsequently, however, the implied path for the federal funds rate steepened, and in the run-up to the November *Report* was around 15 basis points higher than in August (**Chart 1.3**).

1.2 Developments in financial markets

Exchange rates

At the time of the *August Report*, sterling had depreciated by 15% relative to its November 2015 peak. In the fifteen working days to 26 October it had depreciated by a further 6½% (**Chart 1.2**). The bulk of the decline in sterling occurred from the beginning of October, which market contacts largely attributed to changes in perceptions of the United Kingdom's future trading arrangements. In the weeks leading up to the November *Report*, sterling implied volatility from options prices had also picked up, perhaps reflecting increases in investors' uncertainty around the future value of sterling, although it remained below its level at the time of the referendum.

Interest rates

The market-implied path for Bank Rate fell slightly after the MPC's August announcement (see the box on pages 2–3). Although the 25 basis point cut in Bank Rate had been largely expected by market participants, they may have taken a signal from the guidance that, should the incoming data be consistent with the *August Report* forecast, a majority of MPC members expected to support a further cut in Bank Rate to its effective lower bound during the course of 2016. Longer-term gilt yields also fell (**Chart 1.1**). Given the size of the gilt purchases announced, that fall was broadly in line with previous announcements of asset purchases, particularly the first round of purchases during 2009.⁽¹⁾

Following those initial falls, UK yields subsequently rose from the beginning of October and, in the run-up to the November *Report*, both the market-implied path for Bank Rate (**Chart 1.3**) and longer-term gilt yields (**Chart 1.1**) were higher than at the time of the *August Report*. Some of that rise occurred alongside rises in long-term interest rates internationally (**Chart 1.4**), suggesting that global factors were a driver. UK yields, however, have risen by more than those in the United States and euro area, possibly for similar reasons that drove the fall in the sterling ERI.

(1) For more detail on the impact of the August announcement see Haldane, A G, Roberts-Sklar, M, Wieladek, T and Young, C (2016), 'QE: the story so far', *Bank of England Staff Working Paper No. 624*; www.bankofengland.co.uk/research/Documents/workingpapers/2016/swp624.pdf.

Monetary policy since the August Report

The MPC's central projection in the *August Report* was that four-quarter GDP growth would slow materially in the near term, before settling below its historical average rate by the end of the forecast period. This reflected a drag on private domestic demand growth from uncertainty in the near term, and a path for potential supply growth that was well below past averages. CPI inflation was projected to pick up over the next year, rising above the 2% target from 2018, as the depreciation in sterling and the unwinding of the effects of the past falls in energy and imported goods prices offset an increased margin of spare capacity. That central projection was conditioned on: the path for Bank Rate implied by market interest rates; the announced Term Funding Scheme; and the stock of purchased gilts and corporate bonds reaching £435 billion and £10 billion respectively and remaining there throughout the forecast period. The last three elements would be financed by the issuance of central bank reserves.

At its meeting ending on 14 September, the MPC continued to expect a material slowing in UK GDP growth in the second half of 2016, although survey indicators suggested somewhat

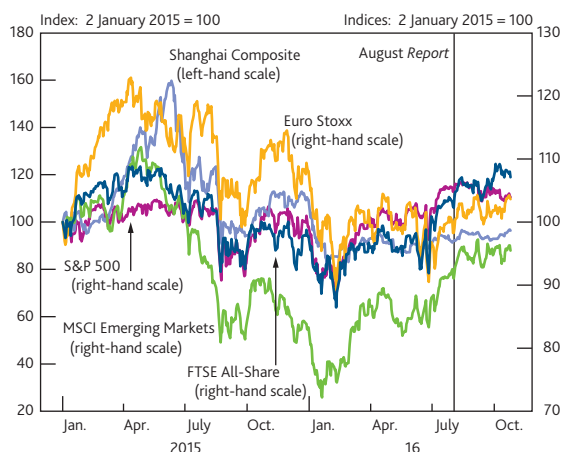
less of a slowing than anticipated in the *August Report*. The announcement of the MPC's policy package in August had led to an increase in UK asset prices and falls in market interest rates. In addition, many banks had announced cuts in both variable and fixed-rate mortgage products and deposit rates.

Twelve-month CPI inflation had remained at 0.6% in August, lower than projected at the time of the *August Report*, and well below the 2% inflation target. Despite the lower starting point, CPI inflation was still expected to rise to around the 2% target in the first half of 2017, as the influence of past falls in energy and food prices waned.

All Committee members judged it appropriate to leave the stance of monetary policy unchanged. Although news on the near-term momentum of the UK economy had been slightly to the upside, the MPC's view of the contours of the economic outlook following the EU referendum had not changed. If the outlook in November was judged to be broadly consistent with the *August Report* projections, a majority of members expected to support a further cut in Bank Rate to its effective lower bound at one of the MPC's forthcoming meetings during the course of 2016.

Chart 1.7 Equity prices have risen

International equity prices^(a)



Sources: Thomson Reuters Datastream and Bank calculations.

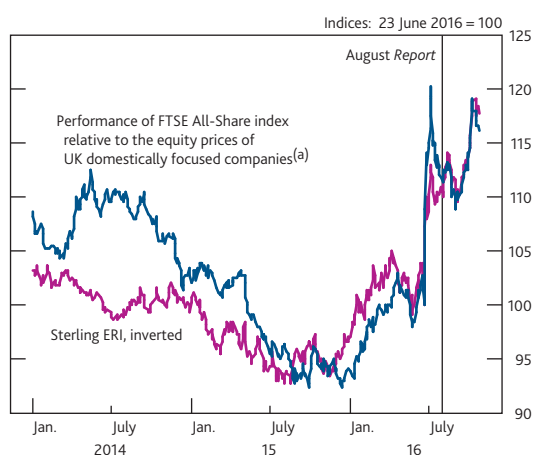
(a) In local currency terms, except for MSCI Emerging Markets, which is in US dollar terms.

Changes in nominal government bond yields can reflect changes in both real interest rates and inflation compensation. Compensation for inflation five to ten years ahead in the United States and euro area has fallen markedly over the past two years and, although they have risen slightly since August, they remain well below their historical average levels (**Chart 1.5**). The UK measure — which is related to RPI inflation — has recovered its fall over the past year and is around past average levels. In part, this may reflect increases in inflation expectations or increased perceptions of risks around future inflation. In addition, these measures may also be influenced by other factors. For example, fluctuations in demand from certain investors — such as pension funds and insurers — for hedging the risks associated with liabilities that are linked to future inflation rates can have a material impact on these measures. Market contacts suggest that demand from those investors has been particularly strong in recent months, having been more subdued around the time of the referendum.

Notwithstanding the recent increases in yields, longer-term interest rates across advanced economies remain lower than at the start of the year (**Chart 1.4**), continuing their long-term decline. As discussed in the box on pages 8–9, while monetary policy may have played some role in the recent decline, the longer-term decline in interest rates across many countries is likely to reflect mainly global structural factors such as increases in desired saving and greater risk aversion.

Chart 1.8 The FTSE All-Share index has been supported by the depreciation in sterling

The FTSE All-Share index relative to the equity prices of UK domestically focused companies and the sterling ERI

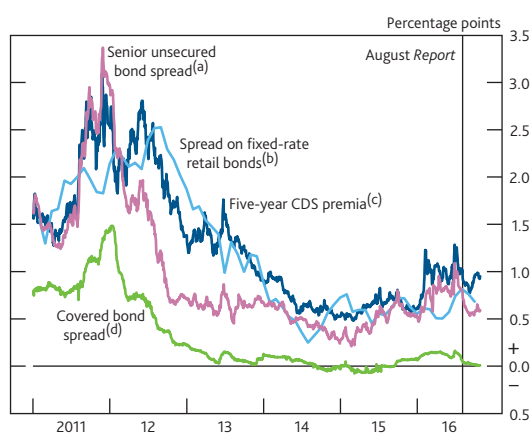


Sources: Bloomberg, Thomson Reuters Datastream and Bank calculations.

(a) Ratio of FTSE All-Share index and an index of UK domestically focused companies' equity prices. UK domestically focused companies are defined as those generating at least 70% of their revenues in the United Kingdom.

Chart 1.9 Bank funding spreads have narrowed

UK banks' indicative longer-term funding spreads



Sources: Bank of England, Bloomberg, IHS Markit and Bank calculations.

- (a) Constant-maturity unweighted average of secondary market spreads to mid-swaps for the major UK lenders' five-year euro-denominated senior unsecured bonds or a suitable proxy when unavailable.
- (b) Unweighted average of spreads for two-year and three-year sterling fixed-rate retail bonds over equivalent-maturity swaps. Bond rates are end-month rates and swap rates are monthly averages of daily rates.
- (c) Unweighted average of five-year euro-denominated senior CDS premia for the major UK lenders.
- (d) Constant-maturity unweighted average of secondary market spreads to swaps for the major UK lenders' five-year euro-denominated covered bonds or a suitable proxy when unavailable.

Corporate capital markets

Although benchmark interest rates have risen slightly since August, the cost of finance for UK non-financial companies is broadly unchanged. The spread between the yield on sterling bonds issued by lower-risk companies — known as investment-grade bonds — and equivalent government bond yields narrowed significantly after the MPC's announcement of the Corporate Bond Purchase Scheme (CBPS) (Chart 1.6). In contrast, the spreads on US dollar and euro-denominated bonds were little changed. Although sterling investment-grade spreads widened slightly alongside the depreciation in sterling in October, they remain narrower than at the time of the August Report. All else equal, these narrower spreads will have reduced the cost of issuing sterling-denominated bonds and supported issuance, which has picked up sharply since the MPC's announcement (Section 2).

Spreads on sterling-denominated debt issued by riskier borrowers — known as high-yield bonds — narrowed to a similar degree to those issued by less risky borrowers following the announcement of the CBPS (Chart 1.6). They subsequently narrowed further, in line with spreads on dollar and euro-denominated bonds, perhaps reflecting a gradual reduction in investors' perceptions of risk internationally. During October, however, sterling high-yield corporate bonds underperformed relative to their US dollar and euro-denominated equivalents.

UK equity prices have increased since August. The FTSE All-Share index rose by around 1½% on the announcement of the MPC's policy package and, in the run-up to the November Report, was around 5% higher than at the time of the August Report (Chart 1.7). The FTSE All-Share index has outperformed the equity prices of UK-focused companies since June. That probably reflects the boost to the profits of internationally focused companies from the recent depreciation of sterling. Over the past year, changes in the equity prices of these internationally focused companies relative to those of domestically focused companies have been closely correlated with changes in the sterling exchange rate (Chart 1.8). Improved global sentiment may have also boosted the prospects of those internationally focused companies: equity prices in the euro area, Japan and emerging market economies (EMEs) were also slightly higher at the time of the November Report than three months ago (Chart 1.7).

Bank funding costs

Banks can raise funds either through issuing debt or equity. Although UK bank equity prices remain lower than before the EU referendum, the cost of wholesale debt funding has fallen due, in part, to a narrowing in funding spreads (Chart 1.9). As explained in the box on pages 2–3, the TFS and CBPS may have contributed to that narrowing in spreads. Recent actions by the Financial Policy Committee to lower the countercyclical

Table 1.A Global activity growth slowed a little in Q2
GDP in selected countries and regions^(a)

Percentage changes on a quarter earlier, annualised

	Averages					2016		
	1998– 2007	2012– 13	2014	2015 H1	2015 H2	Q1	Q2	Q3
United Kingdom	2.9	1.9	3.5	1.5	1.9	1.7	2.7	2.0
Euro area (38%)	2.3	-0.2	1.3	2.3	1.6	2.1	1.2	1.4
United States (20%)	3.0	2.0	2.5	2.3	1.4	0.8	1.4	2.9
China (3%) ^(b)	10.0	7.8	7.3	7.0	6.9	6.7	6.7	6.7
Japan (2%)	1.1	1.1	-0.8	1.5	0.2	2.1	0.7	n.a.
India (1%) ^(b)	n.a.	6.2	7.0	7.1	7.4	7.9	7.1	n.a.
Russia (1%) ^(c)	7.8	1.6	-0.7	-4.9	-2.3	n.a.	n.a.	n.a.
Brazil (1%)	3.1	2.6	-0.6	-6.3	-5.5	-1.7	-2.3	n.a.
UK-weighted world GDP ^(d)	3.0	1.6	2.2	2.3	2.0	2.0	1.6	n.a.

Sources: IMF *World Economic Outlook* (WEO), OECD, ONS, Thomson Reuters Datastream and Bank calculations.

(a) Real GDP measures. Figures in parentheses are shares in UK goods and services exports in 2015.

(b) Data are four-quarter growth. The earliest observation for India is 2012 Q2.

(c) The earliest observation for Russia is 2003 Q2. Figure for 2015 H2 is based on data to 2015 Q3. Official seasonally adjusted GDP data beyond 2015 Q3 are not yet available.

(d) Constructed using data for real GDP growth rates for 180 countries weighted according to their shares in UK exports. For the vast majority of countries, the latest observation is 2016 Q2. For those countries where data are not yet available, Bank staff projections are used.

Table 1.B Euro-area activity growth remained steady in Q3
Selected euro-area indicators

Differences from averages, 1998–2007 (number of standard deviations)

	Quarterly averages			2016			
	2013	2014	2015	Q1	Q2	Q3	Oct.
Policy uncertainty ^(a)	2.0	1.0	1.5	2.7	3.2	2.5	n.a.
Consumer confidence ^(b)	-1.8	-0.3	0.4	0.0	0.1	0.0	0.1
Business confidence ^(c)	-1.6	-0.7	-0.4	-0.3	-0.2	-0.2	0.0
Composite PMI: output ^(d)	-1.4	-0.5	-0.2	-0.4	-0.4	-0.5	-0.3
Composite PMI: new orders ^(d)	-1.3	-0.5	-0.1	-0.2	-0.3	-0.3	-0.1

Sources: European Commission, IHS Markit, policyuncertainty.com and Thomson Reuters Datastream.

(a) Policy uncertainty is a measure of media citations of terms related to policy uncertainty, based on Baker, S R, Bloom, N and Davis, S J (2016), 'Measuring economic policy uncertainty', *NBER Working Paper No. 21633*. Measure constructed as an average of the series for France, Germany, Italy and Spain. Series for Spain begins in 2001.

(b) Overall EC consumer confidence indicator for the euro area.

(c) Headline sentiment index, reweighted to exclude consumer confidence. Average of overall confidence in the industrial (50%), services (38%), retail trade (6%) and construction sectors (6%).

(d) Data for October are flash estimates. The eurozone PMI is produced by IHS Markit based on original survey data collected from a representative panel of around 5,000 companies based in the euro-area manufacturing and service sectors. National manufacturing data are included for Austria, France, Germany, Greece, Italy, the Netherlands, the Republic of Ireland and Spain. National services data are included for France, Germany, Italy, the Republic of Ireland and Spain. Earliest observation is for July 1998.

capital buffer and to exclude central bank reserves from the leverage ratio should also, all else equal, help banks to structure their balance sheets to mitigate upward pressure on overall funding costs.

1.3 Developments in global activity

Four-quarter UK-weighted global activity growth slowed in 2016 Q2 to 1.9%, somewhat weaker than projected three months ago and still subdued relative to its pre-crisis average rate of 3% (Table 1.A). This was due in part to slower growth in the United States and EMEs; indicators of activity growth in Q3, however, suggest that this weakness was temporary. Growth is therefore projected to pick up gradually to a similar rate to that projected three months ago. As in recent *Reports*, the risks around the projection for global growth are judged to lie to the downside, largely on account of continued vulnerabilities in EMEs (Section 5).

Euro area

Having recovered from its weakness in 2013, four-quarter euro-area GDP growth has been steady over the past two years, supported by monetary policy and a slightly expansionary fiscal stance. Quarterly growth in Q3 remained at 0.3%, as projected in the *August Report*.

The near-term outlook for euro-area activity is for growth to pick up slightly around the turn of the year, a little faster than projected three months ago. Measures of uncertainty in the euro area, which had risen around the time of the EU referendum, have since fallen back (Table 1.B). Indicators of business activity and confidence have strengthened slightly, although some remain subdued relative to their pre-crisis levels. In contrast, consumer confidence has eased back a little since June, although it remains around its past average level.

United States

Over the past few years the US economy has continued to expand at a modest rate, driven by household consumption growth (Chart 1.10). Quarterly activity growth recovered to 0.7% in Q3, from a temporary dip in Q2 as the drag from stockbuilding unwound. Business investment growth remains weak, however, in part reflecting the effect of lower oil prices on energy-related investment. In the near term, activity is projected to continue growing at a little above ½% per quarter, supported by a gradual increase in productivity growth, albeit to rates below its pre-crisis average.

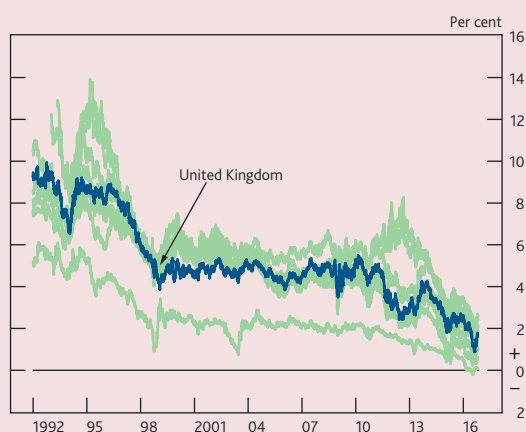
Employment growth, despite some volatility, appears to have been resilient. Monthly non-farm payrolls increased by 192,000 on average in Q3, slightly above the level consistent with a stable unemployment rate. An increase in participation, however, led to a small increase in the unemployment rate to 5.0%. This is only slightly above the median projection of

Explaining the long-term decline in interest rates

Both short-term and longer-term interest rates have fallen across advanced economies. Some of the recent declines, particularly in short-term interest rates, are likely to reflect cyclical factors with many economies having experienced similar shocks and policy responses during and after the financial crisis. Longer-term interest rates have, however, been declining globally for several decades (**Chart A**), suggesting that global structural factors — such as demographics and increased risk aversion — are likely to have been the primary driver. To the extent that monetary policy makers have set policy rates at low levels, this is likely to be a consequence of these trends, rather than being the primary cause of low rates: had central banks failed to track this trend, policy would have been too tight and inflation and output too low.⁽¹⁾

Chart A Forward interest rates have fallen across advanced economies in recent decades

Five-year, five-year forward nominal interest rates^(a)



Sources: Bloomberg and Bank calculations.

(a) Derived from the yields of five and ten-year benchmark government bonds. Green lines show data for: Australia, Canada, France, Germany, Italy, Japan, Spain and the United States.

While the transition from a higher inflation environment to lower, more stable, inflation in many advanced economies will have contributed to some of the decline in nominal interest rates since the 1980s, measures of real interest rates, which account for this, have also declined significantly over that period. Given the highly integrated nature of global capital markets, a key factor behind this decline is likely to have been shifts in global saving and investment preferences. This box examines the evidence for such shifts in more detail.

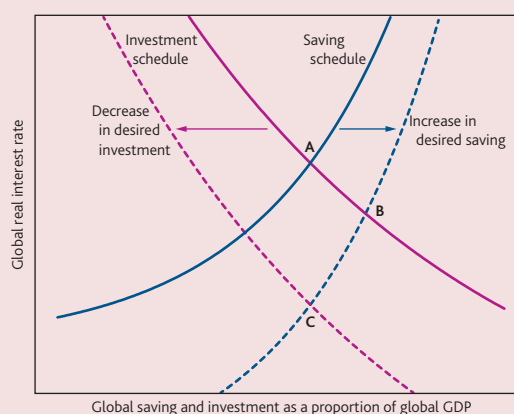
What influences long-term real interest rates?

Longer-term real interest rates will be determined by the balance between saving and investment preferences. For example, an increase in desired saving for a given desire to invest will lower the real interest rate required to bring actual saving and investment into line.

The decline in global real interest rates since the 1980s has been accompanied by broadly stable actual investment (and saving) relative to GDP. If the fall in real interest rates had been driven only by an increase in desired saving, the amount of actual saving and investment would have been expected to increase (moving from point A to point B in **Chart B**). The relative stability of the actual investment share therefore suggests that desired investment has also fallen (moving from B to C in **Chart B**). Together changes in desired saving and investment may be able to explain some of the falls in real interest rates since the 1980s. But estimates of the effects of these are extremely uncertain: desired saving and investment are unobservable, as are their relationships with real interest rates.

Chart B Higher desired saving and lower desired investment push down interest rates

Shifts in desired saving and investment: an illustration



Global growth expectations

In classical theories of growth, household saving decisions, wealth and the real interest rate are closely, and positively, related to the rate of technological progress, or productivity. Global growth expectations were broadly stable until the financial crisis, however, so this factor is unlikely to explain much of the decline in real interest rates observed before then. Downward revisions to global growth expectations since the financial crisis, however, could account for some of the more recent fall in long-term interest rates. For example, Consensus forecasts for global growth in five to ten years' time have fallen by around 1 percentage point since 2007.

Other shifts in desired global saving

In addition to changes in expected future economic growth, other factors may have increased desired global saving, which would be reflected in the blue line in **Chart B** moving outwards and lowering the real interest rate (from point A to B). One such factor is the changing global demographic

(1) For more detail on this, see Broadbent, B (2014), 'Monetary policy, asset prices and distribution'; www.bankofengland.co.uk/publications/Documents/speeches/2014/speech770.pdf; and Carney, M (2013), 'The spirit of the season'; www.bankofengland.co.uk/publications/Documents/speeches/2013/speech696.pdf.

profile.⁽¹⁾ Net wealth typically increases over an individual's working lifetime: young people tend to have more debt than older people, and over their working lives individuals tend to accumulate wealth in order to finance their consumption in retirement. Over the past few decades, the age distribution has changed such that a greater proportion of the population are at stages of life associated with higher rates of saving. Further, as life expectancy has tended to increase relative to average retirement ages, individuals may choose to save a greater proportion of their income while they are working in order to finance the same rate of consumption in their retirement. These demographic effects are likely to have increased aggregate desired wealth and pushed down real interest rates.⁽²⁾⁽³⁾

Changes in the distribution of income and wealth within countries may also have pushed up desired saving.⁽⁴⁾ People's saving rates tend to increase with their incomes, so the rise in income inequality since the 1980s — which has been associated with a greater proportion of income going to those in the higher income groups — may have pushed up aggregate desired saving.⁽⁵⁾

Another driver of desired saving is likely to have been a rise in EME government saving. During the Asian debt crisis in the late 1990s, the sudden reversal of capital flows to emerging economies prompted a sharp slowing in activity. Since then, EME governments have increased their saving, in part as a precautionary measure to avoid fluctuations in private sector borrowing destabilising their economies, which will have pushed down real interest rates. In recent years, however, the saving of oil-exporting economies have fallen significantly, which may have pushed up real interest rates.

Other shifts in desired global investment

At the same time as the rise in desired saving, desired investment appears to have fallen, consistent with the magenta line in **Chart B** moving inwards (from point B to point C). That is likely to have reflected several factors. For example, investors in risky projects require an expected rate of return greater than the real interest rate on relatively safe assets, such as government bonds, in order to compensate them for the risk they may lose some of their initial investment. While the cost of financing for companies has fallen in recent decades across many countries, it has fallen by less than yields on government bonds. That suggests that the compensation that investors require for holding risky assets has increased, perhaps reflecting increased risk aversion or heightened perceptions of risk: for example, if investors perceive that the probability of significant adverse events have increased they may be more willing to pay more for, and tolerate lower returns on, relatively safe government debt.⁽⁶⁾ This could have offset some of the boost to desired

investment that would otherwise have been provided by lower real interest rates.

Another factor that will influence desired investment is the price of capital goods, which has fallen significantly relative to output prices since the 1980s. That means that it costs businesses less, as a share of their revenue, to fund a given investment project. The lower price of capital may have encouraged some companies to undertake more investment, which would increase the overall capital stock. As the stock of capital increases, the extra productive potential of increasing it further is likely to decline. If this effect is sufficiently large, then the real interest rate would be expected to fall.⁽⁷⁾

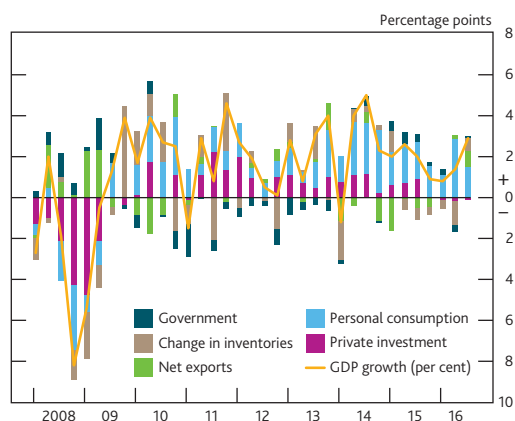
Other trends are also likely to have affected desired investment. For example, public sector investment rates have been declining over the past few decades. To the extent that those projects are not otherwise funded by the private sector, this would weigh on aggregate desired investment. And there have been some signs of a shift in corporate behaviour towards a greater distribution of earnings to investors instead of using these funds for investment, which may be due to the changing nature of incentives such as those associated with a reduction in the time shares tend to be held for.⁽⁸⁾

Conclusion

The impact of shifts in desired saving and investment on global real interest rates could explain much of the fall in real long-term interest rates in recent decades. But the relative sizes of the effects of these factors are highly uncertain, as is the outlook for real interest rates, which will depend on the extent to which these structural shifts persist.

- (1) For a more detailed discussion of how demographics can influence interest rates, see Vlieghe, G (2016), 'Debt, demographics and the distribution of income: new challenges for monetary policy'; www.bankofengland.co.uk/publications/Documents/speeches/2016/speech872.pdf.
- (2) For a model of how variations in net wealth over the life cycle can affect real interest rates, see Eggertsson, G and Mehrotra, N (2014), 'A model of secular stagnation', *NBER Working Paper No. 20574*.
- (3) For a model of how increasing life expectancy can push down on real interest rates, see Carvalho, C, Ferrero, A and Nacchio, F (2015), 'Demographics and real rates: inspecting the mechanism', working paper, Oxford University.
- (4) See, for example, the discussion of inequality in Rachel, L and Smith, T D (2015), 'Secular drivers of the global real interest rate', *Bank of England Staff Working Paper No. 571*; www.bankofengland.co.uk/research/Documents/workingpapers/2015/swp571.pdf.
- (5) See, for example, Attanasio, O, Besley, T, Haldane, A, Lindert, P, Piketty, T, Shanbhogue, R and Ventura, J (2015), 'Capital in the 21st century', *Bank of England Quarterly Bulletin*, Vol. 55, No. 1, pages 36–46; www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2015/q103.pdf.
- (6) For a discussion of this, see Broadbent, B (2014), 'Monetary policy, asset prices and distribution'; www.bankofengland.co.uk/publications/Documents/speeches/2014/speech770.pdf.
- (7) Thwaites, G (2015), 'Why are real interest rates so low? Secular stagnation and the relative price of investment goods', *Bank of England Staff Working Paper No. 564*; www.bankofengland.co.uk/research/Documents/workingpapers/2015/swp564.pdf.
- (8) For more detail on the conflicting incentives faced by companies, see Haldane, A (2015), 'Who owns a company?'; www.bankofengland.co.uk/publications/Documents/speeches/2015/speech833.pdf.

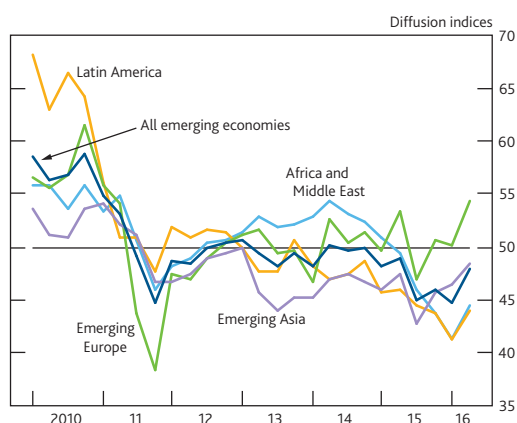
Chart 1.10 US GDP growth picked up in Q3
Contributions to quarterly US GDP growth^(a)



Source: US Bureau of Economic Analysis.

(a) Chained-volume measures. Seasonally adjusted annualised rate.

Chart 1.11 Financial conditions may have held back EME growth recently
EME bank lending conditions^(a)



Source: Institute of International Finance.

(a) A balance of 50 indicates neutral conditions, and a lower (higher) balance indicates tighter (looser) conditions.

Table 1.C Inflation remains weak across countries
Inflation in selected countries and regions

Per cent	Monthly averages					2016			
	1998–2007	2015 H1	2015 H2	2016 Q1	2016 Q2	July	Aug.	Sep.	Oct.
Annual headline consumer price inflation									
United Kingdom	1.6	0.1	0.0	0.4	0.4	0.6	0.6	1.0	n.a.
Euro area ^(a)	2.0	-0.1	0.1	0.0	-0.1	0.2	0.2	0.4	0.5
United States ^(b)	2.0	0.3	0.4	0.9	1.0	0.8	1.0	1.2	n.a.
UK-weighted world inflation ^(c)	2.0	0.4	0.5	0.8	0.6	n.a.	n.a.	n.a.	n.a.
Annual consumer price inflation excluding food and energy^(d)									
United Kingdom	1.2	1.0	1.2	1.3	1.3	1.3	1.3	1.5	n.a.
Euro area ^(a)	1.6	0.7	0.9	1.0	0.8	0.9	0.8	0.8	0.8
United States ^(b)	1.8	1.4	1.4	1.6	1.6	1.6	1.7	1.7	n.a.

Sources: Eurostat, IMF WEO, ONS, Thomson Reuters Datastream, US Bureau of Economic Analysis and Bank calculations.

(a) Data points for October 2016 are flash estimates.

(b) Personal consumption expenditure price index inflation. Data point for September 2016 is a preliminary estimate.

(c) Constructed using data for consumption deflators for 51 countries weighted according to their shares in UK exports. For the vast majority of countries, the latest observation is 2016 Q2. Where data are not yet available, Bank staff projections are used.

(d) For the euro area and the United Kingdom, excludes energy, food, alcoholic beverages and tobacco. For the United States, excludes food and energy.

FOMC members for the longer-run unemployment rate of 4.8%. While broader measures of underemployment — which include those who would like to work more hours for example, or those marginally attached to the labour force — remain elevated relative to their pre-crisis levels, most measures suggest that slack has narrowed over the past couple of years. Perhaps reflecting this, measures of wage growth have shown tentative signs of picking up: for example, the Employment Cost Index measure of wages increased by 2.4% over the four quarters to 2016 Q3, up from around 2% in 2014–15.

Emerging market economies

Over the past few years, four-quarter activity growth in China has slowed gradually from around 10%. This slowing appears to have stabilised in recent quarters, and growth in Q3 was broadly in line with expectations at 6.7% (Table 1.A). At the end of last year there had been concerns among market participants of a more pronounced slowing in growth. Those concerns appear to have diminished, at least in the near term; capital outflow pressures have eased and the depreciation in the renminbi exchange rate has been gradual. But activity continues to be underpinned by strong domestic credit growth, which poses a risk to the medium-term sustainability of growth.

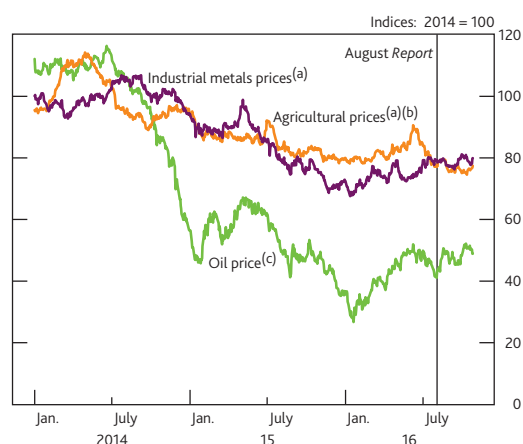
Elsewhere, EME activity growth slowed a little further. Growth was weaker than expected in 2016 H1 as activity in Brazil contracted by more than anticipated and growth in India slowed slightly. Bank lending conditions also continued to tighten (Chart 1.11). Some of the weakness in growth reflected erratic factors and so is likely to dissipate. In addition, the adverse effects of lower commodity prices (Section 1.4) on commodity exporters is expected to diminish following recent increases in oil prices. Moreover, portfolio capital inflows to EMEs increased in Q3 and corporate bond spreads have also narrowed in recent months. This may suggest some improvement in financial conditions, which should support near-term growth prospects. Consistent with this, more recent data and forward-looking indicators suggest some improvement in overall EME growth in Q3. In particular, there are signs of stabilisation in Russia and Brazil, two economies that accounted for a significant proportion of the slowdown in overall EME growth during 2012–16.

As in August, the balance of risks to EME growth prospects remains to the downside. Many EMEs have a large stock of outstanding debt, and may be vulnerable to capital outflows and any tightening in financial conditions, for example if US interest rates rise more quickly than expected.

1.4 Commodity markets and developments in inflation

Inflation across advanced economies remains weaker than prior to the financial crisis (Table 1.C). Headline inflation

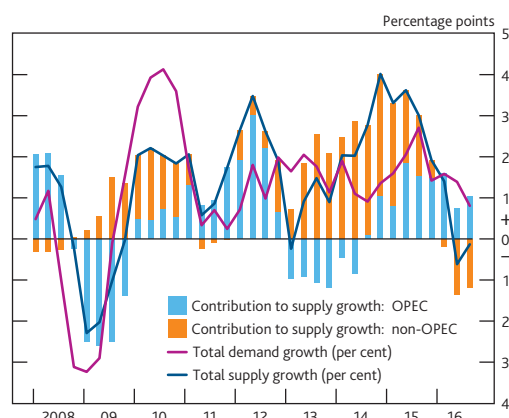
Chart 1.12 Oil prices have risen since August
US dollar oil and commodity prices



Sources: Bloomberg, S&P indices, Thomson Reuters Datastream and Bank calculations.

- (a) Calculated using S&P GSCI US dollar commodity price indices.
(b) Total agricultural and livestock S&P commodity index.
(c) US dollar Brent forward prices for delivery in 10–25 days' time.

Chart 1.13 Oil supply growth has slowed to below demand growth
Four-quarter growth in global oil supply and demand



Sources: International Energy Agency *Oil Market Report* © OECD/IEA 2016 and Bank calculations.

rates have been dragged down by falls in the prices of energy-related goods following the fall in oil prices in 2014–15 (**Chart 1.12**). In addition, the prices of other commodities, including agricultural products, have drifted lower over the past two years.

As the effects of past falls in oil prices have begun to fade, headline inflation rates have started to increase and will be boosted further by the rise in oil prices since the start of the year. Ultimately the price of oil is determined by the balance between oil supply and demand. Over the past few years, oil supply growth has been robust and outstripped demand growth, largely on account of non-OPEC supply (**Chart 1.13**). Although non-OPEC supply fell during the four quarters to 2016 Q3 — in part in response to lower oil prices — the International Energy Agency projects supply to recover in 2017. Uncertainty surrounding a potential OPEC agreement to limit production was behind some volatility in oil prices in August and September. An agreement was announced on 28 September that, if implemented, would reduce oil production from recent levels. In the run-up to the November *Report*, oil prices were 12% above their level at the time of the August *Report* (**Chart 1.12**).

Measures of core inflation — which exclude the direct effects of changes in energy and food prices — remain fairly subdued. This is likely to reflect some remaining slack in advanced economies. As global growth picks up (Section 5), this should reduce slack and put upward pressure on domestic costs and core inflation. The near-term projection is for an increase in headline inflation globally, little changed from three months ago.

Table 1.D Monitoring the MPC's key judgements

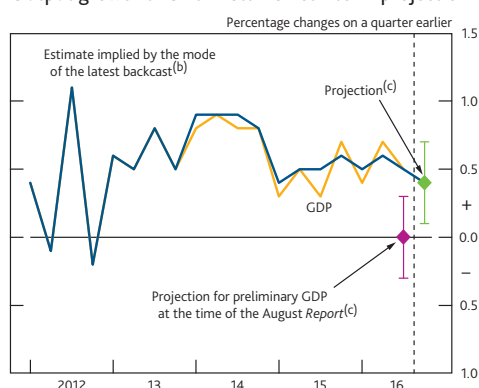
Developments anticipated in August	Developments now anticipated
Advanced economies <ul style="list-style-type: none"> Quarterly euro-area growth to average around ¼%. Annual inflation to increase. Quarterly US GDP growth to average a little above ½%. Annual PCE inflation to pick up in coming months, averaging a little below 1½%. 	Broadly unchanged <ul style="list-style-type: none"> Quarterly euro-area growth to average between ¼% and ½%. Annual euro-area HICP inflation to increase to above 1% around the turn of the year. Quarterly US GDP growth to average a little above ½%. Annual US PCE inflation to pick up in coming months as past falls in oil prices drop out of the annual calculation, reaching 2% in the first half of 2017.
Rest of the world <ul style="list-style-type: none"> Average four-quarter PPP-weighted EME growth of around 4¼%; Chinese GDP growth to average around 6½%. 	Broadly unchanged <ul style="list-style-type: none"> Average four-quarter PPP-weighted EME growth of around 4¼%; Chinese GDP growth to average around 6½%.
Commodity prices and the exchange rate <ul style="list-style-type: none"> Commodity prices and sterling ERI to evolve in line with the conditioning assumptions. 	Sterling lower than expected Oil prices higher than expected <ul style="list-style-type: none"> Commodity prices and sterling ERI to evolve in line with the conditioning assumptions.

2 Demand and output

Output grew by 0.5% in Q3. This was slightly lower than Q2 growth and a much less marked slowing than expected at the time of the *August Report*. The near-term outlook for growth is also stronger. While investment intentions have weakened further since August, household spending appears to have remained robust and conditions in the housing market have been resilient. The past depreciation in sterling should support net trade and will boost the sterling value of foreign income, helping to narrow the current account deficit.

Chart 2.1 GDP growth is projected to slow slightly further in Q4

Output growth and Bank staff's near-term projection^(a)



Sources: ONS and Bank calculations.

- (a) Chained-volume measures. GDP is at market prices.
 (b) The latest backcast, shown to the left of the vertical line, is a judgement about the path for GDP in the mature estimate of the data. The observation for 2016 Q4, to the right of the vertical line, is consistent with the MPC's central projection.
 (c) The magenta diamond shows Bank staff's central projection for the preliminary estimate of GDP growth in 2016 Q3 at the time of the August Report, which was consistent with growth of 0.1% in the mature estimate as shown in Chart 2.13 of the August Report. The green diamond shows the current staff projection for the preliminary estimate of GDP growth in 2016 Q4. The bands on either side of the diamonds show uncertainty around those projections based on one root mean squared error of past Bank staff forecasts for quarterly GDP growth made since 2004.

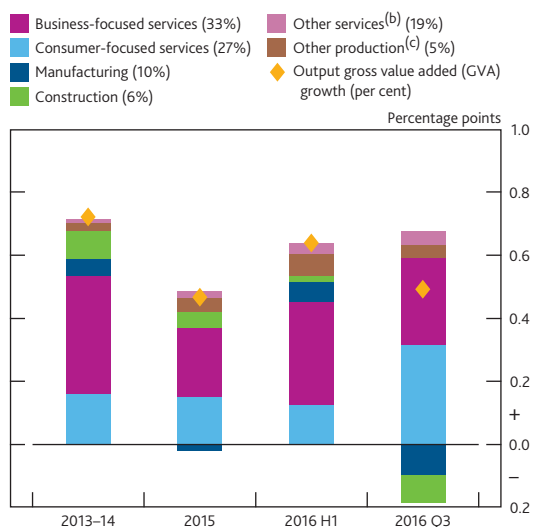
Table 2.A Monitoring the MPC's key judgements

Developments anticipated in August	Developments now anticipated
Cost of credit	Revised down slightly
• Credit spreads to increase slightly.	• Credit spreads to remain broadly flat.
Consumer spending	Revised up slightly
• Quarterly consumption growth to slow gradually to around ¼% in 2017 Q1.	• Quarterly consumption growth has been revised up in the near term and is expected to average ¼% in 2016 Q4 to 2017 Q2.
Housing market	Revised up
• Mortgage approvals to average around 56,000 a month.	• Mortgage approvals to average around 65,000 per month.
• The average of the Halifax and Nationwide house price indices is expected to decline a little over the next year.	• The average of the Halifax and Nationwide house price indices is expected to increase by ½% per quarter.
• Quarterly growth in housing investment to average -1%.	• Housing investment to be flat.
Business investment	Revised up
• Business investment to fall by around 1¼% a quarter, on average.	• Business investment to fall by around ¾% a quarter, on average.

In August, the MPC projected that demand growth would slow materially in 2016 H2 (**Chart 2.1**), although there was considerable uncertainty around that judgement and the precise extent and timing of any slowing was hard to judge from the range of indicators available. Measures of uncertainty in the economy had picked up ahead of the June referendum and rose further in July. That appeared to be weighing on indicators of activity and property markets. For example, the July Markit/CIPS business survey — which has in the past been a better gauge of official output data than most other survey measures — pointed to a weaker outlook than in the MPC's August projections, consistent with a sharp fall in activity. Uncertainty was expected to remain elevated in the near term, reflecting the range of possible outcomes for the United Kingdom's future trading arrangements and their differing implications for economic activity and incomes.

Since then, the slowing in growth has been much less severe than those indicators initially suggested. According to the latest ONS estimates, GDP growth slowed only slightly to 0.5% in 2016 Q3 from 0.7% in Q2 (**Chart 2.1**). It is expected to remain at 0.5% in the mature estimate, compared to the August projection of 0.1%. The slowing in Q3 mainly reflected falls in manufacturing and construction output (**Chart 2.2**). Growth in business-facing service sectors also slowed somewhat. In part, this is likely to have reflected a weakening in commercial real estate transactions (Section 2.1). In contrast, output growth in consumer-facing service sectors strengthened, suggesting household demand growth remained robust.

While survey measures of expected activity continued to decline slightly in Q3 as a whole, some monthly indicators such as the Markit/CIPS measure recovered in August and September from their July lows (**Chart 2.3**). Overall, GDP growth is projected to slow slightly further to 0.4% in 2016 Q4, consistent with a preliminary estimate of 0.4%. Within the modest slowing in GDP growth in 2016 H2,

Chart 2.2 Output grew by 0.5% in Q3Contributions to average quarterly GVA growth by output sector^(a)

Sources: ONS and Bank calculations.

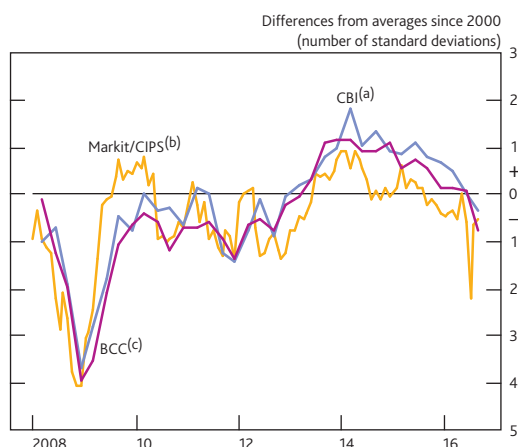
(a) Chained-volume measures at basic prices. Contributions may not sum to the total due to rounding. Service industries are defined as 'consumer-focused' if the share of their output that is directly consumed exceeds the share of output that is sold to other businesses to be used as intermediate inputs, while the reverse is true for 'business-focused' service sectors. Calculated using the *United Kingdom Input-Output Analytical Tables 2010*. Figures in parentheses are weights in nominal GDP in 2013.

(b) Other services includes: public administration and defence; health services and education.

(c) Other production includes: utilities; extraction and agriculture.

Chart 2.3 The Markit/CIPS indicator of expected output has recovered from its July low

Survey indicators of expected output growth



Sources: BCC, CBI, IHS Markit and Bank calculations.

(a) Net percentage balance of respondents reporting that they expect output/business/sales to increase in the next three months for manufacturing and business/consumer/professional services, and next month for distributive trade sectors; quarterly average of monthly data. Weighted together using output shares.

(b) Monthly data to September 2016. Net percentage balance of companies reporting that they expect business activity to rise over the next twelve months (services and construction) or that new orders have increased over the month (manufacturing). Weighted together using output shares.

(c) Net percentage balance of respondents in the non-services and services sectors reporting that they expect turnover to increase in the next year, weighted together using output shares. Data are non seasonally adjusted.

business investment appears likely to have fallen, while consumption growth appears to have remained robust, and spending is likely to be supported by the MPC's policy package (Section 2.1). A broad-based indicator of the level of uncertainty has fallen from its July peak, although it remains above its long-run average and firms responding to the CBI survey reported that their uncertainty about the outlook for demand increased markedly in Q3 (Chart 2.4). Net trade is also projected to support GDP growth in coming quarters (Section 2.2), although it is likely to be sensitive to changes in perceptions of the United Kingdom's future trading arrangements (see the box on pages 21–22).

2.1 Domestic demand

Business spending

Business investment rose modestly in Q2 (Table 2.B) but was lower than a year ago. These early data are, however, volatile and prone to revision.⁽¹⁾ At the time of the *August Report*, survey indicators and intelligence from the Bank's Agents suggested that the heightened level of uncertainty around the outlook was weighing on firms' investment intentions, and business investment was projected to fall in the near term. Since then, survey indicators have, on average, weakened further (Chart 2.5). The stronger outlook for output growth suggests, though, that investment is likely to fall by less than projected in August (Table 2.A).

A number of factors are likely to be affecting the outlook for investment. First, heightened uncertainty following the referendum is likely to weigh on companies' investment decisions.⁽²⁾ Second, investment could be affected by any decisions by firms to reallocate capital in anticipation of changes in UK trading arrangements. Third, the 21% depreciation in sterling since November 2015 (Section 1) will raise the cost of imported capital goods. As a significant proportion of investment is relatively capital-intensive, this may deter some investment spending.

Prices and activity in the commercial real estate (CRE) market can also affect companies' spending in a number of ways. Around a quarter of investment directly reflects spending on new and existing buildings, including costs associated with CRE transactions, such as legal fees. While CRE market activity will directly affect that transaction expenditure, sentiment in the market may also affect investment more broadly. In addition, many firms use property as collateral for borrowing. Fluctuations in CRE prices can, therefore, affect their access to finance.

(1) See Chart 2.10 of the *May 2016 Report*; www.bankofengland.co.uk/publications/Documents/inflationreport/2016/may.pdf.

(2) For a discussion of the effect of uncertainty on companies' investment decisions see the box on pages 14–15 of the *May Report* and Broadbent, B (2016), 'Uncertain times'; www.bankofengland.co.uk/publications/Documents/speeches/2016/speech929.pdf.

Defined-benefit pension fund deficits and the real economy

Pension funds invest upfront contributions to provide payments to beneficiaries on retirement. There are two main types of pension funds: defined-benefit and defined-contribution. Payouts by defined-contribution funds depend on the return earned on investments, while for defined-benefit funds, the value of those payments is specified in advance. When calculating the current value of defined-benefit pension funds' assets and liabilities, those future payments are typically discounted in line with a benchmark yield curve. As a result, the value of their liabilities can increase when long-term interest rates fall.

The overall effect of changes in long-term interest rates on the net value of a pension fund and hence the degree to which it is in deficit will depend, however, on how the value of its assets change. For example, falls in interest rates associated with an easing in monetary policy will typically boost the value of both assets and liabilities. All else equal, therefore, funds starting from a balanced position will typically remain so, although those funds starting from a deficit position would probably see some widening in their deficits.⁽¹⁾

When deficits have increased in the past, they have typically closed over time as pension funds' assets have historically earned a higher average return than the interest rates used to calculate the value of their liabilities. This has not, however, been the case over the past five years, as falls in long-term interest rates have outpaced increases in the prices of riskier assets, such as equities, and pension deficits have widened (**Chart A**).⁽²⁾ As explained in the box on pages 8–9, most of those falls in the yield curve are likely to have reflected the influence of global factors such as increased risk aversion.

There are around 6,000 defined-benefit pension schemes in the United Kingdom, of which around 80% are currently in deficit. One timely measure of the size of the aggregate deficit is provided by the Pension Protection Fund. On that measure, UK defined-benefit pension funds had a deficit of 29% of their assets at the end of September (**Chart A**). Although that deficit has widened over much of the past year, it narrowed slightly in September and is likely to have narrowed further in October, in line with the rise in long-term interest rates (Section 1).

The widening in defined-benefit pension funds' deficits over recent years could have macroeconomic consequences if it influences businesses' decisions such as their spending, hiring and dividend payouts. This box examines the evidence, so far, on their macroeconomic effects, drawing on the results of a recent survey by the Bank's Agents.

Chart A Defined-benefit pension fund deficits have widened as long-term yields have fallen

Fifteen-year government bond yield and the balance on UK defined-benefit pension funds as a proportion of total assets



Sources: Bloomberg, Pension Protection Fund and Bank calculations.

- (a) Monthly average of daily data. Zero-coupon spot rate derived from government bond prices. Data for October are the average of data for 3 October to 26 October.
 (b) Calculated as the aggregate value of pension schemes' total assets less the value of their liabilities, divided by the total value of assets. Calculated on a \$179 basis, which is the theoretical cost that would have to be paid to a private insurance company to take on the level of protection provided by the Pension Protection Fund. As the Fund does not provide protection for the full liability, this number may be somewhat smaller than a measure (the technical provisions measure) calculated for each scheme by trustees and considered by The Pensions Regulator every three years. Data are up to September 2016.

Economic implications

An increase in pension deficits could affect businesses' decisions through two key channels. One channel is if firms reduce spending in order to increase their pension contributions. Firms are required by The Pensions Regulator to have plans in place to close their deficits. When making those plans, however, companies are allowed to consider their forecast for cash flows after essential investment and their plans for sustainable growth. As such, defined-benefit pension contributions have been broadly stable over the past decade despite fluctuations in the size of deficits.

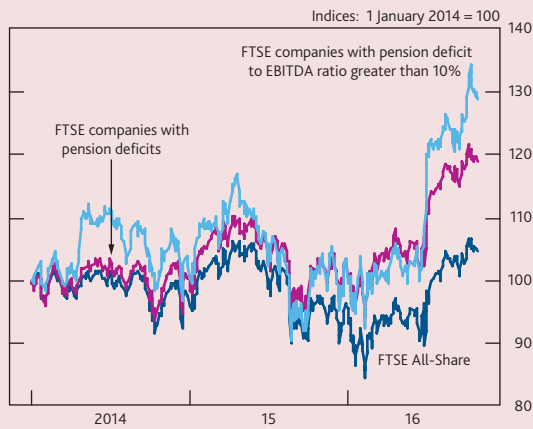
The second key channel is if an increase in pension deficits raises firms' financing costs. The widening in deficits since 2014 does not, however, appear to have dragged on the equity prices of those companies compared with the broader index (**Chart B**). Factors other than pension deficits, however, such as the depreciation in sterling, are likely to have supported these companies' equity prices more recently, perhaps because they are on average more internationally focused (Section 1).

Perhaps consistent with that, there is little evidence so far to suggest that changes in pension deficits have weighed on firms' spending decisions in aggregate. While past analysis by Bank staff and other researchers has found that companies'

(1) See Bean, C (2012), 'Pension funds and quantitative easing'; www.bankofengland.co.uk/archive/Documents/historicpubs/news/2012/050.pdf for a discussion of the effects of monetary policy on pension fund assets and liabilities.
 (2) See Broadbent, B (2016), 'Uncertain times'; www.bankofengland.co.uk/publications/Documents/speeches/2016/speech929.pdf for a more detailed discussion of this issue.

Chart B Equity prices for firms with large pension deficits do not appear to have fallen relative to other companies

Equity prices: FTSE All-Share and companies with pension deficits^(a)



Sources: Thomson Reuters Datastream, Worldscope and Bank calculations.

(a) Pension deficits for 2015 used to group companies.

dividend payouts have been affected by the level of pension deficits, these do not appear to have had a significant influence on business investment.⁽¹⁾ Changes in pension deficits may, however, have been important to certain companies' spending decisions.

In addition, a recent survey on investment intentions conducted by the Bank's Agents suggests that, in aggregate, pension deficits were not having a significant impact on firms' investment plans for the coming year (**Chart C**). Companies with pension deficits report that this is due to a number of factors, including: the periods over which they intend to close their deficits, which have in some cases been extended or were expected to be extended in future; their balance sheets, which have strengthened during recent years; and their access to finance, which has improved. As with investment, there is little evidence, so far, that the increase in pension deficits has weighed on employment or wage growth. The Bank's Agents and respondents to business surveys have not reported this factor as being a significant influence on hiring or pay decisions.

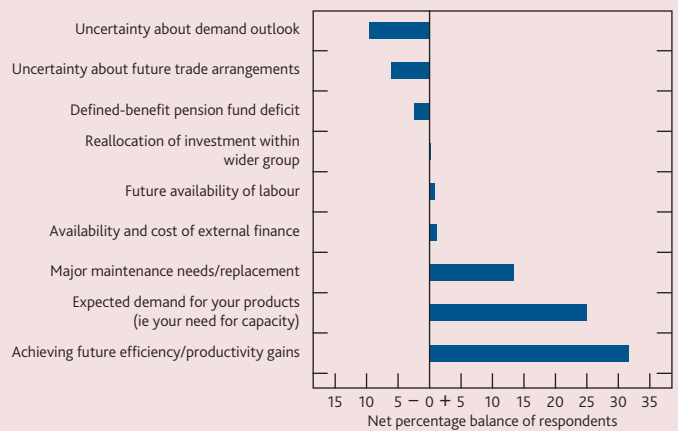
Conclusion

The evidence examined so far suggests that changes in defined-benefit pension fund deficits do not appear to have been a significant influence, in aggregate, on firms' spending decisions over the past or on their current plans for future spending.

The effects of low long-term interest rates on defined-benefit pension fund deficits was one of the main issues discussed when the Financial Policy Committee (FPC) and the Monetary Policy Committee (MPC) met on 4 October. Both Committees will continue to monitor developments in

Chart C A survey by the Bank's Agents suggests that defined-benefit pension fund deficits are not a key influence on aggregate investment at present

Agents' survey: factors influencing firms' investment decisions^(a)



(a) Factors influencing investment decisions over the next twelve months compared with the previous twelve months. The balances show the proportion of companies indicating whether each factor is pushing down, boosting or has no impact on capital expenditure decisions over the next twelve months. Respondents could select more than one option. Responses are weighted by employment and sectors are weighted by turnover. More detail on the survey can be found in the forthcoming *Agents' summary of business conditions* published on 9 November.

pension fund deficits and evidence on the implications for the economic outlook and financial stability closely.

The Committees were also briefed on how the outlook for economic activity and inflation had evolved since the *August Report*, as detailed in the MPC's September Minutes and the box on page 5. And they were briefed on how the outlook for UK financial stability had evolved. As detailed in the FPC's September Record, the financial system had demonstrated resilience to spikes in uncertainty and risk aversion. Core financial markets had functioned effectively despite initial sharp price moves and particularly high volumes of transactions relative to normal levels in some markets. Bank funding conditions had remained broadly stable. That reflected the consistent building of resilience in the financial system over recent years, extensive contingency planning undertaken by the Bank of England and financial institutions in the run-up to the referendum, and the co-ordinated actions taken by the Bank after the referendum.⁽²⁾

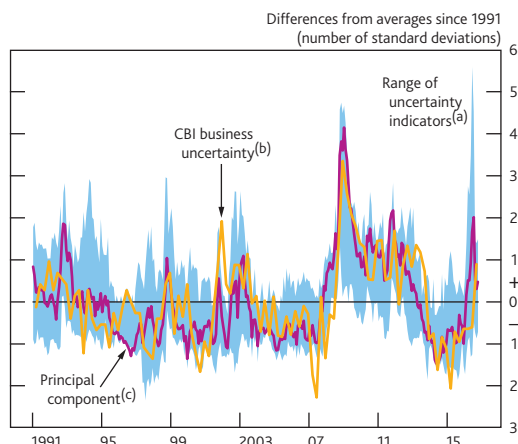
In addition to defined-benefit pension fund deficits, there were a number of other issues identified that were particularly pertinent to both Committees and which they agreed they would continue to monitor closely in this forum. That included bank resilience, profitability and future credit conditions, and the distribution of household indebtedness.

(1) See for example, Tonks, I and Liu, W (2012), 'Pension funding constraints and corporate expenditures'; http://people.bath.ac.uk/it237/Research/Dividend&Investment_Sensitivity.pdf, or Bunn, P and Trivedi, K (2005), 'Corporate expenditures and pension contributions: evidence from UK company accounts', *Bank of England Working Paper No. 276*; www.bankofengland.co.uk/archive/Documents/historicpubs/workingpapers/2005/wp276.pdf.

(2) The MPC's September Minutes can be found at www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2016/sep.pdf, and the FPC's September Record can be found at www.bankofengland.co.uk/publications/Documents/records/fpc/pdf/2016/record1610.pdf.

Chart 2.4 Uncertainty has eased but remains above its long-run average level

Range of uncertainty measures



Sources: Bloomberg, CBI, Consensus Economics, Dow Jones Factiva, GfK (research on behalf of the European Commission), Thomson Reuters Datastream and Bank calculations.

- (a) A higher number indicates greater uncertainty. Range includes: the average standard deviation of monthly Consensus Economics forecasts for GDP growth in the current and next year ahead, seasonally adjusted by Bank staff; the number of media reports citing uncertainty in four national broadsheet newspapers; survey responses of households to questions relating to their personal financial situation and unemployment expectations; and the three-month implied volatilities for the FTSE 100 and sterling ERI — realised volatilities have been used prior to April 1992 and September 2001 respectively. Media and implied volatilities data for October are based on daily data up to 26 October.
- (b) Quarterly data. CBI survey measure of demand uncertainty as a factor likely to limit capital expenditure for manufacturing and services — excluding distribution and financial services — weighted together using shares in value added. Prior to 1998, CBI data are for manufacturing only.
- (c) The first principal component extracted from the set of indicators listed in footnote (a).

Table 2.B Household consumption growth picked up, while net trade fell in Q2

Expenditure components of demand^(a)

Percentage changes on a quarter earlier

	Averages					2016	
	1998– 2007	2008– 09	2010– 12	2013– 14	2015	Q1	Q2
Household consumption ^(b)	0.9	-0.6	0.2	0.5	0.7	0.7	0.9
Private sector investment	0.7	-4.4	1.6	1.1	0.8	-0.1	0.5
of which, business investment ^(c)	0.6	-3.0	1.9	0.8	0.5	-1.1	1.0
of which, private sector housing investment	0.8	-7.4	0.8	2.8	1.5	2.0	-0.5
Private sector final domestic demand	0.8	-1.3	0.6	0.7	0.7	0.6	0.8
Government consumption and investment ^(c)	0.8	0.9	-0.1	0.4	0.4	0.4	0.8
Final domestic demand	0.8	-0.8	0.4	0.6	0.6	0.5	0.8
Change in inventories ^{(d)(e)}	0.0	0.2	0.0	0.0	-0.1	0.3	-0.4
Alignment adjustment ^(e)	0.0	-0.1	0.0	0.1	-0.1	-0.5	0.8
Domestic demand ^(f)	0.8	-0.8	0.4	0.8	0.4	0.1	1.4
'Economic' exports ^(g)	1.2	-1.1	0.7	0.8	1.3	0.1	-1.1
'Economic' imports ^(g)	1.4	-1.2	0.8	1.1	1.2	0.2	1.3
Net trade ^{(e)(g)}	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.8
Real GDP at market prices	0.7	-0.7	0.4	0.7	0.4	0.4	0.7
Memo: nominal GDP at market prices	1.2	-0.2	0.9	1.0	0.5	1.2	1.5

(a) Chained-volume measures unless otherwise stated.

(b) Includes non-profit institutions serving households.

(c) Investment data adjust for the transfer of nuclear reactors from the public corporation sector to central government in 2005 Q2.

(d) Excludes the alignment adjustment.

(e) Percentage point contributions to quarterly growth of real GDP.

(f) Includes acquisitions less disposals of valuables.

(g) Excluding the impact of missing trader intra-community (MTIC) fraud.

The CRE market had already weakened markedly in 2016 H1 and this weakness has continued. Despite rising in September, the value of CRE transactions in Q3 was 40% lower than a year ago. The RICS commercial property market survey reported a small rise in occupier demand for CRE, although demand remains weak, especially in London. Consistent with the weakness in demand for CRE, prices fell in Q3 and market contacts and indicators, such as the RICS survey, suggest that new construction also declined. Market contacts expect CRE prices to fall further over the coming year.

Businesses' investment decisions can also be affected by the cost of finance. The cost of market-based finance for non-financial companies has changed little since August despite the rise in benchmark interest rates, as spreads on corporate bonds have narrowed slightly (Section 1). In addition, banks' business lending rates, which are generally linked to Bank Rate or Libor, fell in the months following the MPC's August announcement (Table 2 in the box on pages 2–3).

Despite those declines in the cost of finance, net external finance raised by private non-financial corporations was lower in 2016 Q3 than in Q2 (Table 2.C). Within that, net issuance of commercial paper and net new bank lending fell, consistent with evidence from the Q3 *Credit Conditions Survey* that firms' demand for loans declined in Q3. In contrast, corporate bond issuance picked up and market contacts expect the Bank's Corporate Bond Purchase Scheme (Section 1) to support sterling issuance in coming months. Respondents to the *Credit Conditions Survey* expected the cost and availability of corporate credit to remain stable and demand to remain subdued in Q4.

While low interest rates should support investment, they can also increase the value of companies' liabilities, particularly those of their pension funds. Firms with large pension deficits could choose to reduce their investment spending in order to increase their pension contributions. As explained in the box on pages 14–15, however, the evidence so far suggests that the size of pension deficits has not been a major influence on firms' investment spending in the past. Moreover, a recent survey on investment intentions conducted by the Bank's Agents suggests that, in aggregate, pension deficits were not having any significant influence on firms' investment plans.

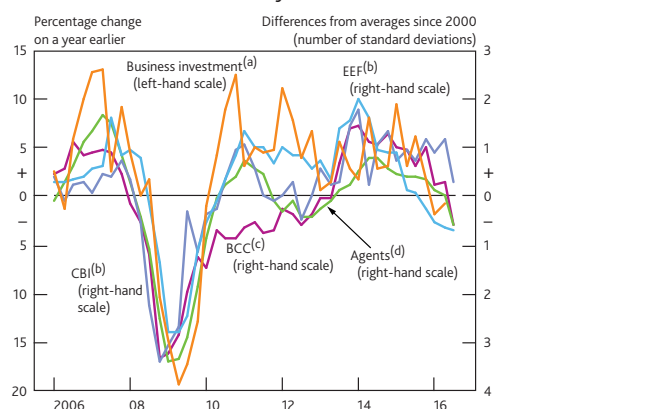
Household spending and the housing market

In the August *Report*, consumption growth was projected to ease gradually in 2016 H2. Indicators of household spending growth, such as new car registrations and retail sales, and stronger-than-expected output growth suggest that consumption growth remained robust in Q3, however. There is little evidence of uncertainty depressing spending so far.

In the near term, consumption growth is projected to slow modestly as real income growth slows (Table 2.A). While

Chart 2.5 Measures of investment intentions have weakened further

Business investment and survey measures of investment intentions



Sources: Bank of England, BCC, CBI/PwC, EEF and Bank calculations.

- (a) Chained-volume measure. Data are to 2016 Q2 and adjust for the transfer of the nuclear reactors from the public corporation sector to central government in 2005 Q2.
 (b) EEF and CBI measures are net percentage balances of respondents reporting that they have increased planned investment in plant and machinery for the next twelve months. EEF measure corresponds to the manufacturing sector and CBI sectoral surveys are weighted together using shares in real business investment.
 (c) BCC measure is the net percentage balance of respondents reporting that they have increased planned investment in plant and machinery. Sectoral surveys are weighted together using shares in real business investment. Data are non seasonally adjusted.
 (d) Agents measure shows companies' intended changes in investment over the next twelve months, with sectoral surveys weighted together using shares in real business investment. Q3 figure reflects data for the average of July and August.

Table 2.C Net finance raised by companies in Q3 was lower than in Q2

Net external finance raised by private non-financial corporations^(a)

£ billions

	Quarterly averages					2016 Q3
	2003– 08	2009– 12	2013– 14	2015	2016 H1	
Loans	11.6	-6.2	-1.5	1.3	6.2	1.3
Bonds ^{(b)(c)}	2.9	3.3	3.1	3.1	5.2	6.1
Equities ^(b)	-2.1	1.3	0.2	1.1	0.7	0.3
Commercial paper ^(b)	0.0	-0.4	-0.3	1.5	-0.6	-3.3
Total^(d)	12.9	-1.9	1.6	6.3	10.4	6.8

- (a) Includes sterling and foreign currency funds from UK monetary financial institutions and capital markets.
 (b) Non seasonally adjusted.
 (c) Includes stand-alone and programme bonds.
 (d) As component series are not all seasonally adjusted, the total may not equal the sum of its components.

Table 2.D Real income growth has supported consumption growth

Household income, consumption and saving

	Averages					
	1998–2007	2010–12	2013–14	2015 H1	2015 H2	2016 Q1 Q2
Percentage changes on a year ago						
Real post-tax income ^(a)	3.0	0.3	1.0	1.3	2.2	2.6 1.7
Real post-tax labour income ^(b)	3.4	0.1	1.4	2.0	3.2	1.7 2.7
Consumption ^(c)	3.5	0.6	1.9	2.5	2.5	2.7 2.9
Per cent						
Saving ratio ^(d)	8.0	9.4	6.7	6.0	6.3	5.6 5.1
Saving out of available income ^(e)	-1.3	1.7	-0.2	0.1	1.2	1.0 0.9

- (a) Total available household resources divided by the consumer expenditure deflator.
 (b) Wages and salaries plus mixed income less taxes plus net transfers, divided by the consumer expenditure deflator.
 (c) Chained-volume measure. Includes non-profit institutions serving households.
 (d) Percentage of household post-tax income.
 (e) Percentage of household post-tax income excluding flows into employment-related pension schemes.

nominal income growth has been subdued (Section 4), real income growth over the past year (Table 2.D) has been boosted by falls in food and energy prices (Section 4). That increase in purchasing power appears to have supported robust household consumption growth in 2016 H1. As food and energy prices have stopped falling, real income growth is expected to have slowed in 2016 H2. Further ahead, the pickup in import prices, following the depreciation in sterling, is likely to weigh further on real income growth.

Households' confidence in their expected income and financial situation will influence their decisions to spend or save out of their current income. The GfK/EC measure of households' confidence in making major purchases — which has typically been a good indicator of spending growth — has been above its long-run average for the past two years (Chart 2.6).

The cost and availability of credit is another key influence on households' spending and saving decisions. The cut in Bank Rate has lowered interest rates on deposits and borrowing (see the box on pages 2–3). Lower interest rates will reduce debt-servicing costs for borrowers. Although it will also reduce the income on deposits for savers, the net effect will support aggregate consumption. Moreover, the latest Bank/NMG survey of household finances shows that households with greater savings, who may be experiencing a fall in their income from deposits, are also likely to hold more non-deposit financial assets, which will have risen in value in response to lower interest rates.

The fall in interest rates will also support household spending by lowering the cost of consuming now relative to the future. Household unsecured credit growth was robust over the year to September and respondents to the *Credit Conditions Survey* expect demand for credit to rise in Q4.

Another indicator of households' spending intentions is their money holdings, such as deposits. Growth in household money has been picking up since the start of the year — annual growth in the M4 measure was 6.9% in September compared to 3.8% at the end of 2015. Over a similar period, households appear to have withdrawn money from equity and property-related funds. As such, the pickup in household money holdings may, in part, reflect a desire to hold more liquid assets in the face of uncertainty about the general economic situation as opposed to a greater desire to spend.

Reflecting robust household confidence and the low level of interest rates, the saving rate is projected to decline a little further in coming quarters. There are risks, however, around that outlook, associated with the impact of general economic uncertainty on household confidence and the timing of any such effect. If households were to become less confident in their prospects for income growth — for example, in response to any increases in unemployment — then that could be associated with a rise in precautionary saving.

The housing market and household spending

Since the vote to leave the European Union, household spending has remained resilient and the housing market has weakened by less than projected at the time of the *August Report* (Section 2.1). Developments in the housing market and consumption are closely linked. Indeed, house price inflation and consumption growth have been highly correlated in the past.

In large part, that close relationship is because household decisions to consume or buy property are driven by common factors such as income growth, confidence and financial conditions. Beyond those common factors, however, there are a number of channels through which developments in the housing market and household spending can be interlinked. This box considers the evidence for three main potential channels, drawing on household-level data including the latest Bank/NMG survey of household finances, before considering estimates from a structural econometric model of the aggregate relationship between house prices and consumption.

The collateral effect

When house prices rise, the value of homeowners' equity also increases. This can allow households to use that increase in equity as collateral to borrow against. Such a collateral channel would be expected to result in increases in house prices being associated with increases in homeowners' consumption relative to that of renters.

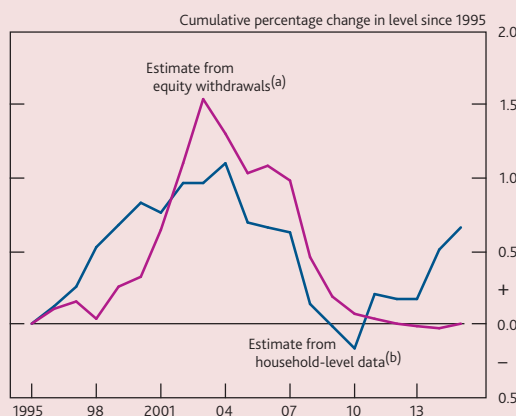
Household-level data from the ONS Living Costs and Food Survey provide some evidence of a collateral channel over much of the past 25 years. On average, homeowners' consumption was more sensitive to changes in house prices than that of renters.⁽¹⁾ Bank staff estimate that a 10% increase in house prices was associated with a boost to the level of consumption averaging 0.5% over the following year, which was reversed in the subsequent year. The size of that effect is small, however, compared with the average comovement between house prices and consumption over the past.

Data on households' housing equity withdrawals can provide a cross-check on this estimate, as withdrawals used to fund consumption are likely to be one of the main ways the collateral channel influences consumption. Over 1995 to 2014, an estimate of equity withdrawn through mortgage advances for consumer spending aligns quite closely with the estimate of the propensity to spend out of the increase in house prices over that period (**Chart A**).

In the most recent Bank/NMG survey conducted in September 2016, there is tentative evidence that the effect of this channel may be even smaller at the moment. A similar proportion of homeowners and renters reported that they

Chart A Changes in house prices appear to have had a small effect on consumption through the collateral channel

Estimates of the contribution to consumption through the collateral channel



Sources: British Household Panel Survey, ONS Living Costs and Food Survey, ONS and Bank calculations.

- (a) Based on data on further mortgage advances and a staff estimate that around half of housing equity withdrawals are for consumption, while the other half are used for home improvements, which would be expected to add to the value of the property.
(b) Calculated using staff estimates of the marginal propensity to consume out of an increase in house prices.

would expect to increase their spending in response to a 10% increase in house prices.

The distributional wealth effect

A rise in house prices may also affect spending by changing perceptions of wealth. For an individual household this will depend on their expected future demand for housing as well as their current demand. For households planning on trading down in the future, a rise in house prices may mean they expect to release more cash when they make that move, which could cause them to spend more now. Those purchasing for the first time or trading up, however, may need to put in more cash or take out a larger mortgage when they make that move, which could lead them to save more now. If the former has a bigger effect on aggregate spending than the latter, then increases in house prices would boost spending through this distributional wealth channel.

The effects of such a channel would be expected to be seen in a difference in the response of older households' consumption to changes in house prices, relative to that of younger households. Household-level data, however, provide little evidence of such a difference. Indeed, younger households' consumption appears to have risen more in response to increases in house prices than that of older households in the past.⁽²⁾ Consistent with that, the latest Bank/NMG survey

(1) This finding is broadly consistent with those of other researchers. See for example Disney, R, Gathergood, J and Henley, A (2010), 'House price shocks, negative equity and household consumption in the United Kingdom', *Journal of the European Economic Association*, Vol. 8(6), pages 1,179–207.

(2) See for example Attanasio, O, Blow, L, Hamilton, R and Leicester, A (2009), 'Booms and busts: consumption, house prices and expectations', *Economica*, Vol. 76, Issue 301, pages 20–50.

suggests that younger households' spending behaviour continues to be more responsive to changes in house prices than that of older households.

The durable goods effect

Moving house is often associated with a greater propensity to purchase certain durable goods, such as furniture and household appliances. Changes in the volume of housing transactions can, therefore, influence the consumption of these goods. This would support consumption to the extent that these purchases are not financed by reducing other consumption.

The British Household Panel Survey provides evidence of such a durable goods channel. Households are found to be two to three times more likely to purchase white goods when moving house.⁽¹⁾ The effect of this channel on consumption is, however, quite small as household appliances only form 0.6% of the consumption basket. Those data suggest that an additional 100,000 housing transactions — close to a doubling of transactions from the current monthly rate — would be associated with around a 0.05% increase in annual consumption.

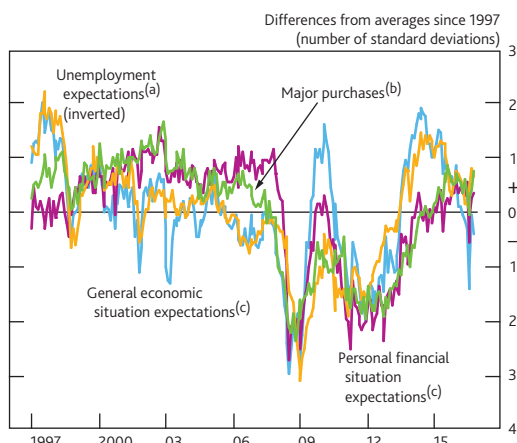
The overall impact of the housing market on consumption

Taken together, the evidence suggests that these direct links from house prices to consumption are too small to explain the strong correlation seen between consumption and house prices in the data. That is consistent with an important role

for common factors in driving both. As well as easily observed variables such as current income, those common factors may be things that are hard to measure like households' uncertainty or their future income expectations. House prices may therefore provide timely information on how these are changing, and the outlook for household spending, even if they are not actually driving changes in that outlook themselves. Macroeconometric models of the economy typically find a significant link between house prices and consumption growth. One such model, which is used to inform the MPC's projections for consumer spending, suggests that a one-off 10% rise in house prices would, on average, be associated with stronger mortgage lending and a boost to the level of consumption averaging just under 1% over the following year, fading back to around ½% in the year after.⁽²⁾ This impact assumes no additional feedback to household incomes and other variables. The fact that this is a much stronger and more persistent effect than suggested by the microeconomic evidence suggests that the impact of house prices on consumption in macroeconomic models may indeed reflect the effect of common factors that are influencing both, as well as any direct effect of house prices on spending.

- (1) Benito, A and Wood, R (2005), 'How important is housing market activity for durables spending?', *Bank of England Quarterly Bulletin*, Summer, pages 153–59; www.bankofengland.co.uk/archive/Documents/historicpubs/qb/2005/qb050202.pdf.
 (2) Cloyne, J, Thomas, R, Tuckett, A and Wills, S (2015), 'A sectoral framework for analysing money, credit and unconventional monetary policy', *Bank of England Staff Working Paper No. 556*; www.bankofengland.co.uk/research/Documents/workingpapers/2015/swp556.pdf.

Chart 2.6 Consumer confidence remains robust
Measures of consumer confidence and unemployment expectations



Sources: GfK (research carried out on behalf of the European Commission) and Bank calculations.

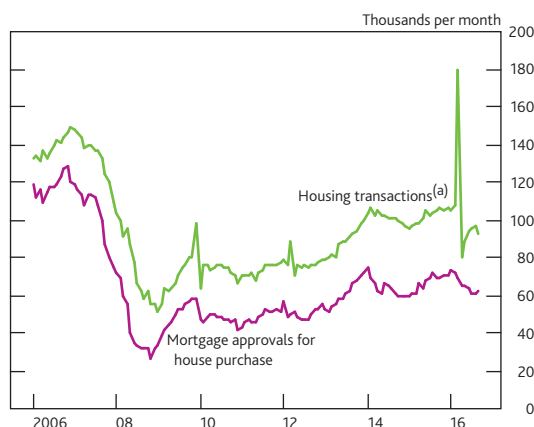
- (a) Net balance of respondents expecting that the number of people unemployed will rise over the next twelve months.
 (b) Net balance of respondents reporting that, in view of the general economic situation, now is the right time for people to make major purchases such as furniture or electrical goods.
 (c) Net balance of respondents reporting that they expect their personal financial situation or the general economic situation to improve over the next twelve months.

As explained in the box on pages 18–19, household spending is closely related to developments in the housing market. Housing market activity will also have a more direct effect on housing investment. Around a quarter of housing investment reflects spending on services associated with housing transactions. As discussed in the *May Report*, the pre-announced rise in stamp duty land tax in April 2016 led some transactions that would otherwise have taken place later in the year to be brought forward (**Chart 2.7**). That resulted in a sharp rise in transactions in Q1 and a subsequent fall in April. Since then, housing transactions have risen modestly, though they remain below their late-2015 levels.

Mortgage approvals, a leading indicator of housing transactions, have fallen in recent months (**Chart 2.7**) and annualised growth in the average of the Halifax and Nationwide house price indices slowed to 2.5% in the three months to September from 4.6% in the three months to June. Both of those were somewhat higher than forward-looking indicators at the time of the *August Report* suggested and, while housing transactions and house price inflation are projected to remain subdued, the outlook is more resilient than in August. While the RICS survey balances for new buyer

Chart 2.7 Housing market activity has weakened somewhat

Mortgage approvals for house purchase and housing transactions



Sources: Bank of England and HM Revenue and Customs.

(a) Number of residential property transactions for values of £40,000 or above.

enquiries and price expectations both remain below their levels at the turn of the year, they have rebounded from their lows in June and July. The fall in mortgage interest rates (see the box on pages 2–3) should also be supporting demand for house purchases. Lenders responding to the Q3 *Credit Conditions Survey* reported that demand for mortgages fell significantly in 2016 Q3, but is expected to recover in Q4.

Around three quarters of housing investment consists of investment in new dwellings and improvements to existing dwellings. At the time of the *August Report*, heightened uncertainty was projected to weigh on new housing starts. The Bank's Agents and market contacts report that this impact appears to have been less severe, so far, than projected. Investment in new dwellings rose in 2016 Q2 and forward-looking indicators, such as housing starts and new construction orders also rose. Housing investment is projected to remain broadly unchanged in the near term (Table 2.A).

Government spending

The MPC's November projections are conditioned on the Government's spending plans, along with tax and benefit rates, set out in the March *Budget*. The MPC's February 2017 projections will include any changes to those plans and policies that are announced in the Autumn Statement on 23 November.

2.2 Net trade and the current account

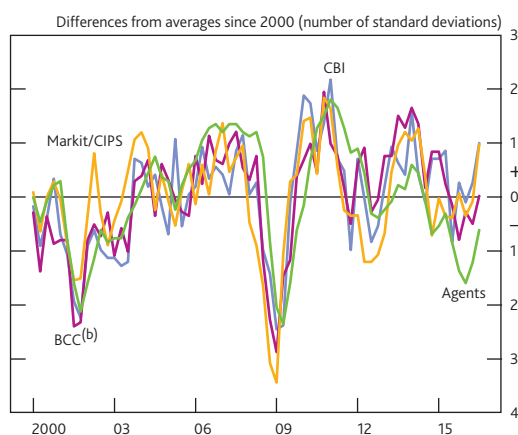
Net trade dragged on growth in the first half of 2016, mainly reflecting weak growth in exports (Table 2.B). The vote to leave the European Union is likely to lead to an adjustment in the composition and size of UK trade flows, reflecting changes in trading arrangements with other countries. There is considerable uncertainty around what those eventual arrangements will be and how quickly trade flows will respond in anticipation of those changes.

Sterling has depreciated by 21% since its peak in November 2015. This will affect the prices of UK imports and exports, which should support net trade through two key channels — reducing domestic demand for imported goods and services and supporting foreign demand for UK exports. As explained in the box on pages 21–22, however, the outlook for net trade and the extent of that support will be influenced by a wide range of factors.

Net trade is expected to have supported GDP growth in Q3 and to continue to support growth in the near term. The Bank's Agents report that the depreciation in sterling has supported demand for exports, consistent with rises in survey indicators of growth in goods export orders (Chart 2.8).

Chart 2.8 Growth in export orders appeared to pick up in Q3

Survey measures of goods exports(a)



Sources: Bank of England, BCC, CBI, IHS Markit and Bank calculations.

(a) BCC and CBI measures are net percentage balances of manufacturing companies reporting that export orders increased on the quarter. CIPS measure is the net percentage balance of manufacturing companies reporting that export orders increased this month compared with the previous month; quarterly average of monthly data. The Agents measure is manufacturing companies' reported annual growth in production for sales to overseas customers over the past three months; Q3 data are for August.

(b) BCC data are non seasonally adjusted.

Net trade and the exchange rate

The United Kingdom's trade with the rest of the world is an important component of UK economic activity (Section 2.2). It will reflect, among other factors, developments in foreign demand (Section 1), domestic demand (Section 2.1) and the sterling exchange rate. The depreciation in sterling of 21% over the past year (Section 1) should support UK exports and weigh on imports over coming years. But, as set out in this box, there is uncertainty over the magnitude of these effects, and net trade — exports less imports — will be sensitive to how companies anticipate and respond to possible future changes in the United Kingdom's trading arrangements.

Trade prices

Movements in sterling are likely to affect export and import prices, but the scale and timing of that impact will depend on how exporters and importers respond. The initial ability of firms to adjust prices will depend on factors such as the length of contracts and the currency in which exports and imports are invoiced.

When companies reset prices they face a choice of how much to adjust them by. For instance, in response to the depreciation, UK exporters could maintain their export prices in sterling terms, passing through all of the depreciation to lower export prices in foreign currency terms. UK export prices relative to those of the rest of the world, in common currency terms, would therefore fall. This gain in competitiveness would support UK export volumes. Alternatively, exporters could choose to maintain foreign currency export prices and earn a higher sterling profit margin on exports sold. That decision for exporters of how much to adjust prices is likely to depend on: how persistent they expect the fall in sterling to be; the strength of demand growth in their export markets; how price-sensitive they judge demand for their products to be; and how many inputs to production they import.

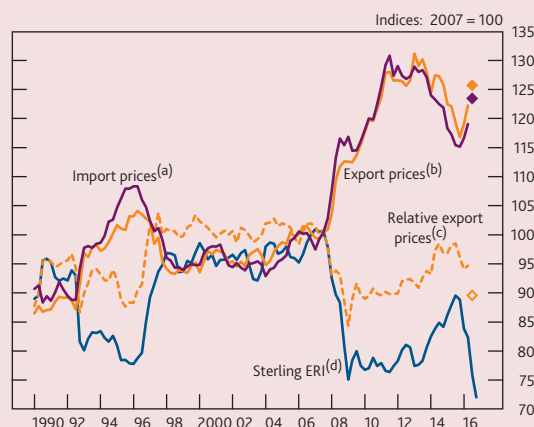
At the same time, the pass-through of the fall in sterling to import prices will depend on a similar set of factors, including foreign exporters' pricing strategies in light of conditions in the UK economy (Section 4).⁽¹⁾ Higher import prices relative to the prices of available domestic alternatives will make imported goods and services less competitive, which will weigh on import volumes.

The overall scale of the boost to net trade from a depreciation will depend on the extent of these movements in trade prices. Both export and import prices have typically changed by about 60% of any change in sterling: for instance, they picked up by around 15% following the depreciation of sterling of around 25% in 2007–08 (Chart A). Foreign currency export

prices, therefore, tend to be cut by around 40% of any fall in sterling: UK exporters become somewhat more competitive but also allow margins to rise. That increase in export margins is likely to be gradually competed away, as exporters raise production or new firms enter export markets, boosting export supply. But it can take time for capital and labour to shift between sectors to enable this.

Chart A Export and import prices increased similarly following past depreciations

Sterling exchange rate and measures of trade prices



Sources: Bank of England, CEIC, Eurostat, ONS, Thomson Reuters Datastream and Bank calculations.

- (a) UK import prices, excluding the impact of MTIC fraud. The diamond shows Bank staff's projection for 2016 Q3.
- (b) UK sterling export prices, excluding the impact of MTIC fraud. The diamond shows Bank staff's projection for 2016 Q3.
- (c) UK sterling export prices, excluding the impact of MTIC fraud, divided by the ratio of domestic currency export prices of goods and services of 51 countries, weighted together according to their shares in UK imports, to the sterling effective exchange rate. The sample excludes major oil exporters. The diamond shows Bank staff's projection for 2016 Q3.
- (d) Quarterly average of daily data. 2016 Q4 data point is the average from 3 October to 26 October.

The net trade outlook

The response of trade volumes to changes in trade prices associated with the fall in sterling and the net trade outlook in coming years will depend on how domestic and foreign firms anticipate and respond to the evolution of UK trading arrangements following the vote to leave the European Union.⁽²⁾

Uncertainty over the United Kingdom's long-term trading arrangements could mean that those companies that currently, or would aspire to, export have less incentive to invest to expand capacity. For example, UK companies may delay entering new markets or foreign firms may put off planned investment in UK-based capacity. In addition, uncertainty may make EU importers, and perhaps importers in other countries, reluctant to renew or enter into new contracts with UK exporters. Trade that is part of supply chains with other EU countries, crossing borders more than once in the

(1) For more details see the box on pages 28–29 of the November 2015 *Report*; www.bankofengland.co.uk/publications/Documents/inflationreport/2015/nov.pdf.

(2) For more details see the box on page 29 of the August *Report*; www.bankofengland.co.uk/publications/Documents/inflationreport/2016/aug.pdf.

production process, may be particularly affected. The United Kingdom is highly integrated into supply chains: the latest estimates for 2011 suggest that around a quarter of UK exports were part of supply chains with other EU countries.⁽¹⁾

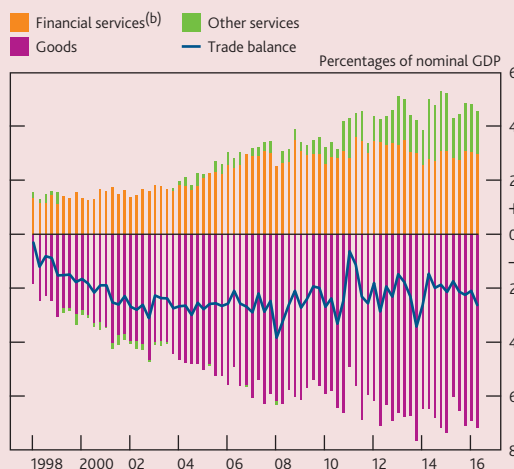
Developments in net trade in coming years are likely to differ across the economy. For instance, some goods producers are particularly integrated into EU supply chains. Some service sectors such as financial services benefit from relatively open access to EU markets. The surplus in financial services trade is around 3% of GDP, around 1¼ percentage points of which is with the European Union, and it accounts for the majority of the surplus in services trade (**Chart B**). Prospects in these areas of the economy are, therefore, likely to be sensitive to any changes in trading arrangements.

In addition, there is evidence that increased specialisation in goods over time may have limited the scope to substitute easily away from imports to domestically produced goods in which the United Kingdom may not have a comparative advantage.⁽²⁾ Indeed, cross-country evidence suggests that the increasing role of global supply chains over time may have steadily reduced the sensitivity of trade volumes to changes in the exchange rate and trade prices.⁽³⁾

The outlook for net trade over the MPC's forecast horizon is discussed in Section 5.

Chart B The United Kingdom has run a trade surplus in services

Trade balances by sector^(a)



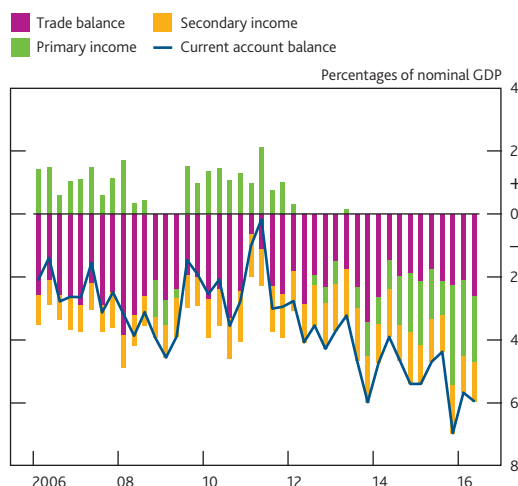
Sources: ONS and Bank calculations.

(a) At market prices. Excluding the estimated impact of MTIC fraud.

(b) Includes monetary financial institutions, insurance companies, pension providers and other financial institutions.

Chart 2.9 The current account deficit widened slightly in Q2

UK current account



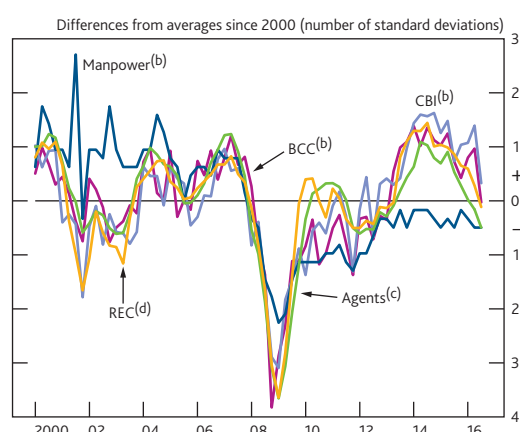
Payment flows associated with trade and investment between the United Kingdom and the rest of the world will be reflected in the current account. The current account deficit widened slightly to 5.9% of GDP in Q2 from 5.7% in Q1 (**Chart 2.9**). This was driven by a widening in the trade deficit, which was partly offset by a fall in the primary income deficit. Primary income is the value of net investment income received by UK residents. As UK residents hold more foreign currency assets than they have foreign currency liabilities, the depreciation will have boosted the sterling value of net primary income. The depreciation will have also boosted the sterling value of foreign currency assets relative to foreign currency liabilities, contributing to an improvement in the United Kingdom's international investment position. The current account is projected to narrow further over the coming quarters as the effects of the depreciation continue to be passed through to income flows.

3 Supply and the labour market

Employment growth has eased in recent months and surveys of employment intentions point to a further slowing in the near term. The softening in employment growth in 2016 H2 appears likely, however, to be more gradual than expected at the time of the *August Report*. Unemployment is projected to be stable in the near term. The outlook for output growth will depend in part on developments in supply, which will be sensitive to changes in trading arrangements between the United Kingdom and its economic partners. In the near term, productivity growth is projected to remain subdued.

Chart 3.1 Employment intentions have continued to soften since the referendum

Survey indicators of employment intentions^(a)



Sources: Bank of England, BCC, CBI, CBI/PwC, KPMG/REC/IHS Markit, Manpower, ONS and Bank calculations.

- (a) Measures for the Bank's Agents (manufacturing and services), the BCC (non-services and services) and CBI (manufacturing, financial services, business/consumer/professional services and distributive trades) are weighted together using employee shares from Workforce Jobs. The Manpower and REC data cover the whole economy. The BCC data are non seasonally adjusted.
- (b) Net percentage balance of companies expecting their workforce to increase over the next three months.
- (c) End-quarter observation. The scores refer to companies' employment intentions over the next six months. 2016 Q3 data are for August.
- (d) Quarterly average. Net percentage balance of recruitment agencies' reports on the demand from employers for staff placements compared with the previous month.

Output growth appears to have slowed slightly in 2016 H2 (Section 2). Employment growth has also eased in recent months. Broadly consistent with the continued softening in survey indicators of employment intentions (Chart 3.1), employment growth is projected to slow further in the near term (Section 3.1). That slowing is more gradual than projected in August (Table 3.B), reflecting stronger-than-expected output growth.

The unemployment rate and overall slack in the economy are projected to be broadly stable in the near term (Section 3.2). Developments in output growth further ahead will depend on labour supply growth (Section 3.3) and on productivity growth (Section 3.4). Subdued demand and elevated uncertainty are likely to weigh on productivity growth, by reducing investment in physical capital and in skills and innovation. The path for productivity will also be sensitive to whether firms anticipate any changes to trading arrangements between the United Kingdom and its economic partners, and any adaption of production ahead of the transition to those arrangements (Section 5).

3.1 Labour demand

Employment growth slowed slightly in the three months to August (Table 3.A), but was stronger than expected at the time of the *August Report*. That slowing is likely in part to reflect a normalisation in the labour market, following the absorption of spare capacity and rapid growth in employment over 2012–15. Consistent with that, indicators suggest that, in recent quarters, recruitment difficulties have been similar to or greater than prior to the financial crisis.

In the near term, employment growth is projected to slow further, to below its past average rate, as companies respond to the more subdued demand outlook and above-average levels of uncertainty (Section 2). That is consistent with

Table 3.A Employment growth has slowed

Change in employment, and survey indicators of recruitment difficulties

	Quarterly averages					2016		
	2000–07	2008–09	2010–12	2013–14	2015	Q1	Q2	Q3
Change in employment (thousands)^(a)	70	-59	67	130	149	44	172	106
<i>of which, employees^(a)</i>	55	-67	32	106	112	28	72	120
<i>of which, self-employed and other^{(a)(b)}</i>	16	7	35	24	37	16	100	-14
Surveys of recruitment difficulties								
Agents ^(c)	1.5	-2.5	-1.1	0.4	2.0	1.5	1.3	1.3
BCC ^(d)	61	55	51	57	66	69	65	57
CBI, skilled ^(e)	27	15	16	23	34	35	32	28
CBI, other ^(e)	8	2	2	3	8	8	5	8

Sources: Bank of England, BCC, CBI, CBI/PwC, ONS and Bank calculations.

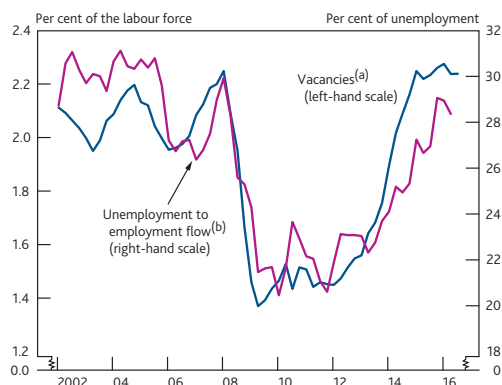
- (a) Changes relative to the previous quarter. Figures for 2016 Q3 are data for the three months to August.
 (b) Other comprises unpaid family workers and those on government-supported training and employment programmes classified as being in employment.
 (c) End-quarter observations on a scale of -5 to +5, with positive scores indicating greater recruitment difficulties in the most recent three months compared with the situation a year earlier. 2016 Q3 data are for August.
 (d) Percentage of respondents reporting recruitment difficulties over the past three months. Non seasonally adjusted. Services and non-services balances are weighted using employee shares from Workforce Jobs.
 (e) Balances of respondents expecting skilled or other labour to limit output/business over the next three months (in the manufacturing sector) or over the next twelve months (in the financial services, business/consumer/professional services and distributive trades sectors), weighted using employee shares from Workforce Jobs.

Table 3.B Monitoring the MPC's key judgements

Developments anticipated in August	Developments now anticipated
Unemployment	Revised down slightly
• Unemployment rate to rise to just over 5% by 2017 Q1.	• Unemployment rate to rise to just over 5% by 2017 Q2.
Participation	Revised up slightly
• Labour market participation rate to remain stable at around 63½%.	• Participation rate to fall back slightly, and then remain just below 63¾% during 2017 H1.
Average hours	Broadly unchanged
• Average hours to fall by ¾% in the year to 2017 Q1.	• Average hours to fall by just under ½% in the year to 2017 Q2.
Productivity	Revised up slightly
• Quarterly hourly labour productivity growth of around ¼% in the near term.	• Quarterly hourly labour productivity growth of between ¼% and ½% in the near term.

Chart 3.2 Vacancies have been broadly flat recently

Vacancies and flow from unemployment to employment



Sources: Labour Force Survey (LFS) and Bank calculations.

- (a) Excludes vacancies in agriculture, forestry and fishing. Data for 2016 Q3 are vacancies in September relative to the size of the labour force in the three months to August.
 (b) Two-quarter average. Based on total LFS unemployment of people aged 16–64. Data are up to 2016 Q2.

survey indicators of employment intentions, which fell further in Q3 (**Chart 3.1**). That slowing is more gradual than projected in August, consistent with the stronger path for output growth in 2016 H2 (Section 2).

The projected further slowing in employment growth mainly reflects an expected easing in the rate of hiring, rather than an increase in the rate of job losses. There is uncertainty, however, around the extent, timing and composition of that slowing, and there are risks in both directions. To assess whether the projection for employment growth is on track, the MPC monitors a wide range of aggregate and sectoral indicators of the labour market, including official data, survey evidence and reports from the Bank's Agents.

One key indicator of hiring is the number of vacancies. The number of vacancies rose strongly over 2012–14, leading to a sharp pickup in the rate at which unemployed people found jobs (**Chart 3.2**). Since the beginning of 2015, the number of vacancies has been fairly flat, and is expected to fall slightly in the near term, broadly consistent with survey indicators of recruitment intentions. The Bank's Agents report that the softening in recruitment intentions since the referendum has been concentrated in some professional and financial services subsectors. In addition, in consumer services, the increase in some wage costs as a result of the National Living Wage — which came into effect in April (Section 4) — is reported to have weighed on recruitment intentions.

In contrast, the rates at which employees are made redundant or move from employment to unemployment for other reasons have been well below past average levels in recent quarters (**Chart 3.3**), and are likely to remain low in the near term. That is consistent with the stability in indicators of job losses, such as the Chartered Institute of Personnel and Development (CIPD) survey of businesses' redundancy intentions and the GfK/EC survey of households' expectations for unemployment.

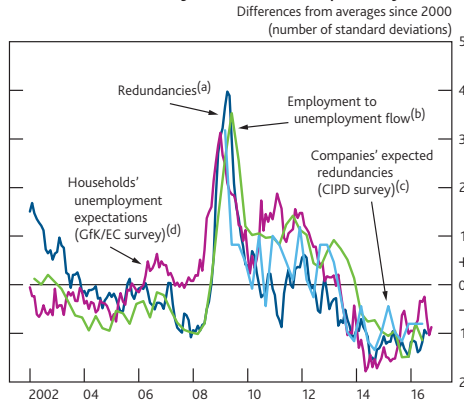
3.2 Slack in the economy

Economic slack tries to capture the extent of underused resources, which may exert downward pressure on inflation. One important aspect of slack is unemployment. Reflecting the past strength in labour demand growth, the unemployment rate fell steadily over 2013–15, and was stable at 4.9% in the three months to August (**Chart 3.4**). Consistent with the near-term projection for employment growth (Section 3.1), unemployment is projected to remain stable over the rest of the year, slightly lower than projected in August. Beyond the near term, unemployment is projected to rise modestly (Section 5).

Bank staff estimate that the unemployment rate is currently close to its medium-term equilibrium rate — that consistent

Chart 3.3 Redundancies and indicators of job losses remain low

Job losses and survey indicators of expected job losses

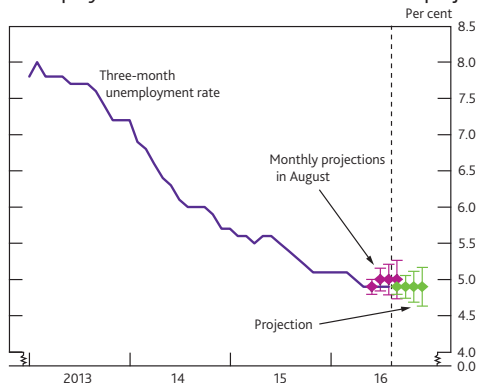


Sources: CIPD, GfK (research carried out on behalf of the European Commission), Labour Force Survey (LFS) and Bank calculations.

- (a) Percentage of total LFS employees. Monthly data, to August 2016.
 (b) Percentage of total LFS employment of people aged 16–64. Two-quarter average of quarterly data, to 2016 Q2.
 (c) Percentage of employers intending to make redundancies over the next three months. Data begin in 2009. Quarterly data, to 2016 Q2.
 (d) Net balance of respondents expecting that the number of people unemployed will rise over the next twelve months. Monthly data, to October 2016.

Chart 3.4 Unemployment is expected to be stable in the near term

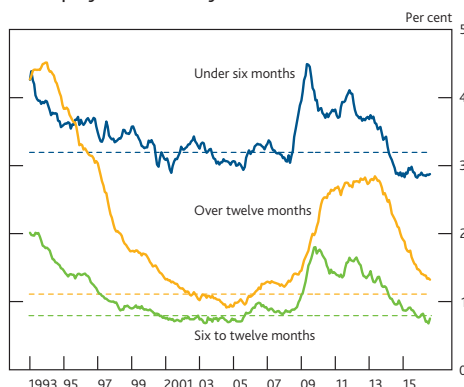
Unemployment rate and Bank staff's near-term projection^(a)



- (a) The magenta diamonds show Bank staff's central projections for the headline unemployment rate for the three months to June, July, August and September 2016, at the time of the *August Report*. The green diamonds show the current staff projections for the headline unemployment rate for the three months to September, October, November and December 2016. The bands on either side of the diamonds show uncertainty around those projections based on one root mean squared error of past Bank staff forecasts for the three-month LFS unemployment rate.

Chart 3.5 Short-term unemployment remains below, but long-term unemployment above, its pre-crisis average rate

Unemployment rates by duration^(a)



Sources: Labour Force Survey and Bank calculations.

- (a) The number of people unemployed in each duration category, divided by the economically active population. Dashed lines are averages from 2002 to 2007.

with neither upward nor downward pressure on wage growth. There is, however, uncertainty around this judgement.

On the one hand, unemployment could still be above its equilibrium. Wage growth has remained weak in the face of the decline in the unemployment rate, which could suggest a lower equilibrium rate of unemployment. The rising average age of the workforce and increased degree of educational attainment over the past two decades are characteristics that have tended to be associated with lower unemployment rates and so could have lowered the equilibrium rate. In addition, some changes in government policy over recent decades, such as to welfare payments, may have lowered the equilibrium rate by increasing the incentive and ability to move from unemployment into employment. Perhaps consistent with that, the short-term unemployment rate has been below its pre-crisis average for some time (**Chart 3.5**), and it does not appear to have put material upward pressure on wage growth (Section 4).

On the other hand, the equilibrium rate of unemployment could be higher. In particular, the long-term unemployment rate remains above its pre-crisis average (**Chart 3.5**), despite strong labour demand in recent years. That could indicate that the pool of unemployed people may currently be less well-suited to the available jobs than prior to the crisis. In addition, increases in the National Living Wage (Section 4) may be associated with a slight weakening in labour demand and a small rise in equilibrium unemployment in the medium term.

Another important aspect of slack in the economy is the margin of spare capacity within firms. Survey measures of capacity utilisation have declined (**Chart 3.6**), as output growth has slowed, suggesting that capacity pressures have eased.

Based on the indicators discussed above and top-down statistical estimates, the MPC's best collective judgement is that there is likely to be currently a small degree of slack in the economy, and this is projected to persist in the near term.

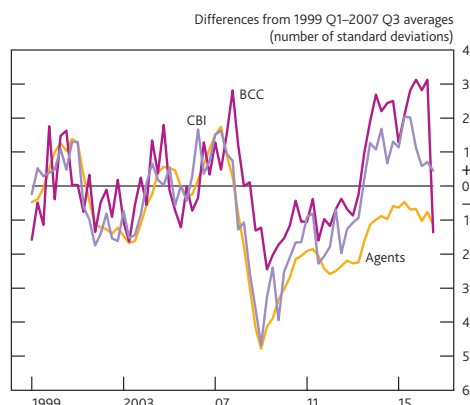
3.3 Labour supply

Beyond the near term, output growth will, in part, be determined by labour supply. The main driver of growth in labour supply is population growth. In the MPC's projections, population growth is assumed to evolve in line with the ONS's latest projection, made in October 2015. Under those projections, population growth slows over the next three years in part due to a fall in net migration.

The prospects for net migration at present are particularly uncertain, and will depend on a number of factors, such as the United Kingdom's relative economic performance as well as

Chart 3.6 Survey indicators of companies' capacity pressures have eased

Survey indicators of capacity utilisation^(a)



Sources: Bank of England, BCC, CBI, CBI/PwC, ONS and Bank calculations.

(a) Measures are produced by weighting together surveys from the Bank's Agents (manufacturing and services), the BCC (non-services and services) and the CBI (manufacturing, financial services, business/consumer/professional services and distributive trades) using shares in nominal value added. The BCC data are non seasonally adjusted. The Agents' data for 2016 Q3 are for August.

Table 3.C On balance, firms have revised down planned investment in training and skills

CIPD survey on companies' expectations of the effect of the referendum on business

Proportion of companies (per cent)^(a)

	Increase	Decrease	No effect	Don't know	Net balance
Ease of hiring EU migrants ^(b)	2	40	29	29	-38
Ease of hiring non-EU migrants ^(b)	10	21	30	40	-11
Training and skills	7	21	59	13	-14
Investment in equipment	5	21	58	16	-16
Domestic capacity relative to overseas ^(c)	n.a.	16	74	10	n.a.
Export competitiveness ^(d)	17	21	46	16	-3

Sources: CIPD and Bank calculations.

(a) Survey conducted in July. Due to rounding, the responses may not sum to 100 and the net balances may not equal the differences between the increase and decrease figures.

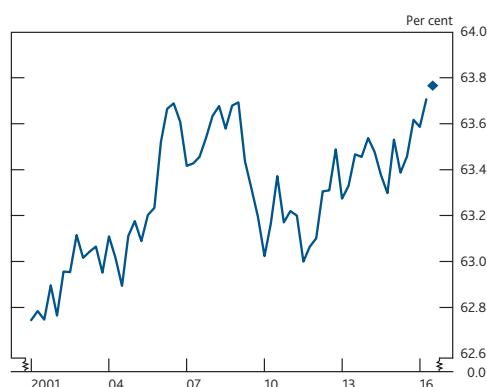
(b) Over the next twelve months.

(c) The question asked was whether employers are considering relocating some or all of their current operations outside of the United Kingdom as a result of the referendum. 'Decrease' denotes 'considering relocating or focusing expansion outside of the United Kingdom'; 'no effect' denotes 'not considering relocating'. The possible survey answers did not include considering relocating towards the United Kingdom.

(d) Companies that do not export are excluded from the figures.

Chart 3.7 Participation is expected to have increased in Q3

Labour force participation rate^(a)



(a) Percentage of 16+ population. The diamond shows Bank staff's projection for 2016 Q3, based on data to August.

government policy. The CIPD survey suggests that a net balance of companies expect to find it more difficult to recruit new migrant workers over the next year (Table 3.C). While net migration contributes to labour supply, it also contributes to domestic demand, and so changes in migration are likely to have relatively small implications for inflationary pressure.⁽¹⁾

Labour supply also depends on the share of the population actively participating in the labour market. The participation rate is likely to have risen further in Q3 (Chart 3.7), but is expected to fall back slightly in Q4, and to remain broadly stable in coming quarters. That reflects the continuation of two large but broadly offsetting factors: a fall in the share of the population in younger age groups most likely to participate in the labour market, set against increased participation among older people.

Labour supply will also be influenced by the number of hours those in work want to work. Average usual hours worked have been broadly stable over the past two years even though average actual hours worked have been volatile (Chart 3.8) due to fluctuations in the extent of leave taken. As discussed in previous Reports, average usual hours worked are expected to ease gradually in coming years as the average age of the workforce continues to rise, while average actual hours are projected to fall back to a greater extent as the amount of leave normalises from its currently subdued level.⁽²⁾

The outlook for both participation and average hours is uncertain. On the one hand, there is a risk that, in the face of a slowing in labour demand growth, some workers become discouraged from participating in the labour market or seek to reduce their hours. On the other hand, a slowing in real wage growth as imported cost pressures pick up (Section 2) could support desired hours and participation as households attempt to offset the impact on their income.

3.4 Productivity

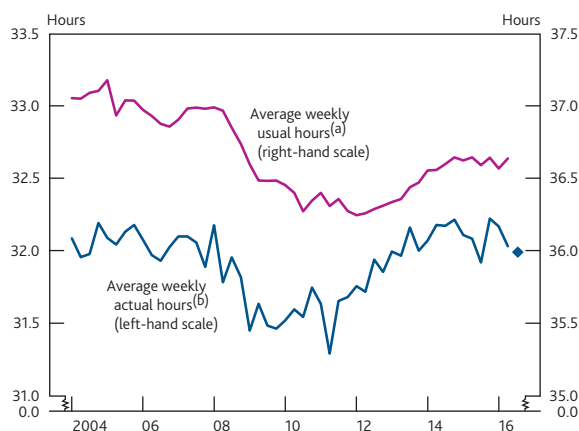
Four-quarter hourly productivity growth is expected to have been broadly stable, but subdued, at 0.5% in Q3 (Chart 3.9). That is slightly faster than anticipated in August, reflecting stronger-than-expected output growth (Section 2). Growth in productivity can be decomposed into changes in capital per hour worked — the equipment and resources that are available to produce output — and growth in total factor productivity (TFP), the efficiency with which firms combine capital and labour inputs to produce output. Since 2012, growth in capital per hour has been particularly weak but TFP growth has also been below its past average rate.

(1) For more details, see the box on pages 30–31 of the May 2015 Report; www.bankofengland.co.uk/publications/Documents/inflationreport/2015/may.pdf.

(2) For more details, see the box on pages 22–23 of the February 2016 Report; www.bankofengland.co.uk/publications/Documents/inflationreport/2016/feb.pdf.

Chart 3.8 Usual hours have been more stable than actual hours

Average weekly hours worked: actual and usual

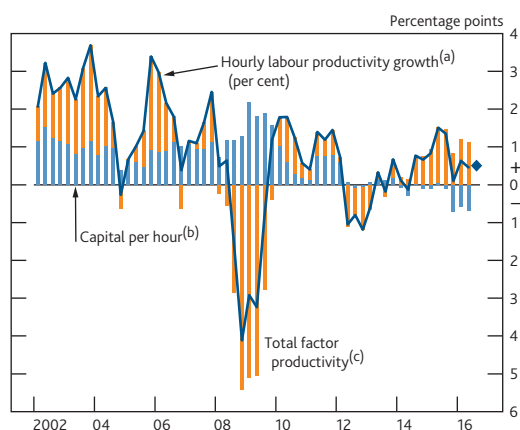


Sources: Labour Force Survey and Bank calculations.

- (a) Usual hours exclude leave taken and other temporary variations in hours. Data are up to 2016 Q2.
 (b) The diamond shows Bank staff's projection for 2016 Q3, based on data to August.

Chart 3.9 Productivity growth is expected to have remained subdued in Q3

Contributions to four-quarter hourly labour productivity growth



Sources: ONS and Bank calculations.

- (a) Output per hour worked based on the backcast for the final estimate of GDP. Percentage change on a year earlier. The diamond shows Bank staff's projection for 2016 Q3, based on the backcast for the final estimate of GDP and labour market data to August.
 (b) Fixed capital stock, including structures, machinery, vehicles, computers, purchased software, own-account software, mineral exploration, artistic originals and R&D. Calculations are based on Oulton, N and Wallis, G (2015), 'Integrated estimates of capital stocks and services for the United Kingdom: 1950–2013', Centre for Economic Performance Discussion Paper No. 1342.
 (c) Calculated as a residual.

The persistent weakness in productivity growth is likely to reflect a range of factors. For instance, evidence suggests that the rate of reallocation of resources, such as the flow of workers between jobs, has been subdued, while weak wage growth may have encouraged companies to switch from capital inputs towards labour.⁽¹⁾ More generally, productivity growth has been sluggish in many advanced economies for several years, reflecting the effects of the financial crisis and, perhaps, an increased divergence between the most productive firms and the rest.⁽²⁾ How these factors evolve will be important for productivity growth in coming years.

Productivity growth will also be sensitive to the eventual trading arrangements between the United Kingdom and its economic partners and the transition to those new arrangements. The box on page 29 of the *August Report* set out some of the long-term effects of openness to trade on productivity growth. It remains difficult to know the nature, scale and speed of companies' adjustment in the near term to any anticipation of changes in future trading arrangements and to the uncertainty around those arrangements.

In the near term, weak investment stemming from uncertainty about demand and the United Kingdom's trading arrangements (Section 2) is likely to reduce growth in the capital stock and thus productivity growth. Heightened uncertainty may also weigh on investment in research, skills and innovation — so-called 'intangible' capital — and so on TFP growth. Perhaps consistent with that, according to the CIPD survey, a net balance of companies report having revised down their plans to invest in training and skills (Table 3.C). Furthermore, there may need to be some reallocation of resources if the composition of demand for UK output changes as trading arrangements change. That could weigh on TFP growth for some time, as firms adjust resources and production to meet the new pattern of demand, or if they are less able to specialise in certain sectors. Overall, productivity growth is projected to remain subdued in the near term (Table 3.B), although the outlook remains highly uncertain and there are risks in both directions (Section 5).

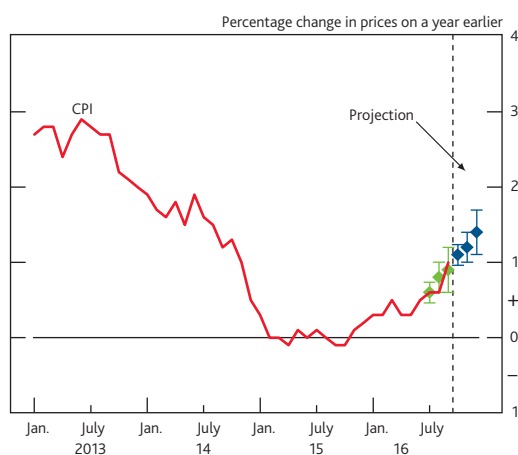
(1) For more details, see Saunders, M (2016), 'The economic outlook', www.bankofengland.co.uk/publications/Documents/speeches/2016/speech927.pdf.
 (2) For more details, see Andrews, D, Criscuolo, C and Gal, P (2016), 'The global productivity slowdown, technology divergence and public policy: a firm-level perspective', OECD.

4 Costs and prices

As in the *August Report*, inflation is projected to continue to rise over the near term. That partly reflects the effects of past falls in energy prices dropping out of the annual comparison. Further ahead, higher import prices associated with the past depreciation in sterling and the further significant fall since August are expected to push up inflation for several years. Only partially offsetting these effects, subdued domestic demand growth is likely to weigh on wage growth and domestically generated inflation. Inflation expectations are judged to be broadly consistent with the MPC's 2% target.

Chart 4.1 CPI inflation is projected to continue to rise in the near term

CPI inflation and Bank staff's near-term projection^(a)



(a) The green diamonds show Bank staff's central projection for CPI inflation in July, August and September 2016 at the time of the *August Inflation Report*. The blue diamonds show the current staff projection for October, November and December 2016. The bands on each side of the green and blue diamonds show the root mean squared error of the projections for CPI inflation one, two and three months ahead made since 2004.

4.1 Consumer price developments and the near-term outlook

CPI inflation picked up to 1.0% in September, from 0.5% in June (*Chart 4.1*), but remains below the 2% target. The deviation of inflation from the target has largely reflected drags from energy and food prices (*Chart 4.2*). While that has mainly been a result of falls in global commodity prices, the appreciation in sterling between 2013 and 2015 has also lowered energy and food prices, as well as imported goods and services inflation more broadly. In addition, muted labour cost growth has weighed slightly on domestic inflationary pressures. Measures of core inflation — which exclude components such as energy and food — have therefore also been subdued, reflecting both the past appreciation and weaker labour cost growth.

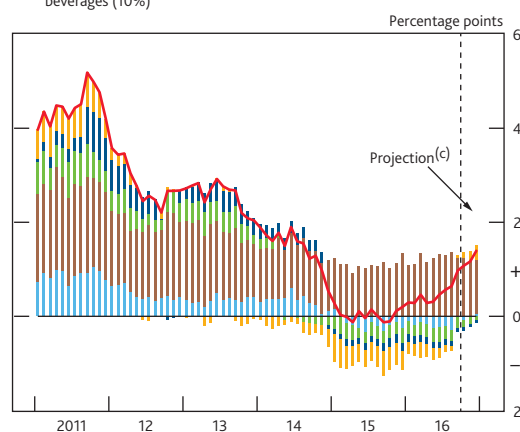
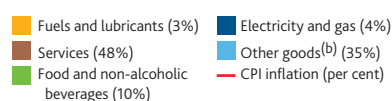
The rise in headline inflation to September largely reflected the drag from past falls in commodity prices continuing to drop out of the annual rate (*Chart 4.2*). As such it was broadly in line with the projections in recent *Reports* (*Chart 4.1*). Clothing and footwear price inflation was, however, somewhat stronger than expected three months ago.

As in the August projection, CPI inflation is projected to continue to rise over the next three months (*Chart 4.1*) and over 2017. The contribution to inflation from petrol prices is expected to turn increasingly positive, in part reflecting rises in oil prices since January (Section 4.2). In addition, sterling has depreciated by 21% since its peak in November 2015, which will continue to push up the prices of energy and other imported goods and services.

The precise path for inflation will depend on the speed and degree to which companies pass through rising external costs (Section 4.2) to consumer prices, given domestic conditions (Section 4.3). Subdued domestic demand growth (Section 2)

Table 4.A Monitoring the MPC's key judgements

Developments anticipated in August	Developments now anticipated
Household energy prices	Broadly unchanged
<ul style="list-style-type: none"> Domestic gas and electricity prices to be unchanged in 2016. 	<ul style="list-style-type: none"> Domestic gas and electricity prices to be unchanged in the first half of 2017.
Import prices	Revised up significantly
<ul style="list-style-type: none"> Non-fuel import prices to rise by 6% in the year to 2017 Q1. 	<ul style="list-style-type: none"> Non-fuel import prices to rise by almost 9% in the year to 2017 Q2.
Earnings growth	Revised down slightly
<ul style="list-style-type: none"> Four-quarter AWE growth to be around 2¾% at the turn of the year. 	<ul style="list-style-type: none"> Four-quarter AWE growth to be between 2½% and 2¾% in the first half of 2017.
Unit labour costs	Revised down slightly
<ul style="list-style-type: none"> Weak productivity growth means that four-quarter growth in whole-economy unit labour costs reaches 2¼% by the turn of the year. 	<ul style="list-style-type: none"> Weak productivity growth means that four-quarter growth in whole-economy unit labour costs reaches just under 2% by 2017 Q2.
Inflation expectations	Broadly unchanged
<ul style="list-style-type: none"> Indicators of inflation expectations continue to be broadly consistent with the 2% target. 	<ul style="list-style-type: none"> Indicators of medium-term inflation expectations continue to be broadly consistent with the 2% target.

Chart 4.2 The drag from food and petrol prices has begun to fadeContributions to CPI inflation^(a)

Sources: Bloomberg, Department for Business, Energy and Industrial Strategy, ONS and Bank calculations.

(a) Contributions to annual CPI inflation. Figures in parentheses are weights in the CPI basket in 2016.

(b) Calculated as the difference between CPI inflation and the other contributions identified in the chart.

(c) Bank staff projection. Electricity and gas prices projections assume prices are broadly unchanged over the remainder of 2016. Fuels and lubricants estimates use Department for Business, Energy and Industrial Strategy petrol price data for October 2016 and are then based on the November 2016 sterling oil futures curve shown in Chart 4.4.

is likely to weigh somewhat on companies' margins and wage growth, and offset slightly the upward pressure from external costs on inflation. The influence of domestic pressure on inflation will also depend on companies' and households' inflation expectations, insofar as they influence wage and price-setting behaviour (Section 4.4).

4.2 Imported cost pressures

Consumer goods and services are produced using a range of inputs. While companies can adjust the composition of their inputs over the medium term, there is a limited ability to do so over short time frames. Sharp fluctuations in the cost of inputs are therefore likely to affect overall costs.

Much of the volatility in the cost of producing consumer goods and services over recent years has reflected energy and non-energy import costs (Chart 4.3). This includes a period of falling energy prices and other import costs over the past three years, but these components have begun to push up overall cost growth more recently.

Energy prices

In the run-up to the November *Report*, sterling oil prices had risen by 20% since the August *Report*. They were around 70% higher than at the end of 2015, unwinding a third of the fall since 2013 (Chart 4.4). That reflected higher US dollar oil prices (Section 1), together with the depreciation in sterling.

The cost of oil currently makes up around a quarter of the cost of retail fuel, and changes in oil prices tend to be passed through to retail prices quickly. The contribution of petrol prices to inflation is therefore expected to rise over the coming months, as past falls drop out of the annual comparison and more recent oil price rises are passed through to retail fuel prices. Indeed, petrol prices were a little higher in September than a year ago, pushing up CPI inflation (Chart 4.2).

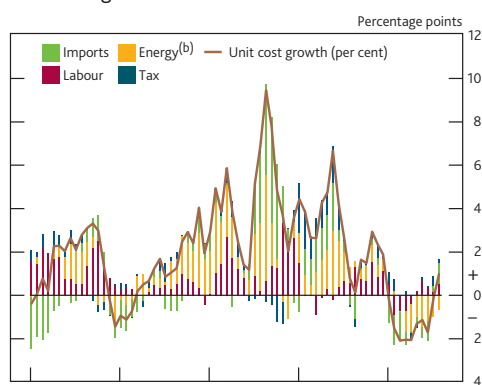
The wholesale gas spot price has been volatile in recent months, but futures prices are little changed relative to August (Chart 4.4). As a result, retail gas prices are projected to remain flat over the near term, in line with the August projections.

Non-energy import prices

The sharp fall in sterling is also likely to put significant upward pressure on non-energy import prices in the coming year. Foreign currency export prices have continued to fall (Chart 4.5), in part reflecting falls in US dollar agricultural prices (Section 1). Sterling has, however, depreciated by 21% since its November 2015 peak, with 6½% having occurred since the August *Report*. Reflecting the effects of that depreciation, four-quarter sterling non-energy import price inflation is expected to have risen to 6½% in 2016 Q3, from

Chart 4.3 Much of the volatility in companies' unit costs has reflected energy and import costs

Estimated contributions to four-quarter growth in unit costs for consumer goods and services^(a)



Sources: ONS and Bank calculations.

- (a) The underlying weights attached to each cost component are based on the *United Kingdom Input-Output Analytical Tables 2010*, adjusted to reflect the composition of CPI. Where applicable, the weights capture each factor's contribution to all stages of the domestic production process.
- (b) Includes imports, labour costs and tax associated with energy inputs.

Chart 4.4 Sterling oil prices have risen over the past year

Sterling oil and wholesale gas prices

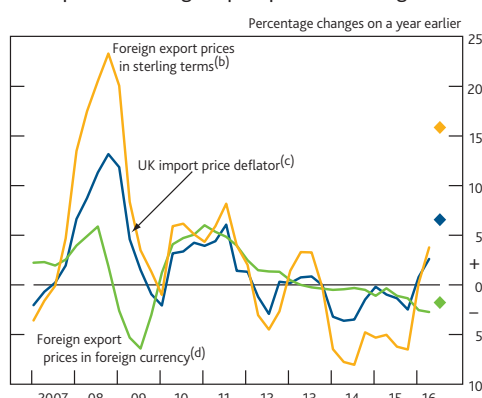


Sources: Bank of England, Bloomberg, Thomson Reuters Datastream and Bank calculations.

- (a) US dollar Brent forward prices for delivery in 10–25 days' time converted into sterling.
- (b) One-day forward price of UK natural gas.
- (c) Averages during the fifteen working days to 26 October 2016 and 27 July 2016 respectively.

Chart 4.5 The fall in sterling has pushed up import price inflation

UK import and foreign export prices excluding fuel^(a)



Sources: Bank of England, CEIC, Eurostat, ONS, Thomson Reuters Datastream and Bank calculations.

- (a) The diamonds show Bank staff's projections for 2016 Q3.
- (b) Domestic currency non-oil export prices as defined in footnote (d), divided by the sterling effective exchange rate.
- (c) UK goods and services import deflator excluding fuels and the impact of MTIC fraud.
- (d) Domestic currency non-oil export prices of goods and services of 51 countries weighted according to their shares in UK imports. The sample excludes major oil exporters.

2½% in Q2, and is projected to remain elevated over the next year.

As discussed in previous *Reports*, Bank staff estimate that, on average, 60% of changes in sterling foreign export prices tend to be reflected in UK import prices, with that pass-through usually completed within a year.⁽¹⁾ Within that, the speed and extent of pass-through will vary by product or service. In particular, the prices of highly tradable goods, such as food, are likely to see greater pass-through.

The latest official data on import prices appear broadly consistent with the decline in sterling passing through in line with that estimate. The extent of pass-through to consumer prices will, however, depend on the factors underlying the change in the exchange rate, as well as prevailing economic conditions.

4.3 Domestic cost pressures and companies' margins

In addition to imported cost pressures, the outlook for inflation will depend on domestic developments. While domestically generated inflation (DGI) is not directly observable, a range of indicators suggest that it has picked up in recent quarters, although it remains subdued (*Chart 4.6*). Those indicators include labour costs — the largest component of domestic costs — and companies' profit margins. Overall, the profile for consumer price inflation will depend significantly on when and to what degree companies pass on changes in costs — both imported and domestic — or absorb them in their margins.

Companies' margins

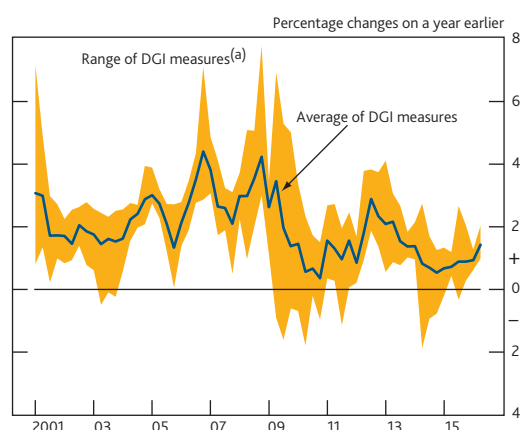
Margins on consumer goods and services were squeezed during the financial crisis by higher external costs (*Chart 4.3*), reflecting higher global commodity prices and the depreciation in sterling. Since then, they have recovered and Bank staff estimate that margins were close to their pre-crisis levels in early 2016 (*Chart 4.7*).

Margins appear to have narrowed in 2016 Q2 and are likely to be squeezed further in the near term, as higher import costs are only gradually passed through to consumer prices. As discussed in previous *Reports*, Bank staff estimate that, on average, changes in import prices are eventually passed through to the CPI in full — implying margins are restored over time.⁽²⁾ As the import content of the CPI is around 30%, together with the estimate that around 60% of changes in the exchange rate are passed through to import prices (Section 4.2), that would imply the depreciation in sterling

(1) For further discussion see the box on pages 28–29 of the November 2015 *Report*; www.bankofengland.co.uk/publications/Documents/inflationreport/2015/nov.pdf.

(2) See the box on pages 28–29 of the November 2015 *Report*, *ibid*.

Chart 4.6 Measures of DGI have risen but remain subdued
Measures of domestically generated inflation (DGI)



(a) Includes: whole-economy labour costs divided by GDP, based on the backcast of the final estimate of GDP; private sector AWE total pay divided by private sector productivity, based on the backcast of the final estimate of GDP; the GDP deflator; the GVA deflator excluding government; and the services producer prices index.

Chart 4.7 Companies' profit margins have recovered since the crisis
Estimated margins on consumer goods and services^(a)



Sources: ONS and Bank calculations.

(a) Calculated as differences in the ratio of the CPI, seasonally adjusted by Bank staff, and the costs identified in Chart 4.3.

since November 2015 will eventually increase consumer prices by around 3½%.

On average over the past, pass-through is estimated to have occurred relatively gradually, with annual inflation still being affected four years after the change in sterling. The speed of pass-through associated with a fall in sterling, however, will depend on a number of factors, including the reasons for the depreciation. There is evidence to suggest that the pass-through of exchange rate moves that stem from supply developments tends to be faster,⁽¹⁾ as does the pass-through from large moves in the exchange rate.⁽²⁾ Following the recent further fall, sterling has depreciated by 21% since its November 2015 peak, some of which has occurred alongside stronger-than-expected activity growth (Section 2), and appears to be associated with an increase in perceptions that the United Kingdom's future trading arrangements with the European Union might be less open than previously thought likely (Section 1), and so a weaker outlook for supply. As such, the MPC judges that the speed of pass-through from import prices to consumer prices is likely to be somewhat faster than on average over the past (Section 5).

Wages and labour costs

Labour costs account for the majority of the domestic cost of production. The degree to which labour costs, such as wages and non-wage benefits, affect prices will depend on how these costs evolve relative to how much output is being produced — known as unit labour cost growth.

While wage growth has remained weak (Table 4.B), that has occurred alongside weak productivity growth, so unit labour cost pressures within companies have not been as weak (Chart 4.8). One factor that is likely to have affected both wage and productivity growth over the recent past — and so perhaps had a limited impact on unit labour costs — has been changes in the composition of the workforce. The proportion of jobs associated with lower pay and productivity fell during the crisis, which will have boosted average pay and productivity growth over that period (Chart 4.9). That subsequently began to unwind, with roles associated with lower pay forming a larger-than-usual share of net employment growth. The effect on wages of the changing composition of the workforce appears, however, to have stabilised over the past year, and Bank staff estimate that the associated drag on wage and productivity growth has therefore diminished.

(1) See, for example, Forbes, K, Hjortsoe, I and Nenova, T (2015), 'The shocks matter: improving our estimates of exchange rate pass-through', *External MPC Unit Discussion Paper No. 43*; www.bankofengland.co.uk/monetarypolicy/Documents/externalmpc/extmpcpaper0043.pdf.

(2) See, for example, Bonadio, B, Fischer, A and Saure, P (2016), 'The speed of the exchange rate pass-through', Swiss National Bank, which discusses the speed of pass-through following the appreciation of the Swiss franc in 2015.

Table 4.B Wage growth remains subdued

Indicators of annual wage growth

Per cent

	Averages				2016		
	2002–07	2010–12	2014	2015	Q1	Q2	Q3
(1) Total AWE ^(a)	4.2	2.0	1.2	2.4	2.0	2.5	2.3
(2) AWE regular pay ^{(a)(b)}	3.9	1.8	1.3	2.4	2.2	2.3	2.3
(1)–(2) Bonus contribution ^{(a)(c)}	0.3	0.2	0.0	0.1	–0.2	0.2	0.0
Pay settlements ^(d)	3.2	1.7	2.0	2.1	2.1	2.1	2.1
Survey indicators of pay growth							
CBI ^(e)	n.a.	1.6	2.0	2.3	2.3	2.1	2.2
REC ^(f)	56.7	52.4	63.1	61.9	58.9	58.0	54.6
Agents ^(g)	2.4	1.3	1.9	2.0	1.9	2.0	1.9
CIPD ^(h)	n.a.	1.2	2.0	1.8	1.7	1.1	n.a.

Sources: Bank of England, BCC, CBI, CIPD, Incomes Data Services, KPMG/REC/IHS Markit, the Labour Research Department, ONS, XpertHR and Bank calculations.

(a) Figures for 2016 Q3 are data for the three months to August.

(b) Whole-economy total pay excluding bonuses and arrears of pay.

(c) Percentage points. The bonus contribution does not always equal the difference between total AWE growth and AWE regular pay growth due to rounding.

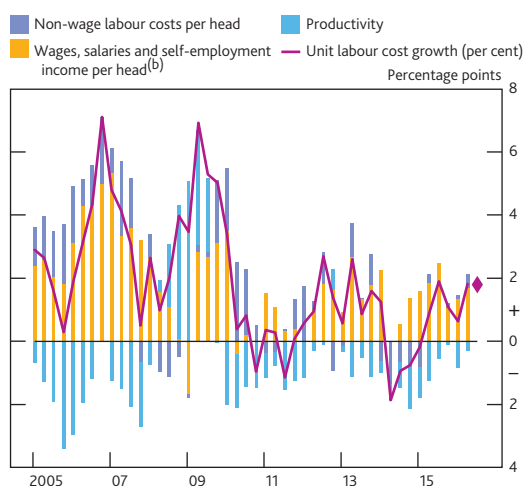
(d) Average over the past twelve months, based on monthly data.

(e) Measures of expected wages for the year ahead. Produced by weighting together balances for manufacturing, distributive trades, business/consumer/professional services and financial services using employee job shares.

(f) Produced by weighting together survey indices for the pay of permanent and temporary placements using employee job shares; quarterly averages. A reading above 50 indicates growth on the previous month and those below 50 indicate a decrease. The greater the divergence from 50, the greater the rate of change signalled by the index. Quarterly average.

(g) End-quarter observation for manufacturing and services weighted together using employee job shares. The scores refer to companies' labour costs over the past three months compared with the same period a year earlier. Scores of –5 to 5 represent rapidly falling and rapidly rising respectively, with zero representing no change. Data for 2016 Q3 are for August.

(h) Pay increase intentions excluding bonuses over the coming year. Data only available since 2012.

Chart 4.8 Unit labour cost growth has been broadly stableDecomposition of four-quarter whole-economy unit labour cost growth^(a)

Sources: ONS and Bank calculations.

(a) Whole-economy labour costs divided by GDP, based on the backcast of the final estimate of GDP. The diamond shows Bank staff's projection for 2016 Q3.

(b) Self-employment income is calculated from mixed income, assuming that the share of employment income in that is the same as the share of employee compensation in nominal GDP less mixed income.

Subdued unit labour cost growth (**Chart 4.8**) suggests that something other than subdued productivity growth is weighing on labour costs. While elevated unemployment following the financial crisis will have depressed wage growth, that effect is likely to have largely diminished as unemployment has fallen back. There is a possibility, however, that some degree of slack remains in the labour market and is continuing to weigh on wage growth (Section 3). In addition, falls in global food and energy prices since 2014 have supported growth in households' real incomes (Section 2) and some contacts of the Bank's Agents report that this has reduced some of the pressure on companies to increase nominal wages. It is also possible that an increased ability to hire people from abroad over the past decade could have reduced the sensitivity of wage growth to domestic labour market conditions.

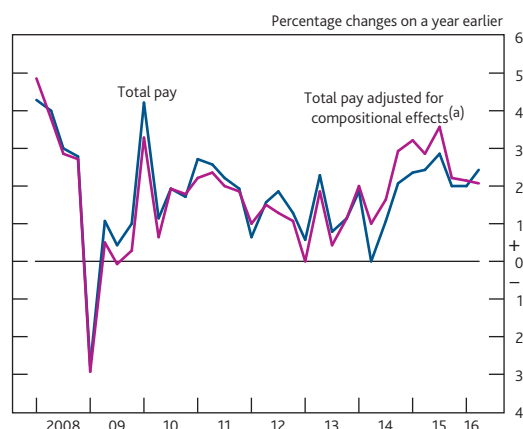
Wage growth is projected to remain subdued over the near term reflecting continued weak productivity growth (Section 3), although there are risks in both directions. Higher import prices could put upward pressure on wages if employees seek greater pay rises to reduce the hit to their purchasing power. Conversely, companies could seek to offset the reduction in their margins associated with higher import prices by attempting to push down other costs, including wages.

The National Living Wage (NLW), which came into effect in April 2016, will continue to increase wages for some employees in coming years.⁽¹⁾ According to the Annual Survey of Hours and Earnings, conducted immediately following the introduction of the NLW in April, wage growth towards the lower end of the income distribution appeared to have been a little stronger than previously expected. The impact of that on aggregate wage growth was small, however, and Bank staff's estimate of the overall effect of the NLW on wage growth is little changed. The Bank's Agents report that companies are seeking to limit the impact on their overall costs; for example by reducing other aspects of pay, such as overtime payments, or by investing to increase productivity. The CIPD survey suggests that while some employers are seeking to improve efficiency, the most common response to date has been to absorb higher pay in profit margins. That could lead to a further drive to reduce costs if companies seek to restore their margins in the face of further rises in the National Living Wage, or some of the additional cost could be reflected in higher prices.

(1) For further details see the box on page 24 of the August 2015 Report; www.bankofengland.co.uk/publications/Documents/inflationreport/2015/avg.pdf.

Chart 4.9 The drag on wage growth from compositional effects has diminished

Whole-economy total pay



Sources: Labour Force Survey and Bank calculations.

(a) Estimates of the effect of individual and job characteristics are derived from a regression of these characteristics on levels of employee pay using Labour Force Survey data from 1995 Q3 to 2016 Q2. The adjustment for compositional effects is obtained by combining those estimates with changes in the composition of the labour force. Data are to 2016 Q2.

Table 4.C Indicators of inflation expectations^(a)

Per cent	2000 (or start of series) to 2007 averages ^(b)	Averages since 2008	2013	2014	2015	2016			
						Q1	Q2	Q3	Q4 ^(c)
One year ahead inflation expectations									
Households^(d)									
Bank/GfK/TNS ^(e)	2.4	3.0	3.5	2.7	2.0	1.8	2.0	2.2	n.a.
Barclays Basix ^(f)	2.8	2.8	2.8	2.3	1.5	n.a.	1.7	1.7	n.a.
YouGov/Citigroup (Nov. 2005)	2.5	2.4	2.7	2.0	1.3	1.4	1.5	1.8	2.5
Companies (2008 Q2)^(g)	n.a.	0.5	0.4	0.6	0.4	0.3	0.5	0.7	n.a.
Financial markets (Oct. 2004)^(h)	2.6	2.7	3.0	2.8	2.5	2.4	2.6	2.9	3.3
Two to three year ahead expectations									
Households^(d)									
Bank/GfK/TNS (2009 Q1) ^(e)	n.a.	2.7	3.3	2.7	2.3	2.1	2.2	2.2	n.a.
Barclays Basix ^(f)	3.2	3.0	3.2	2.6	1.9	n.a.	2.2	2.0	n.a.
Professional forecasters (2006 Q2)⁽ⁱ⁾	2.0	2.1	2.2	2.1	2.1	2.0	2.1	2.1	2.1
Financial markets (Oct. 2004)^(j)	2.8	3.0	3.1	3.1	3.0	2.8	2.9	3.0	3.4
Five to ten year ahead expectations									
Households^(d)									
Bank/GfK/TNS (2009 Q1) ^(e)	n.a.	3.2	3.6	3.1	2.8	2.9	3.4	3.0	n.a.
Barclays Basix (2008 Q3) ^(f)	n.a.	3.7	3.8	3.6	3.1	n.a.	3.6	3.0	n.a.
YouGov/Citigroup (Nov. 2005)	3.5	3.2	3.5	2.9	2.7	2.8	2.7	2.5	2.7
Financial markets (Oct. 2004)^(k)	3.0	3.4	3.5	3.4	3.3	3.2	3.1	3.1	3.5
Memo: CPI inflation	1.6	2.4	2.6	1.5	0.0	0.4	0.4	0.7	n.a.

Sources: Bank of England, Barclays Capital, Bloomberg, CBI (all rights reserved), Citigroup, GfK, ONS, TNS, YouGov and Bank calculations.

(a) Data are non seasonally adjusted.

(b) Dates in parentheses indicate start date of the data series.

(c) Financial markets data are averages from 3 October to 26 October 2016. YouGov/Citigroup data are for October.

(d) The household surveys ask about expected changes in prices but do not reference a specific price index, and the measures are based on the median estimated price change.

(e) In 2016 Q1, the survey provider changed from GfK to TNS.

(f) No data available for 2016 Q1.

(g) CBI data for the manufacturing, business/consumer services and distributive trade sectors, weighted together using nominal shares in value added. Companies are asked about the expected percentage price change over the coming twelve months in the markets in which they compete.

(h) Instantaneous RPI inflation one year ahead implied from swaps.

(i) Bank's survey of external forecasters, inflation rate three years ahead.

(j) Instantaneous RPI inflation three years ahead implied from swaps.

(k) Five-year, five-year forward RPI inflation implied from swaps.

4.4 Inflation expectations

Insofar as inflation expectations affect price or wage-setting decisions, they can also affect the outlook for inflation itself. The MPC monitors a range of indicators to assess whether inflation expectations remain consistent with the MPC's 2% target.

Measures of households' inflation expectations one year ahead picked up slightly in 2016 Q3 (Table 4.C), and the YouGov/Citigroup measure rose further in October. Based on past behaviour, survey measures would be expected to respond to actual inflation and the near-term inflation outlook, which are both higher than in August. In contrast, measures of longer-term expectations either fell a little or were broadly unchanged. And most measures of both shorter-term and longer-term expectations remained below their past averages. It is possible that households' inflation expectations will remain subdued, and there remains a risk that they settle below levels consistent with the 2% target even as headline inflation rises further. It is also possible, however, that a period of above-target inflation (Section 5), following the depreciation in sterling, could be associated with expectations rising beyond levels consistent with the inflation target.

Companies' expectations of inflation one year ahead also rose in 2016 Q3 (Table 4.C). According to the Deloitte survey of chief financial officers (CFOs) of large companies, the dispersion of inflation expectations two years ahead around the inflation target has narrowed since Q2. A majority of CFOs now expect inflation to be between 1.5% and 2.5% in two years' time.

Measures of inflation compensation in financial markets — which will, in part, be driven by financial market participants' inflation expectations — have also risen (Table 4.C). Short-term measures have picked up steadily over 2016, which is likely to reflect expectations of higher import prices associated with the fall in sterling being passed through to consumer prices. Inflation compensation five to ten years ahead has also risen since August to around past average levels (Section 1). The average of professional forecasters' expectations of inflation over the medium term was little changed on the quarter and also remains in line with its past average.

Overall, the MPC judges that inflation expectations remain well anchored, and indicators of medium-term inflation expectations continue to be broadly consistent with the 2% target. The MPC will continue to monitor measures of expectations closely as inflation rises (Section 5).

5 Prospects for inflation

As set out in the May *Inflation Report*, the implications for inflation and monetary policy of the vote to leave the European Union will depend on how demand, supply and the exchange rate adjust. Since August, near-term activity indicators have been better than expected. Despite that, sterling has again fallen sharply. That fall appears to have been associated with market participants' perceptions that the United Kingdom's future trading arrangements with the European Union might be less open than they previously thought likely. In the projections in this *Report*, the MPC has assumed that uncertainty about those arrangements remains elevated throughout the forecast period, weighing on both demand and supply. That drag is likely to be particularly pronounced for those firms who may be concerned that their access to EU markets could be materially reduced. In the MPC's best collective judgement, conditional on a path for market interest rates that reaches 0.4% by late 2019, four-quarter GDP growth is likely to slow to around 1½%. That is stronger in the near term but weaker in the medium term than three months ago. Supply growth remains subdued so unemployment and slack increase only modestly. While domestic cost growth rises a little over the forecast period, imported cost pressures increase sharply due to the depreciation of sterling. As a result, and conditional on the market path for interest rates, inflation is projected to rise above the 2% target within the next twelve months and only begin to fall back in the second half of the three-year forecast period.

In August, the MPC revised down significantly its projections for demand and, to a slightly lesser extent, supply following the vote to leave the European Union. The projection for inflation was nonetheless revised higher, reflecting the impact of the sharp decline in sterling following the referendum. Those projections were published alongside the announcement of the MPC's August policy package — comprising a cut in Bank Rate, a Term Funding Scheme, £60 billion of gilt purchases and up to £10 billion of corporate bond purchases. The immediate impact of the package on market interest rates and asset prices was somewhat greater than anticipated in August and it has begun to feed through to lower interest rates for households and companies (see the box on pages 2–3).

Since the August *Report*, indicators of growth in the second half of 2016 have been stronger than anticipated, but the sterling exchange rate has declined further. The implications of these developments for the MPC's medium-term projections depend on why they have occurred.

GDP grew by 0.5% in 2016 Q3 according to the preliminary estimate, down only slightly from the upwardly revised Q2 outturn. Survey indicators suggest a modest further slowdown in Q4 (Section 2). That is a much stronger profile for the second half of the year than assumed in the August

projections. There are several possible reasons for this. Underlying momentum in the economy may have been greater than previously assumed in the run-up to the referendum. In addition, indicators of uncertainty have fallen back, although they are still above average levels, following their sharp rises in the summer. And financial conditions have improved. The housing market has also been more resilient than previously assumed, consistent with few signs, as yet, of weakness in household spending or consumer sentiment more generally. That suggests consumers have not materially revised down their view of future income prospects since the summer.

Despite positive news on the near-term outlook, the sterling ERI fell sharply in October, and is 6½% lower than at the time of the *August Report*. By itself, the lower level of sterling would support UK activity. The fall has, however, been attributed by market contacts to perceptions that the United Kingdom's future trading arrangements with the European Union might be less open than they previously thought likely. In its projections, the MPC has assumed that uncertainty about those arrangements remains elevated throughout the forecast period, weighing on both demand and supply. That drag is likely to be particularly pronounced for those firms who may be concerned that their access to EU markets could be materially reduced.

Following the latest fall, sterling is around 20% below its November 2015 peak. There is evidence that large changes in exchange rates and those associated with changes in supply expectations tend to pass through to consumer prices more quickly (Section 4). Given the nature of the fall in sterling, the MPC therefore judges that pass-through to CPI inflation will be a little faster than usually assumed. Even so, the extent of the depreciation means it is likely still to be contributing significantly to inflation by the end of the MPC's forecast period and is the sole reason why inflation remains above the 2% target at that point.

Alongside the fall in sterling, market interest rates have risen (see the box on pages 2–3). In the fifteen days to 26 October, the yield curve implied a small fall in Bank Rate to just under 0.2% in the near term before rising to 0.4% by late 2019 (Table 5.A). That profile was 10 basis points higher, on average, than the *August Report* path, which troughed at 0.1% in early 2017.⁽¹⁾ Longer-term market interest rates — such as

Table 5.A Conditioning path for Bank Rate implied by forward market interest rates^(a)

Per cent	2016	2017				2018				2019			
	Q4 ^(b)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
November	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4
August	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	

(a) The data are fifteen working day averages of one-day forward rates to 26 October 2016 and 27 July 2016 respectively. The curve is based on overnight index swap rates.

(b) November figure for 2016 Q4 is an average of realised overnight rates to 26 October 2016, and forward rates thereafter.

(1) Unless otherwise stated, the projections shown in this section are conditioned on: Bank Rate following a path implied by market yields; the introduction of the Term Funding Scheme (TFS) financed by the issuance of central bank reserves; the stock of purchased gilts financed by the issuance of central bank reserves reaching £435 billion and remaining there throughout the forecast period; the stock of purchased corporate bonds financed by the issuance of central bank reserves reaching £10 billion and remaining there throughout the forecast period; the Recommendations of the Financial Policy Committee and the current regulatory plans of the Prudential Regulation Authority; the Government's tax and spending plans as set out in the March 2016 *Budget*; commodity prices following market paths; and the sterling exchange rate remaining broadly flat. The main assumptions are set out in a table at www.bankofengland.co.uk/publications/Documents/inflationreport/2016/novca.pdf.

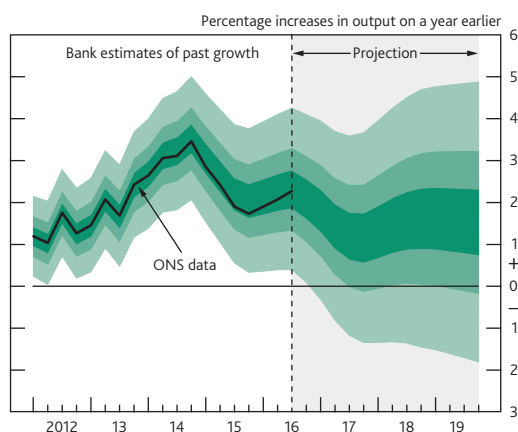
those on UK government debt — have risen above the levels seen in the run-up to the *August Report*, unwinding falls following the announcement of the MPC's policy package. That rise in rates in large part reflects a rise in inflation compensation, to around average levels, rather than higher real yields (Section 1). In risky asset markets, corporate bond spreads have risen slightly, although they remain lower than before the *August Report*. Equity prices remain higher, in part reflecting the support from the lower level of sterling for international companies and, to a lesser extent, a rise in domestic-facing companies' equity prices.

Table 5.B Forecast summary^{(a)(b)}

	Projections			
	2016	2017	2018	2019
GDP ^(c)	2.2 (2.0)	1.4 (0.8)	1.5 (1.8)	1.6
<i>Excluding backcast</i>	2.1 (1.8)	1.4 (0.8)	1.5 (1.8)	1.6
	2016 Q4	2017 Q4	2018 Q4	2019 Q4
CPI inflation ^(d)	1.3 (1.2)	2.7 (2.0)	2.7 (2.4)	2.5
LFS unemployment rate	4.9 (5.1)	5.4 (5.5)	5.6 (5.5)	5.6
Bank Rate ^(e)	0.2 (0.1)	0.2 (0.1)	0.3 (0.2)	0.4

- (a) Modal projections for GDP, CPI inflation and LFS unemployment. Figures in parentheses show the corresponding projections in the August 2016 *Inflation Report*. Projections were only available to 2019 Q3 in August.
- (b) The November projections have been conditioned on the assumption that the stock of purchased gilts reaches £435 billion and remains there throughout the forecast period; the stock of purchased corporate bonds reaches £10 billion and remains there throughout the forecast period; and on the announced Term Funding Scheme (TFS); all three of which are financed by the issuance of central bank reserves. The August projections were conditioned on the same asset purchase and TFS assumptions.
- (c) Calendar-year growth in real GDP consistent with the modal projection for four-quarter growth in real GDP. The MPC's projections are based on its backcast for GDP.
- (d) Four-quarter inflation rate.
- (e) Per cent. The path for Bank Rate implied by forward market interest rates. The curves are based on overnight index swap rates.

Chart 5.1 GDP projection based on market interest rate expectations, other policy measures as announced

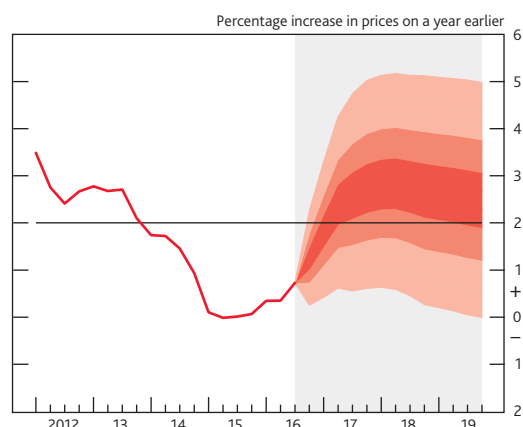


The fan chart depicts the probability of various outcomes for GDP growth. It has been conditioned on the assumptions in Table 5.B footnote (b). To the left of the vertical dashed line, the distribution reflects the likelihood of revisions to the data over the past; to the right, it reflects uncertainty over the evolution of GDP growth in the future. If economic circumstances identical to today's were to prevail on 100 occasions, the MPC's best collective judgement is that the mature estimate of GDP growth would lie within the darkest central band on only 30 of those occasions. The fan chart is constructed so that outcomes are also expected to lie within each pair of the lighter green areas on 30 occasions. In any particular quarter of the forecast period, GDP growth is therefore expected to lie somewhere within the fan on 90 out of 100 occasions. And on the remaining 10 out of 100 occasions GDP growth can fall anywhere outside the green area of the fan chart. Over the forecast period, this has been depicted by the light grey background. See the box on page 39 of the November 2007 *Inflation Report* for a fuller description of the fan chart and what it represents.

The MPC's projections, summarised in Table 5.B, are conditioned on the asset prices set out above. As in August, they are also conditioned on the tax and benefit rates and government spending plans set out in the March 2016 *Budget*. In the MPC's central projection four-quarter growth slows over the next few quarters and then remains around 1½% throughout the forecast period (Chart 5.1). The fall in sterling supports net trade but, by raising import prices, weighs on households' real incomes and spending, by more than projected in August. A sustained period of elevated uncertainty holds back companies' investment. The slowdown is more drawn out than in the August projection, so GDP growth is higher in the near term, reflecting stronger-than-expected data outturns, and lower further out. Supply growth remains subdued such that slack and unemployment increase only modestly in the projection, and domestic cost growth picks up a little, from relatively low rates. Higher import prices, following the 20% depreciation of sterling over the past year, however, mean that CPI inflation is judged likely to rise above the 2% target by mid-2017, before peaking at 2¾% a year later and then beginning to fall back in the second half of the forecast period. Although pass-through is a little faster than in previous projections, the depreciation is judged likely still to be pushing inflation above the MPC's 2% target at the three-year forecast horizon (Chart 5.2). Ultimately, however, the impact of higher import prices dissipates and so CPI inflation is judged likely to return to close to the target over the following year. Inflation rises further above the target than in August (Chart 5.3) primarily due to the further fall in sterling.

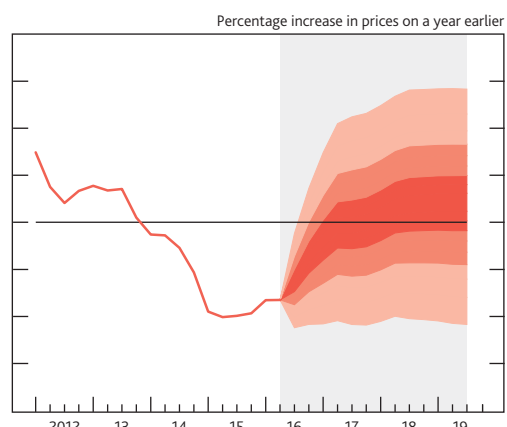
The MPC's Remit requires that monetary policy should balance the speed with which inflation is returned to the target with the support for real activity. Developments since August, in particular the direct impact of the further depreciation of sterling on CPI inflation, have adversely affected that trade-off. This impact will ultimately prove temporary, and attempting to offset it fully with tighter monetary policy would be excessively costly in terms of foregone output and employment growth. However, there are limits to the extent to which above-target inflation can be tolerated.

Chart 5.2 CPI inflation projection based on market interest rate expectations, other policy measures as announced



Charts 5.2 and 5.3 depict the probability of various outcomes for CPI inflation in the future. They have been conditioned on the assumptions in Table 5.B footnote (b). If economic circumstances identical to today's were to prevail on 100 occasions, the MPC's best collective judgement is that inflation in any particular quarter would lie within the darkest central band on only 30 of those occasions. The fan charts are constructed so that outcomes of inflation are also expected to lie within each pair of the lighter red areas on 30 occasions. In any particular quarter of the forecast period, inflation is therefore expected to lie somewhere within the fans on 90 out of 100 occasions. And on the remaining 10 out of 100 occasions inflation can fall anywhere outside the red area of the fan chart. Over the forecast period, this has been depicted by the light grey background. See the box on pages 48–49 of the May 2002 *Inflation Report* for a fuller description of the fan chart and what it represents.

Chart 5.3 CPI inflation projection in August based on market interest rate expectations, other policy measures as announced



Those limits depend, for example, on the cause of the inflation overshoot, the extent of second-round effects on inflation expectations and domestic costs, and the scale of the shortfall in economic activity below potential. In the MPC's November forecast, the inflation overshoot is the product of a perceived shock to future supply, which has caused the exchange rate to fall, alongside a modest projected shortfall of activity. Inflation expectations have picked up to around their past average levels and domestic costs have remained contained. Given the projected rise in unemployment, together with the risks around activity and inflation, and the potential for further volatility in asset prices, the MPC judges it appropriate to accommodate a period of above-target inflation. That notwithstanding, the MPC is monitoring closely the evolution of inflation expectations.

At its meeting ending on 2 November, the MPC voted to maintain Bank Rate at 0.25% and agreed that it remained appropriate to continue the previously announced asset purchase programmes, financed by the issuance of central bank reserves. The factors behind that decision are set out in the Monetary Policy Summary on pages i–ii of this *Report*, and in more detail in the Minutes of the meeting.⁽¹⁾ The remainder of this section sets out the MPC's projections, and the risks around them, in more detail.

5.1 The MPC's key judgements and risks

Key Judgement 1: the fall in sterling supports net trade in the face of modest global growth

The MPC's projections continue to incorporate a small pickup in global growth, although to below average rates (Table 5.C)

⁽¹⁾ The Minutes are available at www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2016/nov.pdf.

Table 5.C MPC key judgements^{(a)(b)}**Key Judgement 1: the fall in sterling supports net trade in the face of modest global growth**

	Average 1998– 2007	Projections			
		2016	2017	2018	2019
World GDP (UK-weighted) ^(c)	3	2 (2¼)	2¼ (2¼)	2¼ (2¼)	2¼
World GDP (PPP-weighted) ^(d)	4	3 (3¼)	3½ (3¼)	3½ (3½)	3½
Euro-area GDP ^(e)	2¼	1½ (1½)	1¾ (1¼)	1¾ (1¾)	1¾
US GDP ^(f)	3	1½ (2)	2¼ (2¼)	2 (2)	1¾

Key Judgement 2: heightened uncertainty weighs on investment, and productivity growth remains below past average rates

	Average 1998– 2007	Projections			
		2016	2017	2018	2019
Business investment to GDP ratio ^(g)	9½	9¼ (9)	9 (8¾)	9 (9¼)	9¼
Productivity ^(h)	2¼	1 (¾)	1½ (1¼)	1½ (1½)	1½
Participation rate ⁽ⁱ⁾	63	63¾ (63½)	63¾ (63½)	63¾ (63½)	63½
Average hours ^(j)	32¼	32 (32)	31¾ (32)	31¾ (31¾)	31¾

Key Judgement 3: household spending growth slows broadly in line with real incomes

	Average 1998– 2007	Projections			
		2016	2017	2018	2019
Credit spreads ^(k)	¾ ^(l)	2¼ (2¼)	2¼ (2¼)	2¼ (2¼)	2
Household saving ratio ^(m)	8	4¾ (5¾)	4 (5)	4¼ (5½)	4

Key Judgement 4: slack weighs on domestic inflationary pressures, but higher import prices take inflation back to the 2% target then above it for a period

	Average 1998– 2007	Projections			
		2016	2017	2018	2019
Dollar oil prices ⁽ⁿ⁾	39	51 (47)	56 (52)	57 (55)	59
UK import prices ^(o)	¼	10¾ (7)	4¼ (2¼)	2 (1¾)	1¼
Unit labour costs ^(p)	3	2½ (2¼)	1¾ (2)	2½ (2¼)	3

Sources: Bank of America Merrill Lynch Global Research (used with permission), Bank of England, BDRG Continental *SME Finance Monitor*, Bloomberg, British Household Panel Survey, Department for Business, Energy and Industrial Strategy, Eurostat, IMF *World Economic Outlook (WEO)*, ONS, US Bureau of Economic Analysis and Bank calculations.

- (a) The MPC's projections for GDP growth, CPI inflation and unemployment (as presented in the fan charts) are underpinned by four key judgements. The mapping from the key judgements to individual variables is not precise, but the profiles in the table should be viewed as broadly consistent with the MPC's key judgements.
- (b) Figures show calendar-year growth rates unless otherwise stated. Figures in parentheses show the corresponding projections in the August 2016 *Inflation Report*, which were only available to 2018. Calculations for back data based on ONS data are shown using ONS series identifiers.
- (c) Chained-volume measure. Constructed using real GDP growth rates of 180 countries weighted according to their shares in UK exports.
- (d) Chained-volume measure. Constructed using real GDP growth rates of 181 countries weighted according to their shares in world GDP using the IMF's purchasing power parity (PPP) weights.
- (e) Chained-volume measure.
- (f) Chained-volume measure.
- (g) Calendar-year average. Chained-volume business investment as a percentage of GDP.
- (h) GDP per hour worked. GDP at market prices is based on the mode of the MPC's backcast.
- (i) Level in Q4. Percentage of the 16+ population.
- (j) Level in Q4. Average weekly hours worked, in main job and second job.
- (k) Level in Q4. Percentage point spread over reference rates. Based on a weighted average of household and corporate loan and deposit spreads over appropriate risk-free rates. Indexed to equal zero in 2007 Q3.
- (l) Based on the weighted average of spreads for households and large companies over 2003 and 2004 relative to the level in 2007 Q3. Data used to construct the SME spread are not available for that period. The period is chosen as broadly representative of one where spreads were neither unusually tight nor unusually loose.
- (m) Calendar-year average. Percentage of total available household resources.
- (n) Average level in Q4. Dollars per barrel. Projection based on monthly Brent futures prices.
- (o) Four-quarter inflation rate in Q4.
- (p) Four-quarter growth in unit labour costs in Q4. Whole-economy total labour costs divided by GDP at market prices, based on the mode of the MPC's GDP backcast. Total labour costs comprise compensation of employees and the labour share multiplied by mixed income.

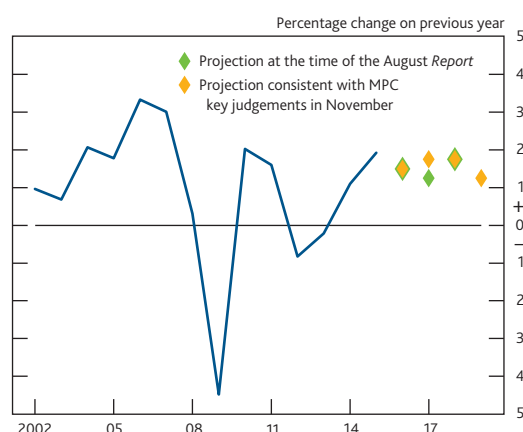
and with the risks to that projection remaining to the downside. Developments over the past three months suggest that spillovers to other economies from the UK vote to leave the European Union have been minimal to date. Partly in light of that, the near-term projection for euro-area growth has been revised up a little (**Chart 5.4**). That projection continues to embody modest growth, supported by policy measures. Those measures, alongside the waning drag from past falls in oil prices, also support a pickup in inflation from current low levels.

In the United States, activity was a little weaker than expected around the middle of the year. The labour market has continued to improve, however, and wage growth, as measured by the Employment Cost Index, has picked up. In the central projection, GDP growth recovers during 2017, supported by stronger productivity growth.

There has been little news on growth prospects in emerging market economies (EMEs) over the past three months. The MPC's projections embody a modest slowing in Chinese GDP growth, to around 6% a year, and some recovery in a number of those economies that have been in recession, including Russia and Brazil. These paths are sensitive to domestic and global developments. In China, for example, the growth outlook is likely to be associated with a further expansion in credit, increasing financial vulnerabilities. More generally, EMEs will remain sensitive to movements in global interest rates. For example, a more pronounced tightening in US policy rates than embodied in market prices could trigger renewed capital outflows from EMEs.

The further 6½% fall in the sterling ERI since August is assumed to raise export growth and lower import growth. The fall in sterling has, however, also been associated with changing market perceptions of the likely outcomes of negotiations with the European Union. In light of that, companies that may be concerned that their access to EU markets could be materially reduced (see the box on pages 21–22) are judged likely to make more significant adjustments to their operations than previously assumed (Key Judgement 2). As a result, over the three years of the forecast period, net trade provides a similar degree of support to growth as in August, despite the additional depreciation.

Nonetheless, the 20% fall in sterling over the past twelve months means that net trade is judged likely to contribute positively to growth in the first two years of the projection, before that contribution wanes in the third year. There is a near halving in the current account deficit over the next three years as, in addition to improving trade flows, net income flows benefit from the lower value of sterling. Substantial risks remain around the outlook for trade and the current account, particularly as details of future trading relationships with the European Union and other countries are

Chart 5.4 Euro-area GDP^(a)

Sources: Eurostat and Bank calculations.

(a) Calendar-year growth rates. Chained-volume measure. Projections were only available to 2018 at the time of the August Report.

Table 5.D Indicative projections consistent with the MPC's modal projections^(a)

	Average 1998– 2007	Projections				
		2016	2017	2018	2019	
Household consumption ^(b)	3½	2¾ (2½)	1¼ (1)	¾ (¾)	1¼	
Business investment ^(c)	2½	-2 (-3¾)	-1¾ (-2)	2 (4¾)	4	
Housing investment ^(d)	3¾	4¾ (1¼)	¼ (-4¾)	1¾ (2½)	2	
Exports ^(e)	4½	2¾ (2¾)	2 (-½)	1 (¼)	½	
Imports ^(e)	6	3¼ (1¼)	¼ (-2½)	-1 (-1¼)	-¼	
Real post-tax household income ^(f)	3	1¼ (2)	½ (½)	1 (1¼)	1	
Employment ^(g)	1	1 (½)	0 (0)	¾ (¾)	½	
Average weekly earnings ^(h)	4¼	2½ (2¾)	2¾ (3)	3¾ (3½)	3¾	

(a) These projections are produced by Bank staff for the MPC to be consistent with the MPC's modal projections for GDP growth, CPI inflation and unemployment. Figures show calendar-year growth rates unless otherwise stated. Figures in parentheses show the corresponding projections in the August 2016 Inflation Report, which were only available to 2018.

(b) Chained-volume measure. Includes non-profit institutions serving households.

(c) Chained-volume measure.

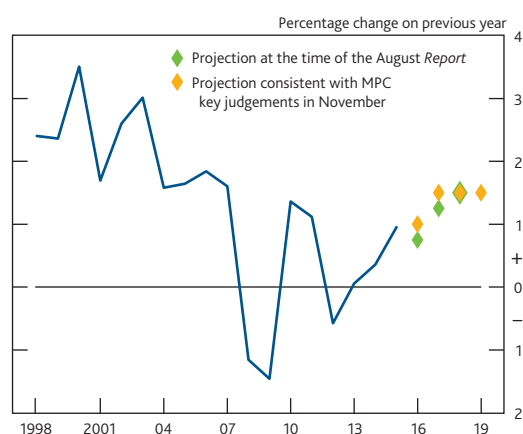
(d) Chained-volume measure. Whole-economy measure. Includes new dwellings, improvements and spending on services associated with the sale and purchase of property.

(e) Chained-volume measure. The historical data exclude the impact of missing trader intra-community (MTIC) fraud.

(f) Total available household resources deflated by the consumer expenditure deflator.

(g) Four-quarter growth rate in Q4.

(h) Four-quarter growth in Q4 in whole-economy total pay.

Chart 5.5 Productivity^(a)

Sources: ONS and Bank calculations.

(a) Calendar-year growth rates. GDP per hour worked. GDP is at market prices and projections are based on the mode of the MPC's backcast. Projections were only available to 2018 at the time of the August Report.

as yet unknown. Income flows will also be sensitive to relative rates of return and companies' choices about where to locate future investments (Key Judgement 2).

Key Judgement 2: heightened uncertainty weighs on investment, and productivity growth remains below past average rates

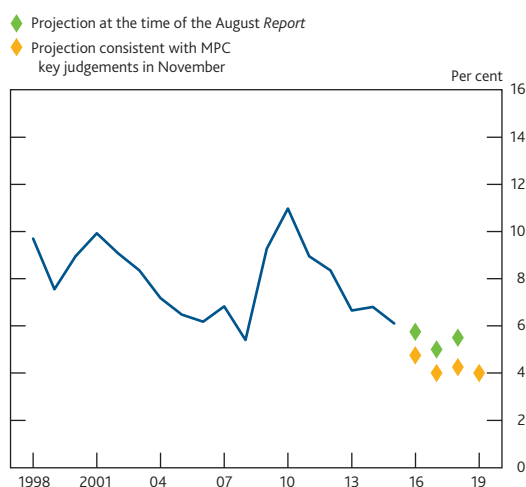
In light of recent developments, in its central projection, the MPC assumes that uncertainty rises somewhat less in the near term than assumed in August but that it remains more elevated further out.

Uncertainty is assumed to lead companies to scale back UK investment projects. It is also associated with continued weakness in commercial real estate activity. The outlook for investment is, however, supported by relatively high rates of return and the MPC's policy package, which has contributed to falls in the cost of borrowing for companies. Reflecting the revised projection for uncertainty, business investment falls less in the near term than projected in August but is weaker further out (Table 5.D), only returning to its 2015 peak towards the end of the forecast period.

The period of low investment will reduce growth in the capital stock and therefore productivity. Uncertainty may cause businesses to postpone some research and development projects that would otherwise have improved productivity (Section 3). Perceptions of a less open set of trading arrangements, at least for a period, would also be expected to have some negative effect on potential supply growth.⁽¹⁾ Any reorientation of business models, in light of new trading arrangements, may require a reallocation of resources towards new sectors or markets. This is likely to dampen productivity growth for a period, especially to the extent that there is a reduction in activity in sectors in which the United Kingdom currently has a particular comparative advantage.

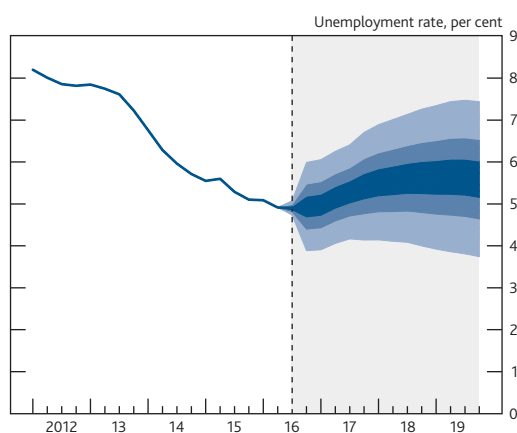
While the implications for productivity of the transition to new trading arrangements with the European Union are highly uncertain, the MPC's central judgement is that hourly productivity growth is likely to remain below historical average rates throughout the forecast period (Chart 5.5). In addition, there remains uncertainty about the prospects for productivity globally. In the United Kingdom and many other countries, productivity has risen little since the financial crisis and projections have been gradually marked down. It is possible that pent-up gains begin to come through over the forecast period, but it is also possible that productivity here and abroad continues to disappoint.

(1) See the box on page 29 of the August 2016 Inflation Report; www.bankofengland.co.uk/publications/Documents/inflationreport/2016/avg.pdf.

Chart 5.6 Household saving ratio^(a)

Sources: ONS and Bank calculations.

(a) Calendar-year average. Percentage of total available household resources. Projections were only available to 2018 at the time of the August Report.

Chart 5.7 Unemployment projection based on market interest rate expectations, other policy measures as announced

The fan chart depicts the probability of various outcomes for LFS unemployment. It has been conditioned on the assumptions in Table 5.8 footnote (b). The coloured bands have the same interpretation as in Chart 5.2, and portray 90% of the probability distribution. The calibration of this fan chart takes account of the likely path dependency of the economy, where, for example, it is judged that shocks to unemployment in one quarter will continue to have some effect on unemployment in successive quarters. The fan begins in 2016 Q3, a quarter earlier than the fan for CPI inflation. That is because Q3 is a staff projection for the unemployment rate, based in part on data for July and August. The unemployment rate was 4.9% in the three months to August, and is projected to be 4.9% in Q3 as a whole. A significant proportion of this distribution lies below Bank staff's current estimate of the long-term equilibrium unemployment rate. There is therefore uncertainty about the precise calibration of this fan chart.

Key Judgement 3: household spending growth slows broadly in line with real incomes

Uncertainty could also weigh on household spending and activity in the housing market. The latest data, however, suggest little, if any, impact to date (Section 2). According to the GfK/EC survey, consumer confidence has fallen back a little since early summer but remains firm. Although official data for consumption in Q3 are not yet available, the output mix of Q3 growth suggests resilient consumer spending. In the housing market the RICS survey of estate agents suggests that the outcome of the referendum has not had a persistently negative effect on activity.

Developments in income are typically the single most significant influence on household spending. Over the past couple of years, households' real incomes have been bolstered by a combination of above-average employment growth, a modest recovery in wage growth and falling prices for energy, food and other imported goods and services. That has been associated with robust consumption growth. Over the forecast period, nominal income growth remains modest as wage growth picks up (Key Judgement 4) but employment growth slows. More significantly, higher prices for imported items reduce households' purchasing power by more than assumed in August, reflecting the further fall in sterling (Key Judgement 4). In the central projection, annual household real income and consumer spending growth average around 1%, well below their historical average rates (Table 5.D). The saving ratio continues to fall in the near term and is broadly flat from early 2017 (Chart 5.6). Any upward impetus from a desire to increase precautionary saving in light of continued uncertainty is judged to be broadly offset by support from lower interest rates.

There are risks around the outlook for consumption on both sides. In the central projection the unemployment rate rises by nearly $\frac{3}{4}$ percentage points (Chart 5.7). Increased concerns among households about job security could raise precautionary saving. In the other direction, it is possible that households will be slower to adjust spending as their purchasing power is eroded — especially in light of supportive credit conditions — such that the saving ratio falls more sharply than assumed.

Weaker income prospects are also associated with a less buoyant housing market over the forecast period than in the recent past. The recent evidence points, however, to a less sharp slowdown than assumed three months ago (Section 2). The central projection incorporates a modest rise in housing investment (Table 5.D) and growth of house prices in line with average earnings (Table 5.E).

Table 5.E Monitoring risks to the Committee's key judgements

The Committee's projections are underpinned by four key judgements. Risks surround all of these, and the MPC will monitor a broad range of variables to understand the degree to which the risks are crystallising. The table below shows

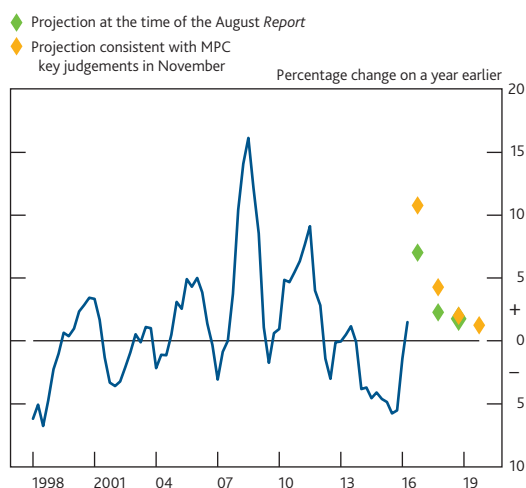
Bank staff's indicative near-term projections that are consistent with the judgements in the MPC's central view evolving as expected.

Key judgement	Likely developments in 2016 Q4 to 2017 Q2 if judgements evolve as expected
1: the fall in sterling supports net trade in the face of modest global growth	<ul style="list-style-type: none"> Quarterly euro-area growth to average between $\frac{1}{4}\%$ and $\frac{1}{2}\%$. Annual euro-area HICP inflation to increase to above 1% around the turn of the year as past falls in oil prices drop out of the annual calculation. Quarterly US GDP growth to average a little above $\frac{1}{2}\%$. Annual US PCE inflation to pick up in coming months as past falls in oil prices drop out of the annual calculation, reaching 2% in the first half of 2017. Indicators of activity consistent with four-quarter PPP-weighted emerging market economy growth of around $4\frac{1}{4}\%$; within that, Chinese GDP growth to average around $6\frac{1}{2}\%$. Net trade contributes positively to real GDP growth. The current account deficit narrows to around 5% of GDP in the first half of 2017.
2: heightened uncertainty weighs on investment, and productivity growth remains below past average rates	<ul style="list-style-type: none"> Business investment is projected to fall by around $\frac{3}{4}\%$ per quarter on average, reflecting the impact of post-referendum uncertainty. Quarterly growth in hourly productivity of between $\frac{1}{4}\%$ and $\frac{1}{2}\%$. Participation rate to fall back slightly, and then remain just below $63\frac{3}{4}\%$ during the first half of 2017. Average hours to fall by just under $\frac{1}{2}\%$ in the year to 2017 Q2. Unemployment starts to rise from its current trough, reaching just over 5% by 2017 Q2.
3: household spending growth slows broadly in line with real incomes	<ul style="list-style-type: none"> A slowing in real income growth leads quarterly consumption growth to slow gradually to around $\frac{1}{4}\%$ per quarter on average. The household savings ratio to fall by around 0.5 percentage points by mid-2017. Credit spreads to remain broadly flat. Mortgage approvals for house purchase to be around 65,000 per month, on average. Quarterly growth in housing investment to average 0%. The average of the Halifax and Nationwide price indices is expected to increase by $\frac{1}{2}\%$ per quarter.
4: slack weighs on domestic inflationary pressures, but higher import prices take inflation back to the 2% target then above it for a period	<ul style="list-style-type: none"> Weak productivity growth means that four-quarter growth in whole-economy unit labour costs reaches just under 2% by 2017 Q2. Commodity prices and sterling ERI to evolve in line with the conditioning assumptions set out in www.bankofengland.co.uk/publications/Documents/inflationreport/2016/novca.pdf. Domestic gas and electricity prices are unchanged in the first half of 2017. Four-quarter AWE growth to remain between $2\frac{1}{4}\%$ and $2\frac{3}{4}\%$ in the first half of 2017. Non-fuel import prices to rise by almost 9% in the year to Q2. Indicators of medium-term inflation expectations continue to be broadly consistent with the 2% target.

Key Judgement 4: slack weighs on domestic inflationary pressures, but higher import prices take inflation back to the 2% target then above it for a period

CPI inflation has risen to 1% as past falls in food, energy and other imported goods prices have begun to drop out of the annual comparison. The speed and extent to which it rises further in coming quarters will depend in particular on how much and how quickly the fall in sterling feeds through the supply chain, and on developments in domestic costs.

The fall of roughly 20% in the sterling exchange rate since November 2015 has begun, and will continue, to raise imported costs. Some exporters to the United Kingdom may

Chart 5.8 Import price inflation^(a)

Sources: ONS and Bank calculations.

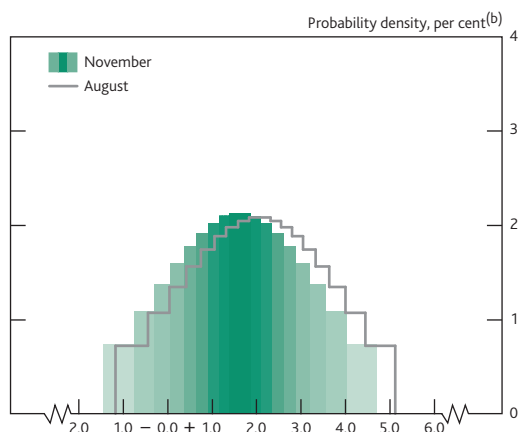
(a) Projections are four-quarter inflation rate in Q4. Excludes the impact of MTIC fraud. Projections were only available to 2018 at the time of the August Report.

Table 5.F Calendar-year GDP growth rates of the modal, median and mean paths^(a)

	Mode	Median	Mean
2016 ^(b)	2.2 (2.0)	2.2 (2.0)	2.2 (1.9)
2017	1.4 (0.8)	1.4 (0.8)	1.4 (0.7)
2018	1.5 (1.8)	1.5 (1.7)	1.5 (1.7)
2019	1.6	1.6	1.6

(a) The table shows the projections for calendar-year growth of real GDP consistent with the modal, median and mean projections for four-quarter growth of real GDP implied by the fan chart. Where growth rates depend in part on the MPC's backcast, revisions to quarterly growth are assumed to be independent of the revisions to previous quarters. The figures in parentheses show the corresponding projections in the August 2016 Inflation Report, which were only available to 2018. The projections have been conditioned on the assumptions in Table 5.B footnote (b).

(b) The anticipated revisions to recent estimates of quarterly GDP growth have implications for calendar-year growth in 2016. Without the anticipated revisions to past GDP growth, the modal path of the Committee's November projections would imply calendar-year growth of 2.1% in 2016 rather than 2.2%.

Chart 5.9 Projected probabilities of GDP growth in 2018 Q4 (central 90% of the distribution)^(a)

(a) Chart 5.9 represents the cross-section of the GDP growth fan chart in 2018 Q4 for the market interest rate projection. The grey outline represents the corresponding cross-section of the August 2016 Inflation Report fan chart for the market interest rate projection. The projections have been conditioned on the assumptions in Table 5.B footnote (b). The coloured bands in Chart 5.9 have a similar interpretation to those on the fan charts. Like the fan charts, they portray the central 90% of the probability distribution.

(b) Average probability within each band; the figures on the y-axis indicate the probability of growth being within ± 0.05 percentage points of any given growth rate, specified to one decimal place.

absorb part of the change in sterling by lowering other costs or accepting lower profits, but past evidence suggests that around 60% of the fall in sterling is likely to be reflected in higher UK non-energy import prices. Further rises in oil prices since August, in both dollar and sterling terms, also add upward pressure to import prices. Import price inflation is therefore judged likely to pick up sharply, and to a greater extent than assumed three months ago, primarily due to the further depreciation (Chart 5.8). There are risks on both sides of that path.

The rise in import costs — which represent close to a third of the CPI basket — is expected to be passed through fully to consumer prices over several years. For some items, such as food, changes in import costs tend to feed through quickly to consumer prices. For other items, pass-through is more drawn out. Given the size of the fall in sterling, and its association with a weaker outlook for supply, the MPC judges that pass-through to CPI inflation will be a little quicker than usually assumed, in line with evidence from previous episodes (Section 4). That increases the contribution of import prices to CPI inflation over the next 18 months and reduces it a little further out, relative to the profile for pass-through in August. In the central projection, the contribution of non-energy import prices is projected to rise to over 1 percentage point in mid-2017, falling back to $\frac{2}{3}$ percentage points at the end of 2019 and to zero over the following year or so. The risks to that outlook remain skewed to the upside in the first year. It is possible that the impact on the CPI could be more pervasive, with the prices of domestically produced goods and services that compete with imports rising faster too.

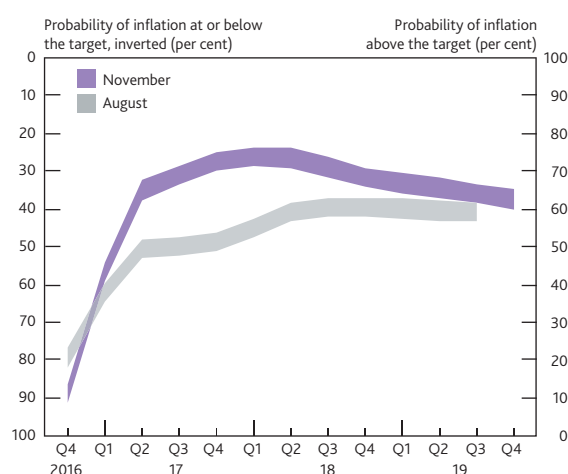
In contrast to imported pressures, domestic cost pressures remain subdued. In particular, wage growth is still well below pre-crisis average rates, despite unemployment falling back to around its pre-crisis level over recent years. For the most part, that weakness reflects developments in productivity. Even adjusting for that, however, and despite some pickup recently, companies' unit labour costs have been growing at rates below those consistent with meeting the inflation target in the medium term. In the MPC's central projection, wage (Table 5.D) and unit labour cost growth rise gradually (Table 5.C) as the impact of past falls in unemployment feed through and inflation picks up.

There are two-sided risks around the outlook for labour costs. On the downside, the weakness in wage growth could indicate more domestic slack. Bank staff estimate that the equilibrium rate of unemployment — that consistent with neither upward nor downward pressure on wage growth — is around 5%, close to the current LFS rate. If the equilibrium rate were in fact lower, unemployment would exert more downward pressure on wage growth throughout the forecast period. On the upside, the recent weakness in wage growth could indicate greater sensitivity to current inflation than assumed. In that

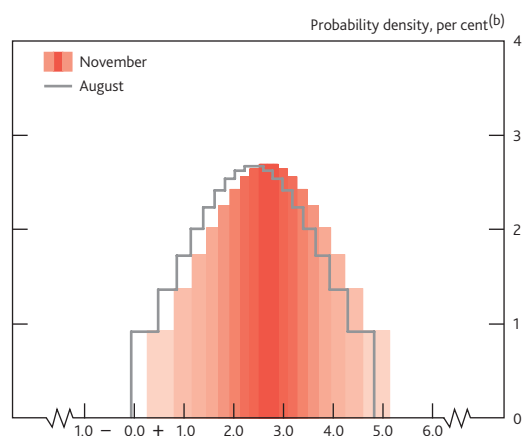
Table 5.G Q4 CPI inflation

	Mode	Median	Mean
2016 Q4	1.3 (1.2)	1.3 (1.3)	1.3 (1.3)
2017 Q4	2.7 (2.0)	2.8 (2.0)	2.8 (2.1)
2018 Q4	2.7 (2.4)	2.7 (2.4)	2.7 (2.4)
2019 Q4	2.5	2.5	2.5

The table shows projections for Q4 four-quarter CPI inflation. The figures in parentheses show the corresponding projections in the August 2016 *Inflation Report*, which were only available to 2018. The projections have been conditioned on the assumptions in **Table 5.B** footnote (b).

Chart 5.10 Inflation probabilities relative to the target

The November and August swathes in this chart are derived from the same distributions as **Charts 5.2** and **5.3** respectively. They indicate the assessed probability of inflation relative to the target in each quarter of the forecast period. The 5 percentage points width of the swathes reflects the fact that there is uncertainty about the precise probability in any given quarter, but they should not be interpreted as confidence intervals.

Chart 5.11 Projected probabilities of CPI inflation in 2018 Q4 (central 90% of the distribution)^(a)

(a) **Chart 5.11** represents the cross-section of the CPI inflation fan chart in 2018 Q4 for the market interest rate projection. The grey outline represents the corresponding cross-section of the August 2016 *Inflation Report* fan chart for the market interest rate projection. The projections have been conditioned on the assumptions in **Table 5.B** footnote (b). The coloured bands in **Chart 5.11** have a similar interpretation to those on the fan charts. Like the fan charts, they portray the central 90% of the probability distribution.

(b) Average probability within each band: the figures on the y-axis indicate the probability of inflation being within ± 0.05 percentage points of any given inflation rate, specified to one decimal place.

case, the prospective period of above-target inflation could have a greater upward impact on wages.

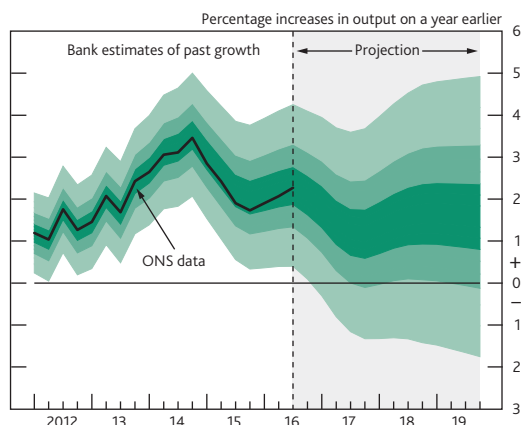
More generally, the projections assume that inflation expectations remain well anchored. Survey indicators of household inflation expectations remain around or below average at longer horizons (Section 4). Medium-term financial market measures of inflation compensation are around their averages, having risen sharply over the past month or so. With inflation further above the target than in August throughout the forecast period, it will be important to monitor medium to long-term inflation expectations closely for any signs of upward drift. Any substantial drift up could lead to changes in domestic wage and price-setting behaviour, which would make it harder to return inflation to the 2% target in the medium term.

5.2 The projections for demand, unemployment and inflation

Based on these judgements and the risks around them, and conditioned on the path for Bank Rate based on market yields, four-quarter GDP growth is projected to slow in the near term and remain around $1\frac{1}{2}\%$ further out. The lower sterling exchange rate supports net trade but, acting against that, companies begin to adjust activity in light of anticipated changes to future trading relationships. Uncertainty about the nature of those relationships holds back business investment, which falls in the near term and recovers only modestly further out. That weighs on productivity growth, as do adjustments to production processes, and it remains below historical average rates. Households' spending grows at a slower rate than recently, as their purchasing power is eroded by the fall in sterling, and unemployment rises, reaching just over $5\frac{1}{2}\%$ by the end of the forecast period (**Chart 5.7**). Near-term growth is stronger than in August, reflecting upside news in the data (**Table 5.F**). The medium-term projection is lower (**Chart 5.9**), reflecting slower real income growth, a more persistent drag from uncertainty and the likelihood of more significant adjustments to activity by companies in some sectors. That change in the pattern of growth reflects a more drawn out adjustment than in August, with the level of output only slightly lower at the three-year horizon. As in August, uncertainty around the outlook is greater than usual, and the fan around the growth projection remains wider than in May, but the risks are judged to be balanced, rather than tilted to the downside.

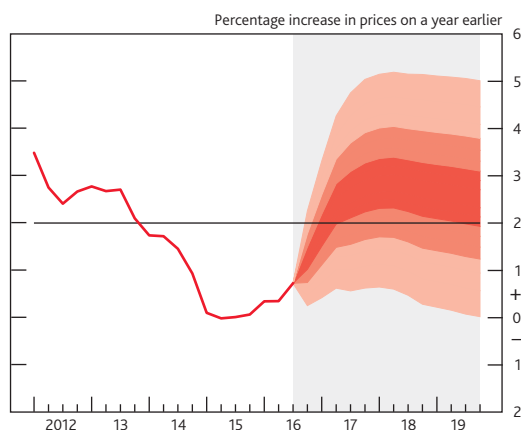
Conditional on a path for Bank Rate that reaches 0.4% by late 2019, domestic inflationary pressures build to levels typically consistent with inflation at the target. The lower level of sterling is, however, assumed to raise import and, in turn, consumer prices. Although the exchange rate's impact on inflation is temporary, it is likely to contribute significantly

Chart 5.12 GDP projection based on constant nominal interest rates at 0.25%, other policy measures as announced



See footnote to Chart 5.1.

Chart 5.13 CPI inflation projection based on constant nominal interest rates at 0.25%, other policy measures as announced



See footnote to Chart 5.2.

to inflation for several years. Inflation is therefore judged likely to rise sharply above the target over the next twelve months and still to exceed the MPC's 2% target at the three-year forecast horizon, before falling back to the target beyond then. It is possible that pass-through of higher import prices will occur more rapidly than in the central projection, so the risks are skewed to the upside in the near term (Table 5.G). Taking the risks and the central projection together, inflation is judged significantly more likely to be above the 2% target than below it in two to three years' time (Chart 5.10). Inflation rises further above the target than in August (Chart 5.11) given the further depreciation, together with higher oil prices, but peaks sooner given the assumption of faster pass-through.

Charts 5.12 and 5.13 show the MPC's projections under the alternative constant rate assumption, and the policy package announced by the MPC. That assumption is that Bank Rate remains at 0.25% throughout the three years of the forecast period, before rising towards the market path over the subsequent three years. Under that path, the outlooks for GDP growth and CPI inflation are broadly similar to those under the market path.

Other forecasters' expectations

This box reports the results of the Bank's most recent survey of external forecasters, carried out in October.⁽¹⁾ On average, respondents expected four-quarter GDP growth to slow materially over the coming year, before picking up further out (Table 1). Relative to August, the range of forecasts for GDP growth one year ahead has narrowed, but has widened for forecasts three years ahead (Chart A). Respondents, on average, expected the unemployment rate to increase over the next two years, albeit to a lesser extent than projected in August.

Table 1 Averages of other forecasters' central projections^(a)

	2017 Q4	2018 Q4	2019 Q4
CPI inflation ^(b)	2.6	2.5	2.1
GDP growth ^(c)	0.9	1.6	1.9
LFS unemployment rate	5.6	5.8	5.8
Bank Rate (per cent)	0.2	0.2	0.4
Stock of purchased gilts (£ billions) ^(d)	466	469	475
Stock of purchased corporate bonds (£ billions) ^(d)	11	12	13
Sterling ERI	76.2	77.7	77.1

Source: Projections of outside forecasters as of 24 October 2016.

(a) For 2017 Q4, there were 22 forecasts for CPI inflation, GDP growth and Bank Rate, 20 for the unemployment rate, 18 for the stock of gilt purchases, 13 for the stock of corporate bond purchases and 10 for the sterling ERI. For 2018 Q4, there were 19 forecasts for CPI inflation and GDP growth, 20 for Bank Rate, 17 for the unemployment rate and the stock of gilt purchases, 13 for the stock of corporate bond purchases and 9 for the sterling ERI. For 2019 Q4, there were 18 forecasts for CPI inflation, GDP growth, and Bank Rate, 17 for the unemployment rate, 16 for the stock of gilt purchases, 12 for the stock of corporate bond purchases and 8 for the sterling ERI.

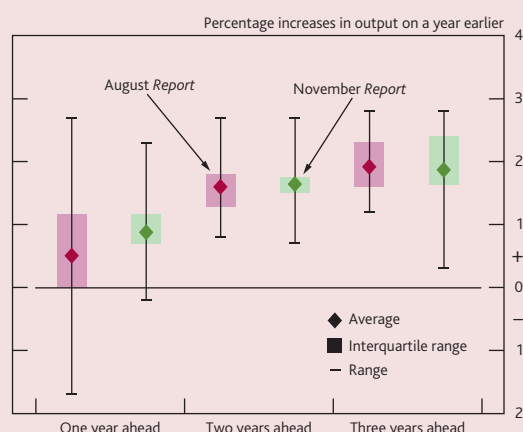
(b) Twelve-month rate.

(c) Four-quarter percentage change.

(d) Original purchase value. Purchased via the creation of central bank reserves.

Chart A The range of GDP forecasts three years ahead has widened

Forecasters' central projections of GDP growth

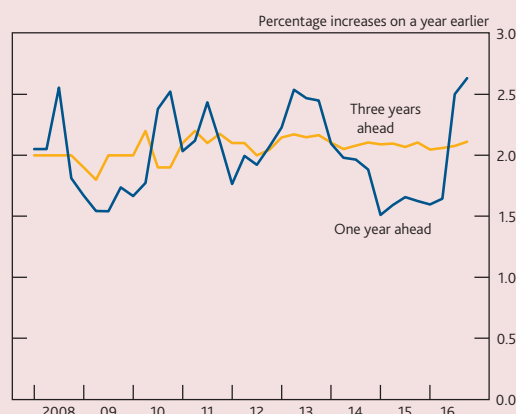


Sources: Projections of outside forecasters provided for Inflation Reports in August and November 2016.

The average of respondents' central expectations for CPI inflation in three years' time remained stable at 2.1% (Chart B). Average expectations in one year's time, however, continued to increase to 2.6%. Sterling was projected, on

Chart B External forecasters expect inflation to be close to the 2% target in three years' time

Forecasters' central projections of CPI inflation



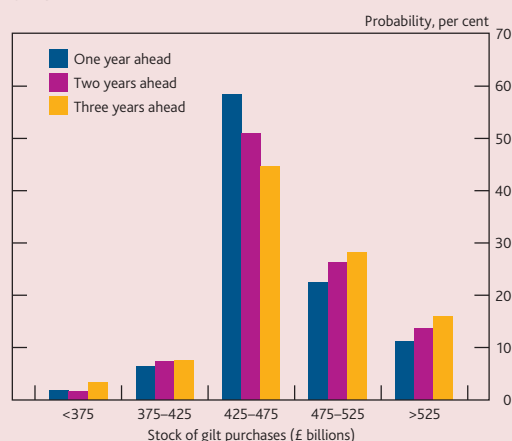
Sources: Projections of outside forecasters provided for Inflation Reports from February 2008 to November 2016.

average, to be around 4% higher than the conditioning path underlying the MPC's forecast (Table 1).

The path for Bank Rate implied by the average of external forecasters' central expectations was little changed from at the time of the August Report and broadly similar to the market path. The stock of gilt purchases was, on average, expected to be higher than the £435 billion announced in August (Table 1), with a 44% weight placed on the stock being £475 billion or higher in three years' time (Chart C). Respondents also placed a 33% weight on the stock of corporate bonds being £15 billion or higher in three years' time, compared with the £10 billion announced in August.

Chart C External forecasters are placing a large weight on a further increase in gilt purchases

Average of forecasters' probability distributions for the stock of gilt purchases^(a)



Source: Projections of outside forecasters as of 24 October 2016.

(a) Outcomes on the boundary of these ranges are included in the upper range. For example, the stock being £475 billion is in the £475 billion to £525 billion range.

(1) For detailed distributions of other forecasters' expectations, see 'Other forecasters' expectations' on the Bank's website, available at www.bankofengland.co.uk/publications/Documents/inflationreport/2016/novofe.pdf.

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Glossary and other information

Glossary of selected data and instruments

AWE – average weekly earnings.

CDS – credit default swap.

CPI – consumer prices index.

CPI inflation – inflation measured by the consumer prices index.

DGI – domestically generated inflation.

ERI – exchange rate index.

GDP – gross domestic product.

HICP – harmonised index of consumer prices.

LFS – Labour Force Survey.

Libor – London interbank offered rate.

M4 – UK non-bank, non-building society private sector's holdings of sterling notes and coin, and their sterling deposits (including certificates of deposit, holdings of commercial paper and other short-term instruments and claims arising from repos) held at UK banks and building societies.

PCE – personal consumption expenditure.

PMI – purchasing managers' index.

RPI – retail prices index.

RPI inflation – inflation measured by the retail prices index.

Abbreviations

BCC – British Chambers of Commerce.

CBI – Confederation of British Industry.

CBPS – Corporate Bond Purchase Scheme.

CEIC – CEIC Data Company Ltd.

CFO – chief financial officer.

CIPD – Chartered Institute of Personnel and Development.

CIPS – Chartered Institute of Purchasing and Supply.

CRE – commercial real estate.

EBITDA – earnings before interest, tax, depreciation and amortisation.

EC – European Commission.

ECB – European Central Bank.

EME – emerging market economy.

EU – European Union.

FOMC – Federal Open Market Committee.

FPC – Financial Policy Committee.

FTSE – Financial Times Stock Exchange.

GfK – Gesellschaft für Konsumforschung, Great Britain Ltd.

GVA – gross value added.

IMF – International Monetary Fund.

MPC – Monetary Policy Committee.

MSCI – Morgan Stanley Capital International Inc.

MTIC – missing trader intra-community.

NLW – National Living Wage.

OECD – Organisation for Economic Co-operation and Development.

ONS – Office for National Statistics.

OPEC – Organization of the Petroleum Exporting Countries.

PPP – purchasing power parity.

PwC – PricewaterhouseCoopers.

REC – Recruitment and Employment Confederation.

RICS – Royal Institution of Chartered Surveyors.

S&P – Standard & Poor's.

SMEs – small and medium-sized enterprises.

TFP – total factor productivity.

TFS – Term Funding Scheme.

WEO – IMF *World Economic Outlook*.

Symbols and conventions

Except where otherwise stated, the source of the data used in charts and tables is the Bank of England or the Office for National Statistics (ONS) and all data, apart from financial markets data, are seasonally adjusted.

n.a. = not available.

Because of rounding, the sum of the separate items may sometimes differ from the total shown.

On the horizontal axes of graphs, larger ticks denote the first observation within the relevant period, eg data for the first quarter of the year.

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