

# Inflation Report

February 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/feb.aspx](http://www.bankofengland.co.uk/publications/Pages/inflationreport/2016/feb.aspx).



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# Monetary Policy Summary

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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 3 February 2016, the MPC voted unanimously to maintain Bank Rate at 0.5%. The Committee also voted unanimously to maintain the stock of purchased assets financed by the issuance of central bank reserves at £375 billion.

In December, twelve-month CPI inflation stood at 0.2%, almost 2 percentage points below the inflation target. Oil prices were more than a third lower, in sterling terms, than a year earlier. Together with muted growth in world prices, the appreciation of sterling since early 2013 has pulled down on import prices more broadly. Overall, these factors can explain the vast majority of the deviation of inflation from the target in December, and to an even greater extent than at the time of the November *Inflation Report*. The remainder of the undershoot reflects subdued domestic cost growth, particularly unit labour costs.

Returning inflation to the 2% target requires balancing the protracted drags from sterling's past appreciation and low growth in world export prices against increases in domestic cost growth. Fully offsetting the drag on inflation from external factors over the short run would, in the MPC's judgement, involve too rapid an acceleration in domestic costs, one that would risk being unsustainable and would lead to undesirable volatility in output and employment. Given these considerations, the MPC intends to set monetary policy to ensure that growth is sufficient to absorb remaining spare capacity in a manner that returns inflation to the target in around two years and keeps it there in the absence of further shocks.

Global growth has fallen back further over the past three months, as emerging economies have generally continued to slow and as the US economy has grown by less than expected. There have also been considerable falls in the prices of risky assets and another significant fall in oil prices. The latter appears largely to reflect news about the supply of oil. Developments in financial markets seem in part to reflect greater weight being placed on the risks to the global outlook stemming from China and other emerging economies. Looking ahead, growth in the United Kingdom's main trading partners should continue to be supported by the boost to real incomes from low commodity prices, and to some degree by monetary and fiscal policy. But emerging market economies are likely to grow more slowly than in recent years and the risks to the MPC's central projections of only modest global growth lie to the downside.

Although activity growth in the United Kingdom has slowed to slightly below average rates, the domestic private sector remains resilient. Consumer confidence is robust, supported by a pickup in real income growth, and overall investment intentions continue to be firm, although a sharp retrenchment in capital spending in the oil and gas sector is under way. GDP is expected to grow at around average rates over the forecast period as a tighter labour market and rising productivity support real incomes and consumption.

The MPC has revised down its estimate of the level of potential supply broadly in line with the lower level of demand. Resilient private domestic demand growth is expected to produce sufficient momentum to eliminate the limited margin of spare capacity during the course of this year. However, wage growth has been weaker than anticipated and labour costs are expected to rise a little less quickly than thought at the time of the November *Inflation Report*, contributing to a slower recovery in inflation. In part that reflects the MPC's expectation that low realised inflation will continue to moderate the increase in wage pressure in the near term. The mechanical return to higher rates of inflation as past falls in energy prices drop from the annual comparison, supported by the recent fall in the sterling exchange rate and some additional stimulus from lower market interest rates, should in time reverse this effect and support wage gains. The MPC judges that inflation expectations remain well anchored, though it remains watchful for signs that low inflation is having more persistent second-round effects on wages.

The scale of recent commodity price falls means that CPI inflation is likely to remain below 1% until the end of the year. As the drags from energy and other imported goods unwind, however, domestic cost pressures are projected to build up sufficiently such that, conditioned on the path for Bank Rate implied by market interest rates, CPI inflation is likely to exceed the 2% target slightly at the two-year point and then rise further above it. This central projection for inflation is modestly below that of three months ago for much of the forecast period but broadly similar by the end. The MPC judges the risks to the central projection to be skewed a little to the downside in the near term, reflecting the possibility of greater persistence of low inflation.

There are significant judgements underlying these projections and a range of views among MPC members about the balance of risks to inflation relative to the best collective judgement presented in the February *Inflation Report*. At its meeting ending on 3 February, the MPC judged it appropriate to leave the stance of monetary policy unchanged. The MPC judges it more likely than not that Bank Rate will need to increase over the forecast period to ensure inflation remains likely to return to the target in a sustainable fashion.

All members agree that, given the likely persistence of the headwinds weighing on the economy, when Bank Rate does begin to rise, it is expected to do so more gradually and to a lower level than in recent cycles. This guidance is an expectation, not a promise. The actual path Bank Rate will follow over the next few years will depend on the economic circumstances.



# 1 Global economic and financial developments

Since the November *Report*, the ECB has eased policy further and the FOMC has raised interest rates. In the United Kingdom, the market-implied path for Bank Rate is lower than that in the run-up to the November *Report* and the sterling ERI has depreciated by 3½%. Oil prices have fallen substantially since November, to around US\$29 per barrel. Financial market volatility rose and UK equity prices fell significantly, alongside those in the United States and the euro area. UK-weighted world GDP growth remained subdued in 2015 Q3, in line with expectations in November.

**Table 1.A** Monitoring the MPC's key judgements

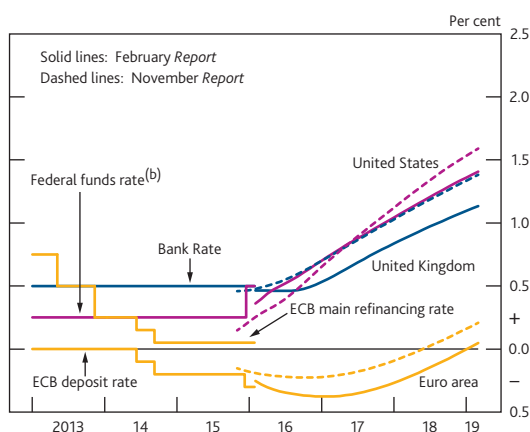
Developments anticipated in November	Developments since November
<b>Global GDP growth</b>	<b>Slightly weaker than expected</b>
<ul style="list-style-type: none"> <li>Quarterly euro-area growth to average a little below ½%. Inflation expected to begin to pick up in the coming months.</li> <li>Quarterly US GDP growth to average a little above ½%; PCE inflation to remain weak in the coming months but is expected to pick up in 2016 H1.</li> <li>Average four-quarter PPP-weighted emerging-economy growth of around 4%; Chinese GDP growth to average around 6½%.</li> </ul>	<ul style="list-style-type: none"> <li>Euro-area GDP rose by 0.3% in Q3. Inflation rose to 0.4% in January 2016, but the near-term outlook is weaker than in November.</li> <li>US GDP rose by 0.2% in Q4, following growth of 0.5% in Q3. PCE inflation was 0.4% in December.</li> <li>Emerging-economy GDP growth was 4.1% in Q3. Chinese GDP growth was 6.8% in Q4.</li> </ul>
<b>Commodity prices and the exchange rate</b>	<b>Oil prices much lower; sterling lower</b>
<ul style="list-style-type: none"> <li>Commodity prices and sterling ERI to evolve in line with the conditioning assumptions.</li> </ul>	<ul style="list-style-type: none"> <li>US dollar oil prices are around 40% lower. The sterling ERI depreciated by around 3½%.</li> </ul>

Since November, the US Federal Open Market Committee (FOMC) has raised interest rates, while the European Central Bank (ECB) has eased policy (**Chart 1.1**). In the United Kingdom, market prices imply a slower pace of Bank Rate rises than at the time of the November *Report*. Reflecting falls against a range of currencies, including the US dollar and the euro, the sterling ERI has depreciated by around 3½% (Section 1.1).

In other financial markets, volatility and risk premia have risen, possibly reflecting concerns about the outlook for emerging market economies (EMEs) and potential spillovers to advanced economies. For example, UK equity prices have fallen by 7% since the November *Report*. While concerns about demand have also weighed on oil prices, increased supply prospects are likely to have been a significant driver of the falls seen since November. Those falls will boost real incomes in commodity-importing economies, but exert a drag on activity in commodity exporters (Section 1.2).

**Chart 1.1** The market-implied path for Bank Rate is lower than in November

International forward interest rates<sup>(a)</sup>



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

(a) The February 2016 and November 2015 curves are estimated using instantaneous forward overnight index swap rates in the fifteen working days to 27 January 2016 and 28 October 2015 respectively.

(b) Upper bound of the target range.

UK-weighted world GDP growth remained subdued in 2015 Q3, in line with expectations in November. EME growth continued at a slower pace than in recent years and activity in advanced economies continued to expand at a moderate pace (Section 1.2). In part reflecting recent developments in financial conditions, however, the outlook for global growth is slightly weaker (Section 5).

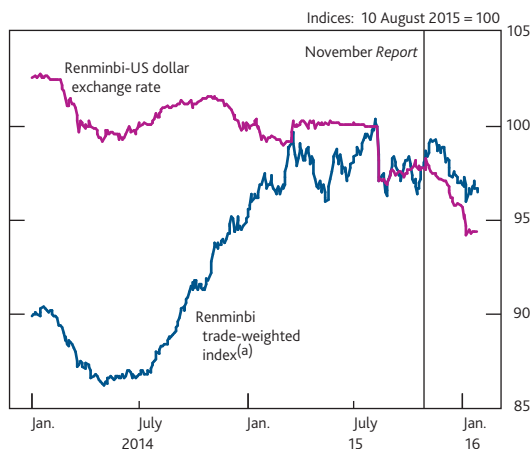
## 1.1 Developments in asset prices

### Monetary policy and interest rates

In the United States, the FOMC increased the target range for the federal funds rate to between ¼% and ½% in December, from between 0% and ¼%, where it had been since 2008. As expectations of the increase firmed in the weeks preceding the December policy meeting, market interest rates rose. There was little reaction in financial markets to the decision itself. Market interest rates have since fallen back as financial

**Chart 1.2** The Chinese renminbi has continued to depreciate against the US dollar

Renminbi exchange rates

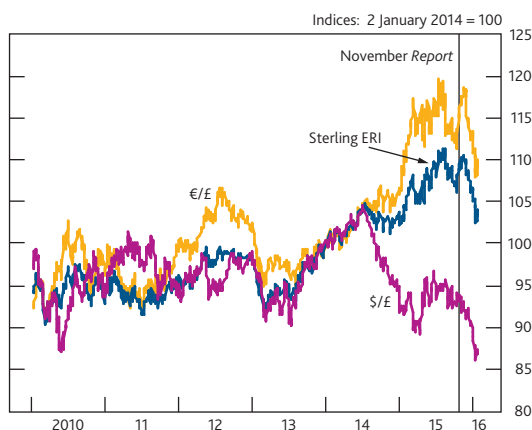


Sources: Bloomberg, China Foreign Exchange Trade System (CFETS) and Bank calculations.

(a) Calculated as a weighted average of end-day spot bilateral exchange rates, using weights published by the CFETS.

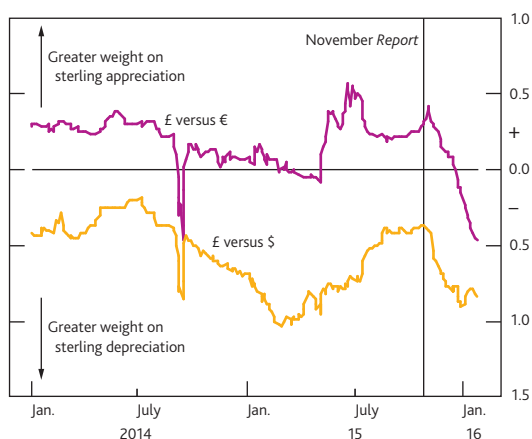
**Chart 1.3** Sterling has depreciated against both the US dollar and the euro since November

Sterling exchange rates



**Chart 1.4** Option prices point to an increasing weight on the risk of a sterling depreciation over the next year

Option-implied asymmetries for selected bilateral exchange rates<sup>(a)</sup>



Sources: Bloomberg and Bank calculations.

(a) Twelve-month measure. Option-implied asymmetries are measured by the skewness of the distribution of twelve-month foreign exchange returns implied by options price data. Returns are defined as the logarithmic difference between current forward rates and the spot rate.

market volatility increased, and the implied pace of rises in the federal funds rate is slower than in the run-up to the *November Report* (**Chart 1.1**).

In the euro area, the ECB left the main refinancing rate unchanged, but cut the deposit rate by a further 10 basis points to -0.3% in December (**Chart 1.1**). The duration of its asset purchase programme was also extended. Monthly purchases are now intended to run until the end of March 2017 — six months longer than originally announced — or beyond, until a sustained adjustment in the path of inflation takes place. The ECB also announced it would reinvest principal payments as purchased bonds matured and that purchases would be extended to regional and local government bonds.

While the scale of the ECB's easing was more modest than had been anticipated by market participants immediately prior to the decision, prompting falls in asset prices on the day of the announcement, that only partly unwound the rises that had occurred over the previous few weeks during which expectations of the change had built. Overall, the change in ECB policy is likely to have supported asset prices in the euro area and in other countries whose assets investors judge to be close substitutes, such as the United Kingdom. The market-implied path for euro interest rates is lower than at the time of the *November Report*, with market participants placing a significant weight on further easing in March.

In the United Kingdom, the market-implied path for Bank Rate reaches 1.1% in 2019 Q1, around 20 basis points lower than in the run-up to the *November Report*. According to market contacts, this is likely to reflect market participants' concerns that weaker global growth could weigh on the UK outlook. The box on page 3 discusses the factors behind the Monetary Policy Committee's (MPC's) decisions in December and January, while the factors underpinning the Committee's February 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.

Ten-year spot government bond yields in the United States, the United Kingdom and the euro area have been broadly unchanged since the *November Report*. Similarly, the implied inflation rate for five to ten years ahead in the United Kingdom has changed little (Section 4).

### Exchange rates

In China, the renminbi continued to depreciate against the US dollar (**Chart 1.2**). Market contacts suggest this may in part have been associated with increased concerns about the extent of the slowdown in China. But the renminbi trade-weighted index — on which the Chinese authorities have recently placed greater emphasis, and which is likely to be more important for the overall outlook for Chinese trade — has fallen by less and remains close to its level a year ago.

## Monetary policy since the November Report

The MPC's central projection in the November Report, under the assumptions that Bank Rate followed a path implied by market interest rates and that the stock of purchased assets remained at £375 billion, was that private domestic demand would continue to grow at above-average rates, such that four-quarter GDP growth would remain around 2½% over the forecast period. CPI inflation was expected to remain below 1% until the second half of 2016, then rise to the 2% target in the second half of 2017 and above it in 2018.

At its meeting ending on 9 December, the MPC noted that domestic and international activity data had generally been consistent with expectations in the November Report. Measures announced in the Government's Autumn Statement meant a slightly slower pace of deficit reduction in 2016 than previously planned. The prices of oil and some other commodities had fallen markedly on the month, which was thought in large part to reflect supply conditions.

CPI inflation had remained at -0.1% in October, as expected. The lower price of oil increased the likelihood that headline inflation rates would remain subdued in the near term. In addition, nominal wage growth had levelled off. Average hours worked had been lower than expected, however, which might have explained some of the flattening off in pay growth, with changes in the composition of employment an additional factor. To the extent that these were reflected in productivity as well as pay, their implications for inflation were likely to be small. A third potential factor behind weak pay growth was the low level of CPI inflation seen during the course of the year, which may have fed into pay negotiations.

Eight Committee members considered the current stance of monetary policy to be appropriate. For one member, the risks around domestic cost growth were to the upside, and were sufficient to justify an immediate increase in Bank Rate.

Data regarding international activity ahead of the MPC meeting ending on 13 January had evolved broadly as expected. The main international developments had been in commodities and financial markets. Concerns about activity

in some emerging market economies had led to volatility in financial markets. Oil prices had fallen further, which in addition to news about oil supply also appeared to reflect demand news stemming from emerging economies. The sterling exchange rate index had fallen by around 3% since the November Report.

UK GDP data had been revised down a little and suggested that after faster growth over the previous two years, growth had been steady during 2015 at a little below its past average rate. The latest survey data had painted a mixed picture. Reflecting both the revised official data and the latest surveys, and despite the prospective boost to GDP from the latest oil price falls, Bank staff had lowered their central projections for GDP growth in Q4 and Q1.

CPI inflation had increased to 0.1% in November, in line with expectations, although further falls in energy prices meant that it was expected to increase slightly more gradually than projected in November. Different signals were being sent by data on wages and employment about the outlook for domestic costs. Wage growth had eased by significantly more than the MPC had anticipated in November, while employment growth had recovered strongly since mid-2015 and the unemployment rate was a touch lower than expected. Overall, unit labour costs had appeared to be a little below the level anticipated at the time of the November Report.

For eight members, the current stance of monetary policy remained appropriate in order to achieve the Committee's aim of returning inflation sustainably to the target in around two years' time. For one member, the risks to domestic cost growth remained to the upside and, given the recent depreciation of sterling, were less likely to be offset by the drag from the earlier sterling appreciation. Together, these were sufficient to justify an immediate increase in Bank Rate.

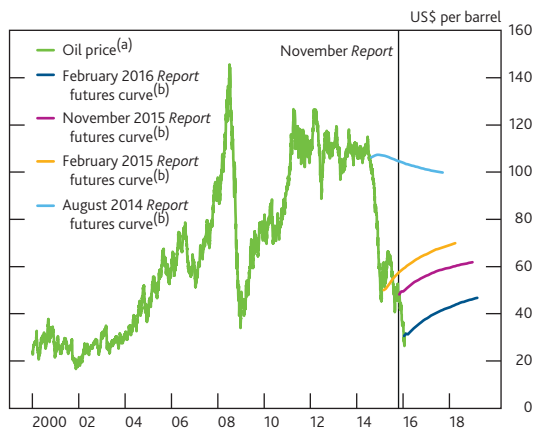
The policy decision at the meeting ending on 3 February, and the factors behind that decision, are set out in the Monetary Policy Summary on pages i–ii of this Report, and in more detail in the Minutes of the meeting.<sup>(1)</sup>

(1) The Minutes are available at [www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2016/feb.pdf](http://www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2016/feb.pdf).

In the United Kingdom, the ERI has depreciated by 3½% since the November Report. The fall was broad-based, with declines of nearly 7% against the US dollar and over 3% against the euro (Chart 1.3). That represents a shift from the trends seen since late 2014, when an appreciation against the euro more than offset a depreciation against the dollar. In part, the recent decline in sterling could reflect strength in the euro following the announcement by the ECB of less easing than had been anticipated by market participants.

**Chart 1.5 Oil prices have fallen further since the November Report**

US dollar oil prices

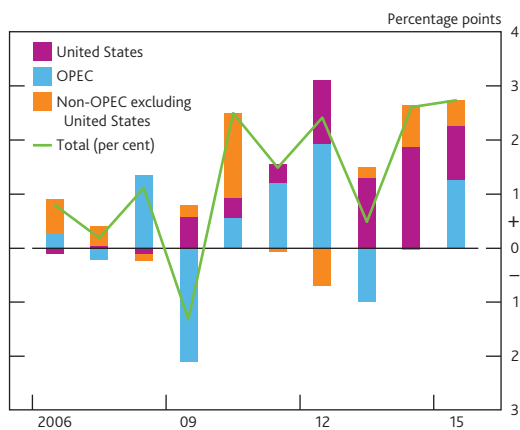


Sources: Bloomberg and Bank calculations.

- (a) US dollar Brent forward prices for delivery in 10–25 days' time.  
 (b) Averages during the fifteen working days to 27 January 2016, 28 October 2015, 4 February 2015 and 6 August 2014 respectively.

**Chart 1.6 Robust oil supply over the past two years was driven by growth in US and OPEC output**

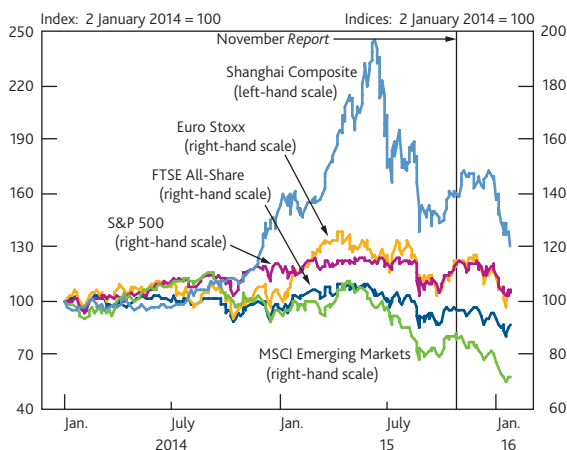
Contributions to annual growth in oil supply



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

**Chart 1.7 Equity prices have fallen markedly**

International equity prices<sup>(a)</sup>



Sources: Thomson Reuters Datastream and Bank calculations.

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

Another factor that market contacts suggest may be weighing on sterling is uncertainty about the implications of the referendum on EU membership, which they expect to be held later this year. Since November, option prices suggest that the weight market participants place on a significant depreciation of sterling against the euro and the dollar over the next year, relative to an appreciation, has increased (Chart 1.4). The current levels of these option-implied asymmetries are close to those seen around the time of the Scottish independence referendum in September 2014.

### Commodity prices

The Brent crude spot oil price was US\$29 per barrel in the run-up to the February Report, a fall of US\$19 per barrel since the run-up to the November Report, and nearly 75% lower than its peak in June 2014. As the spot price has fallen, the futures curve, on which the MPC's forecast is conditioned, has also shifted down, reaching US\$47 in three years' time, compared with US\$62 at the time of the November Report (Chart 1.5). The drag from lower petrol prices on UK CPI inflation in 2016 is consequently projected to be larger than anticipated three months ago (Section 4).

As discussed in previous Reports, the overall implications for UK growth of a supply-driven decline in oil prices tend to be more positive than a fall in oil prices associated with a weakening in world, and hence oil, demand (Section 1.2). Developments in oil supply are likely to have accounted for much of the fall in oil prices since June 2014 and more recently. Oil supply growth over the past two years has been above average rates, initially driven by rises in US output, with OPEC production playing a bigger role more recently (Chart 1.6). Since the November Report, expectations of supply were boosted following the meeting of OPEC members, which ended without a reduction in the OPEC official production ceiling. Market contacts suggest that another factor increasingly weighing on oil prices has been the prospect of increases in Iranian oil supply, following the suspension of trade sanctions in January.

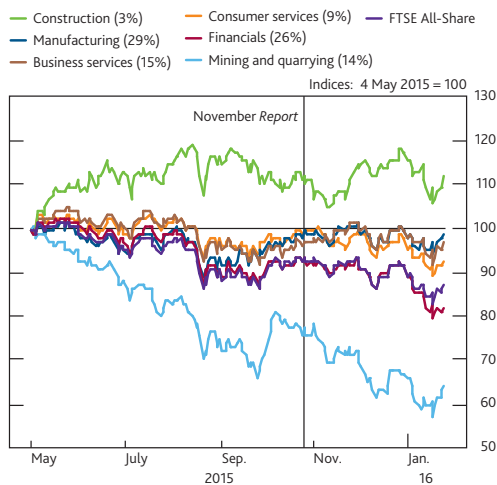
Demand factors, however, are also likely to have contributed to some of the decline in oil prices since November. Volatility in Chinese equity prices and the exchange rate have recently tended to be accompanied by falls in the prices of oil and other commodities: industrial metals prices have fallen by 11% and agricultural commodities by 4% since the November Report.

### Corporate capital markets

UK, US and euro-area equity prices have dropped by around 7% since the run-up to the November Report (Chart 1.7). In part, this reflects declines in the equity prices of companies in the mining and quarrying sector, which have fallen alongside commodity prices. In the United Kingdom, for example, equity prices for these companies have fallen by around 25%

### Chart 1.8 Equity prices of companies in energy-related sectors have fallen the most

UK equity indices for selected sectors<sup>(a)</sup>

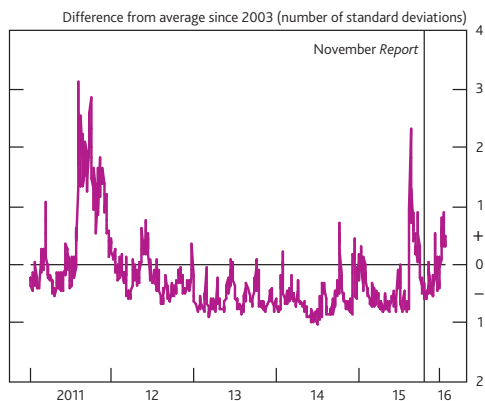


Sources: Thomson Reuters Datastream and Bank calculations.

(a) Sectors capture around 96% of the FTSE All-Share. Sectoral indices are calculated as an average of sub-indices of the FTSE All-Share, weighted by daily shares in market capitalisation. The weight of each sector in the FTSE All-Share is shown in parentheses.

### Chart 1.9 Financial market uncertainty has risen

Implied volatility for US equity prices<sup>(a)</sup>

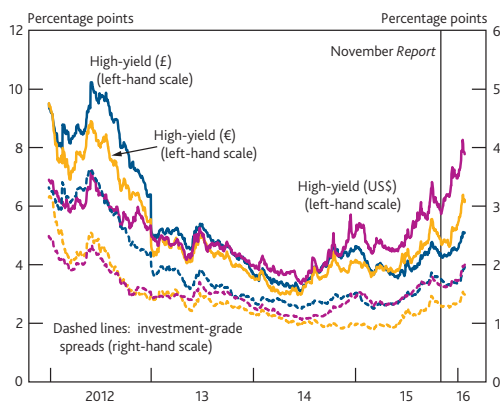


Sources: Bloomberg and Bank calculations.

(a) VIX measure of 30-day implied volatility of the S&P 500 equity index.

### Chart 1.10 Corporate bond spreads have widened

International corporate bond spreads<sup>(a)</sup>



Source: BofA Merrill Lynch Global Research.

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

since the November *Report* (Chart 1.8), accounting for around half of the fall in the overall index.

Part of the fall in equity prices may also reflect rising perceptions of risks to global demand. Emerging market equity prices have also fallen since the November *Report*, with the emerging market MSCI index down by 17%, and Chinese equity prices down by 11% (Chart 1.7). Those falls are likely to signal investors' increased perceptions of downside risks to the outlook for emerging economies, which may also weigh on advanced-economy growth. Consistent with that, the VIX measure of implied equity price volatility — a measure of financial market uncertainty — has risen, but remains below levels seen in August 2015 (Chart 1.9).

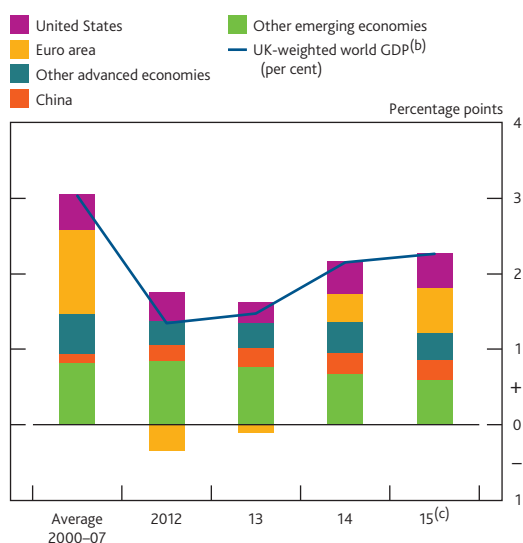
Corporate bond spreads — the compensation that investors require for holding risky corporate bonds, instead of government bonds — have widened since the November *Report*. This was most notable for so-called 'high-yield' bonds, those issued by companies with lower credit ratings. Dollar-denominated high-yield bond spreads have widened by 1.6 percentage points, with smaller pickups for sterling and euro-denominated high-yield bonds (Chart 1.10). Spreads on investment-grade corporate bonds, those issued by companies with higher credit ratings, are also wider than in mid-2015, with dollar and euro-denominated spreads up slightly since November.

While some of the recent widening in corporate bond spreads is likely to have reflected heightened perceptions of risks to the outlook, a number of other factors have also played a role. Much of the widening in dollar-denominated high-yield corporate bond spreads has been driven by bonds issued by commodity-related companies, following further commodity price falls. Market contacts also report that concerns about the resilience of corporate balance sheets more broadly, given the increases in leverage in recent years, may have contributed to wider spreads. In addition, wider investment-grade spreads may have reflected a reappraisal of liquidity conditions in secondary markets alongside strong primary market issuance.

These wider spreads will have pushed up the cost of capital for some companies, although they will have been partly offset by recent falls in reference rates. Although sterling-denominated corporate bond spreads have widened by less, conditions in dollar and euro corporate bond markets are more important for UK companies, as sterling-denominated bond issuance is a small proportion of their total issuance. In 2015, dollar and euro-denominated issuance accounted for over three quarters of gross bond issuance by UK private non-financial corporations.

**Chart 1.11 World GDP growth was unchanged in 2015 as faster advanced-economy growth offset slower EME growth**

Contributions to calendar-year growth in UK-weighted world GDP<sup>(a)</sup>



Sources: IMF *World Economic Outlook (WEO) Update* January 2016, OECD, Thomson Reuters Datastream and Bank calculations.

- (a) Constructed using data for countries' real GDP growth rates weighted according to their shares in UK exports. For the vast majority of countries, the latest observation is 2015 Q3. For those countries where data for 2015 Q3 are not yet available, data are assumed to be consistent with projections in the IMF *WEO Update* January 2016.  
 (b) Weighted average of GDP growth rates for 146 countries.  
 (c) As data for 2015 Q4 for many countries are not available, growth rates for 2015 have been calculated using the first three quarters of 2015 relative to the same three quarters in 2014.

**Table 1.B Inflation is weak across countries**

Inflation rates in selected countries and regions

Per cent	Monthly averages				2015			2016
	1998-2007	2014	2015 H1	2015 Q3	Oct.	Nov.	Dec.	Jan.
<b>Annual headline consumer price inflation</b>								
United Kingdom	1.6	1.5	0.1	0.0	-0.1	0.1	0.2	n.a.
Euro area <sup>(a)</sup>	2.0	0.4	-0.1	0.1	0.1	0.1	0.2	0.4
United States <sup>(b)</sup>	2.0	1.4	0.2	0.3	0.2	0.4	0.4	n.a.
UK-weighted world inflation <sup>(c)</sup>	2.0	1.0	0.4	0.5	n.a.	n.a.	n.a.	n.a.
<b>Annual consumer price inflation excluding food and energy<sup>(d)</sup></b>								
United Kingdom	1.2	1.6	1.0	1.1	1.1	1.2	1.4	n.a.
Euro area <sup>(a)</sup>	1.6	0.8	0.7	0.9	1.1	0.9	0.9	1.0
United States <sup>(b)</sup>	1.8	1.5	1.3	1.3	1.3	1.4	1.4	n.a.

Sources: Eurostat, IMF *WEO Update* January 2016, ONS, Thomson Reuters Datastream, US Bureau of Economic Analysis and Bank calculations.

- (a) Data point for January 2016 is a flash estimate.  
 (b) Personal consumption expenditure price index inflation. Data point for December 2015 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 2015 Q3. For those countries where data for 2015 Q3 are not yet available, data are assumed to be consistent with projections in the IMF *WEO Update* January 2016.  
 (d) For the euro area and the United Kingdom, excludes energy, food, alcoholic beverages and tobacco. For the United States, excludes food and energy.

## 1.2 Global economic developments

### Global growth and inflation

Global growth has been muted in recent years, reflecting a slowing in EME growth and below-average growth in advanced economies. UK-weighted world GDP growth in the four quarters to 2015 Q3 was 2.2%, as expected in November. UK-weighted world trade growth, however, was weaker than expected, in part reflecting falls in Chinese imports. Both world GDP and world trade growth are likely to have slowed in Q4.

Although global growth in 2015 is expected to have been broadly similar to that in 2014, EMEs have made a smaller, and advanced economies a larger, contribution than in previous years (Chart 1.11). In part, the smaller EME contribution reflects a slowing in growth in commodity exporters associated with the past falls in oil prices. Further falls in commodity prices since November are therefore projected to drag further on activity in commodity-exporting economies. While the falls in oil prices should impart a boost to advanced-economy activity growth, that is likely to be partly offset by the impact of slowing EME growth. The recent falls in asset prices and associated tightening in financial conditions mean that the outlook for world GDP growth is slightly weaker than in November (Section 5).

Past falls in oil and other commodity prices have dragged directly on headline inflation rates across many countries (Table 1.B), and are likely to have depressed prices of internationally traded goods by reducing production and transport costs. Annual UK-weighted world export price inflation, excluding fuel, was -0.9% in Q3, which will weigh on UK inflation (Section 4).

### Emerging market economies

Growth in EMEs has slowed significantly since 2010. Four-quarter PPP-weighted EME growth was 4.1% in 2015 Q3, compared with a rate of 7.5% in 2010, and growth looks set to slow further in Q4. While Chinese growth, at 6.8% (Table 1.C), was slightly higher than expected in Q4, activity appears to have been weaker than expected in Russia and Brazil.

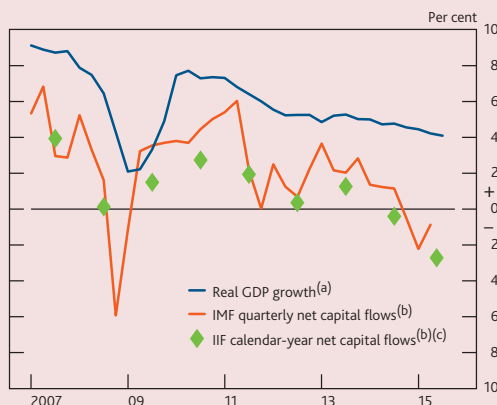
Falls in asset prices, as well as rises in US short-term interest rates, have contributed to a tightening in financial conditions across EMEs over the past year, as capital outflows have intensified. As discussed in the box on page 7, this has led to tighter bank lending conditions in those countries, which is likely to have weighed on economic activity.

In addition, the significant falls in both oil and non-oil commodity prices since Summer 2014 have been associated with a sharper slowdown in commodity-exporting economies than had been anticipated a year ago, and have exacerbated existing vulnerabilities in Brazil and Russia.

## What is the impact of capital flows on the outlook for emerging economies?

As emerging market economies (EMEs) have become more important in the global economy, their growth prospects increasingly matter for the UK outlook. One important factor that will both reflect and, in turn, influence those prospects is the pattern of international capital flows. Having been robust over most of the recent past, net private sector capital flows into EMEs have slowed sharply since 2013 (Chart A). While official data from the International Monetary Fund (IMF) for 2015 H2 are not yet available, more timely estimates from the Institute of International Finance (IIF) indicate that there were net private sector capital outflows from EMEs in 2015 as a whole. This would be the first annual net outflow since 1988. That mainly reflects large net outflows from China. This box explores the recent drivers of capital flows to EMEs, and their potential implications for the economic outlook.

**Chart A Net capital flows into EMEs have slowed since 2013**  
EME GDP growth and net capital flows



Sources: IIF, IMF WEO October 2015 and Bank calculations.

- (a) Constructed using real GDP growth rates for 147 countries weighted according to their shares in world GDP using the IMF's purchasing power parity (PPP) weights. Percentage change on a year earlier.  
 (b) Capital inflows to EMEs less capital outflows from EMEs, excluding changes in reserves and including errors and omissions. Percentages of nominal GDP.  
 (c) Based on data for 30 EMEs. The observation for 2015 is an IIF estimate based on partial data.

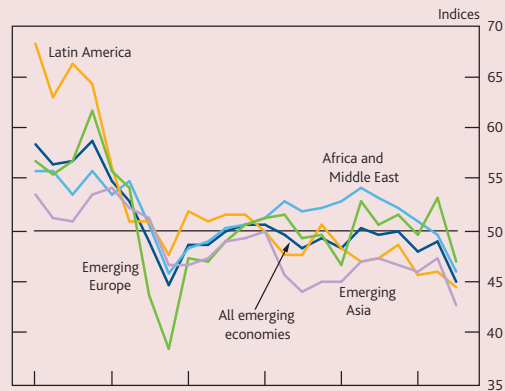
International capital flows arise because companies and households seek to invest in destinations with the highest perceived return, to diversify their portfolios and to smooth their spending over time. As a result, capital flows tend to be driven by relative growth and interest rate prospects. But as some investments are riskier than others, they will also be driven by shifts in the perception of, and appetite for, risk.

EME growth has persistently disappointed in recent years and may have led investors to reappraise the outlook for, and risks around, their medium-term growth prospects. That is likely to have weighed on net capital flows into EMEs in recent years (Chart A). In particular, market contacts report that slowing growth in China, together with concerns about possible further depreciation of the renminbi, have prompted significant private capital outflows from China since 2014 H2.

Capital flows to EMEs are also likely to have been influenced by developments in advanced economies. In the years immediately following the crisis, very low advanced-economy interest rates led investors to seek higher yields elsewhere, and net capital flows into EMEs picked up sharply (Chart A). Some of those flows have subsequently unwound, and expectations of rises in the US federal funds rate may have driven some outflows from EMEs during 2015.

As well as reflecting the outlook, capital flows will also, in turn, influence financial conditions and activity, and so they can be a self-reinforcing mechanism. Net capital flows into EMEs in 2010–11 are likely to have boosted activity there by pushing up private sector asset prices and lowering the cost of financing for companies. Conversely, recent net outflows have been associated with a tightening in financial conditions: for example, equity prices have fallen (Section 1.1). According to an IIF survey of EME banks, a deterioration in funding conditions has contributed to a tightening in overall bank lending conditions over 2015 (Chart B). Those rises in the cost of credit for households and businesses will weigh on activity. Partly offsetting that, however, capital outflows are likely to have driven currency depreciation in some countries. That should support net trade, although it could increase the cost of servicing dollar-denominated debt.

**Chart B Lending conditions have tightened across EMEs**  
EME bank lending conditions<sup>(a)</sup>



Source: IIF.

- (a) Diffusion indices, where a balance of 50 indicates neutral conditions, and a lower (higher) balance indicates tighter (looser) conditions.

Looking ahead, a further deterioration in risk sentiment could lead to an intensification in capital outflows from EMEs, resulting in a more severe slowing in activity growth. As discussed in the December 2015 *Financial Stability Report*, although some risks remain, EMEs appear to be better placed to deal with such outflows now than during previous episodes of reversals in capital flows, such as the East Asian crisis in the late 1990s.<sup>(1)</sup>

(1) For further discussion, including of the Bank of England's 2015 stress-test results, which assessed the UK banking system's resilience to a severe downturn in EMEs, see pages 16–19 of the December 2015 *Financial Stability Report*; [www.bankofengland.co.uk/publications/Documents/fsr/2015/dec.pdf](http://www.bankofengland.co.uk/publications/Documents/fsr/2015/dec.pdf).

**Table 1.C Global growth remained muted in 2015 Q3**  
GDP in selected countries and regions<sup>(a)</sup>

	Averages			2015		
	1998–2007	2012–13	2014	H1	Q3	Q4
	United Kingdom	2.9	1.9	2.8	1.8	1.8
Euro area (39%)	2.3	-0.2	0.9	1.9	1.2	n.a.
United States (16%)	3.0	1.9	2.5	2.3	2.0	0.7
China (4%) <sup>(b)</sup>	10.0	7.7	7.3	7.0	6.9	6.8
Japan (2%)	1.1	1.1	-0.8	2.0	1.0	n.a.
India (2%) <sup>(b)</sup>	n.a.	n.a.	7.1	7.3	7.4	n.a.
Russia (1%) <sup>(c)</sup>	7.8	1.6	-0.7	-4.9	-2.3	n.a.
Brazil (1%)	3.1	2.5	-0.7	-5.6	-6.7	n.a.
UK-weighted world GDP <sup>(d)</sup>	3.0	1.6	2.1	2.2	2.1	n.a.

Sources: IMF *WEO Update* January 2016, OECD, Thomson Reuters Datastream and Bank calculations.

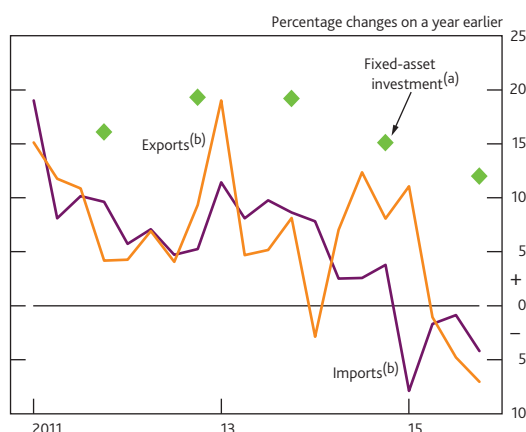
(a) Real GDP measures. Figures in parentheses are shares in UK goods and services exports in 2014.

(b) Data are four-quarter growth. The earliest observation for India is 2012 Q1.

(c) The earliest observation for Russia is 2003 Q2.

(d) See footnotes (a) and (b) to Chart 1.11.

**Chart 1.12 Import growth in China has moderated as export and investment growth have slowed**  
Trade and investment in China



Sources: CEIC, National Bureau of Statistics of China, Thomson Reuters Datastream and Bank calculations.

(a) Real fixed-asset investment. Calendar-year growth rates.

(b) Calculated as the four-quarter growth rate of nominal imports (exports) less the four-quarter growth rate of the import (export) price index. The observation for 2015 Q4 is an average of the October and November outturns.

Another factor weighing on EME growth is likely to have been the changing pattern of demand in China. China has been rebalancing demand away from investment and towards household consumption, and export growth has also slowed. As investment and exports are relatively more import-intensive, this rebalancing process has been associated with slowing import growth, and imports fell during 2015 (**Chart 1.12**). A continued rebalancing in Chinese demand is likely to weigh on the demand for imports from the rest of the world, particularly from other EMEs.

Another influence that is likely to have had a persistent effect on growth in EMEs is the slowing pace of population growth and an increase in the proportion of retired people in those countries. The IMF projects that working-age population growth will average 0.6% a year during 2015–20, compared with a rate of 1.5% during 2002–07.

As in November, four-quarter growth in EMEs is projected to recover from current rates as some of the factors that are weighing on activity wane, but to remain below rates seen prior to 2010, as rebalancing in China proceeds and demographic shifts continue. Further falls in commodity prices since November are expected to weigh on activity in commodity-exporting economies, although they will boost real incomes in commodity-importing countries, helping to support overall EME activity.

Downside risks to the outlook remain, however. In China, the authorities continue to face the challenges of maintaining growth while liberalising and rebalancing the economy in the face of large increases in indebtedness in recent years. Elsewhere, further increases in US short-term interest rates could be associated with an intensification of capital outflows, and could increase the cost of servicing dollar-denominated debt — the issuance of which has increased in recent years — exerting a further drag on EME activity.<sup>(1)</sup>

## Euro area

Euro-area GDP rose by 0.3% in 2015 Q3, a slightly slower pace than in Q2, and a touch below expectations in the *November Report*. Consumption growth remained solid. This is likely to have been supported by strong real income growth, reflecting past falls in energy prices. In contrast, net trade detracted from GDP growth in Q3, following a robust contribution in Q2. The PMI output survey suggests that GDP growth is likely to have been a little faster in Q4.

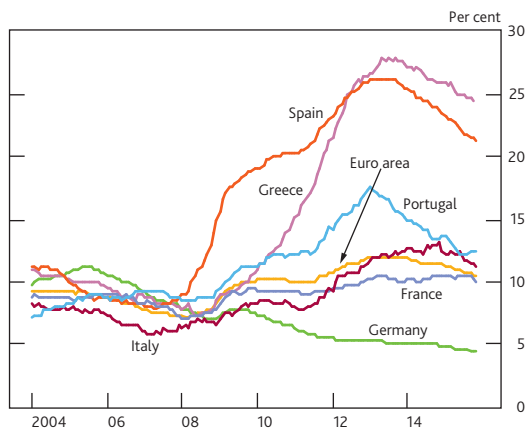
Sizable differences in macroeconomic conditions remain across euro-area countries: for example, the unemployment rate is below its pre-crisis average rate in Germany, but remains elevated in Spain, Portugal and Greece (**Chart 1.13**). That suggests that a significant margin of spare capacity

(1) For a discussion of recent developments in emerging economies' dollar-denominated debt, see pages 17–19 of the December 2015 *Financial Stability Report*; [www.bankofengland.co.uk/publications/Documents/fsr/2015/dec.pdf](http://www.bankofengland.co.uk/publications/Documents/fsr/2015/dec.pdf).



**Chart 1.13 Unemployment rates remain elevated in some euro-area countries**

Unemployment rates in selected euro-area countries<sup>(a)</sup>

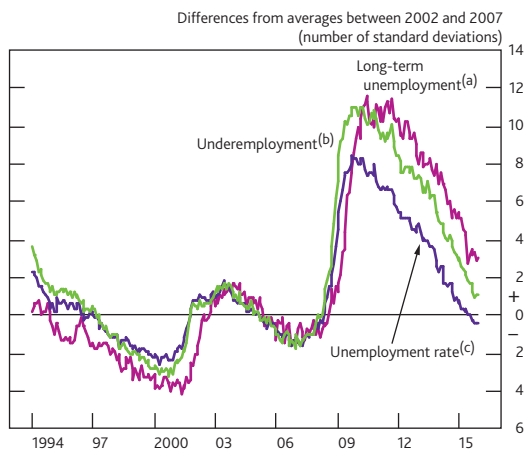


Source: Eurostat.

(a) Final data points shown are for November 2015, with the exception of Greece, for which the final data point is for October 2015.

**Chart 1.14 US labour market conditions have tightened in recent years**

US labour market indicators



Sources: US Bureau of Labor Statistics and Bank calculations.

(a) Number of people unemployed for 27 weeks or more as a percentage of total unemployed.  
 (b) U6 measure, which includes the unemployed, the marginally attached to the workforce and part-time employed people who are working part-time purely for economic reasons, as a percentage of the civilian labour force plus all people marginally attached to the workforce.  
 (c) Percentage of the 16+ civilian labour force.

remains in some countries, which is probably weighing on inflation. While headline inflation has picked up, rising from -0.1% in 2015 H1 to 0.4% in January, that has mainly reflected past falls in food and energy prices beginning to drop out of the annual rate. Core inflation, which excludes food and energy, has remained subdued (**Table 1.B**), particularly in countries where significant slack remains, such as Greece and Spain. Further oil price falls mean that inflation is expected to fall back in the near term, a weaker outlook than in November.

The near-term outlook for euro-area growth has changed little since the November *Report*. Demand is expected to be supported by the further falls in oil prices, ECB policy easing, and the past depreciation in the euro (**Section 5**). Greater fiscal spending associated with increases in the number of refugees over the past year is also projected to support the outlook. But the recent slowing in EMEs, and associated falls in asset prices, is likely to weigh on euro-area growth.

### United States

US activity has expanded at a moderate pace in recent years (**Table 1.C**). In 2015 Q4, however, GDP rose by only 0.2%, less than expected, as stockbuilding and net trade exerted a drag, partly offsetting solid household spending growth.

As demand has expanded, the unemployment rate has fallen rapidly, reaching 5% in December. That is close to the median of FOMC members' estimates of the long-term unemployment rate. Other labour market indicators have also improved: for example, the U6 measure of underemployment — which also includes people discouraged from searching for work and those working part-time for economic reasons — and the share of the long-term unemployed in overall unemployment have both fallen towards their historical averages (**Chart 1.14**).<sup>(1)</sup> This improvement, which suggests that the margin of spare capacity has diminished significantly in recent years, prompted the FOMC to increase interest rates in December (**Section 1.1**). Although nominal wage growth has been subdued, the significant slowing in productivity growth in recent years — from average rates of around 2% to only 0.6% in the four quarters to 2015 Q3 — means that unit labour cost growth has picked up in recent quarters. Inflation remains weak, however, reflecting the past dollar appreciation and falls in energy prices. Personal consumption expenditure inflation stood at 0.4% in December (**Table 1.B**), well below the FOMC's price stability objective of 2%.

The outlook for US GDP growth is a little weaker than in November. Falls in asset prices and the associated tightening in financial conditions are projected to weigh on near-term growth. Overall, however, growth is projected to continue at a moderate pace, supported by strong real income growth.

(1) For further discussion, see Forbes, K (2016), 'A tale of two labour markets: the UK and US'; [www.bankofengland.co.uk/publications/Documents/speeches/2016/speech875.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech875.pdf).

## 2 Demand and output

In 2015, four-quarter GDP growth slowed from a little above to a little below its historical average rate. Although a slowing was anticipated, growth has been slightly softer than expected. In the near term, private domestic demand growth is projected to remain resilient in the face of subdued global growth and continued fiscal consolidation, supported by the past easing in credit conditions and continued solid real income growth.

**Table 2.A** Monitoring the MPC's key judgements

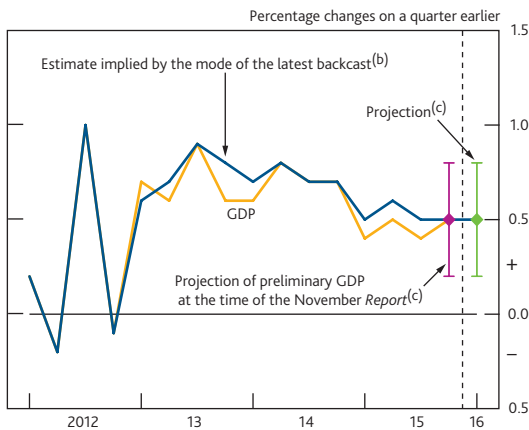
Developments anticipated in November	Developments since November
<b>Cost of credit</b>	<b>Broadly as expected</b>
<ul style="list-style-type: none"> <li>• Credit spreads to widen slightly in 2015 Q4, and then fall back.</li> </ul>	<ul style="list-style-type: none"> <li>• Credit spreads widened slightly in Q4.</li> </ul>
<b>Consumer spending</b>	<b>Broadly as expected</b>
<ul style="list-style-type: none"> <li>• Quarterly consumption growth of around ¾%.</li> <li>• Saving ratio of around 3¾% by 2016 Q2.</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly consumption growth of 0.8% in Q3.</li> <li>• Saving ratio of 4.4% in Q3.</li> </ul>
<b>Housing market</b>	<b>Broadly as expected</b>
<ul style="list-style-type: none"> <li>• A rise in mortgage approvals for house purchase to around 74,000 a month, on average, in 2016 Q1.</li> <li>• Rates of increase in the main indices of national house prices to average around ½% per month.</li> <li>• Quarterly housing investment growth to average around 1%.</li> </ul>	<ul style="list-style-type: none"> <li>• Mortgage approvals for house purchase averaged 70,000 in Q4.</li> <li>• Average of Halifax and Nationwide price indices grew by 0.7% per month in Q4 on average.</li> <li>• Quarterly housing investment fell by 1½% in Q3, but estimates can be volatile.</li> </ul>
<b>Investment</b>	<b>Stronger than expected</b>
<ul style="list-style-type: none"> <li>• Quarterly business investment growth to average above 1½%.</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly business investment growth was 2.2% in Q3.</li> </ul>

The preliminary estimate of output growth in Q4 was 0.5%, in line with the projection made three months ago (**Chart 2.1**). But estimates of GDP in 2014–15 have been revised down since November, such that the level of GDP in 2015 Q3 is 0.3% lower. And, while the Q4 estimate had previously been expected to be revised up to 0.6% in the mature estimate, it is now expected to be unrevised. On the latest backcast — which anticipates future revisions — four-quarter GDP growth has, since 2013, slowed from a little above to a little below its historical average rate. Although a slowing had been anticipated, GDP growth has been slightly softer than expected.

This section examines the slowing in growth since 2013 through the lenses of the output and expenditure data. In the output estimates of GDP, the slowing has been concentrated in manufacturing and business-focused services (Section 2.1), both relatively dependent on exports. This suggests that some of the slowdown in UK GDP growth reflects the direct effects of a weaker global economy (Section 2.3), but this is unlikely to be the only factor. Construction output growth also slowed in 2015, matched on the expenditure side by a slowing in housing investment growth (Section 2.2). The slowing in the output measure of GDP growth, however, is not fully matched by a slowing in final expenditure growth (**Chart 2.2**).

Growth is projected to be broadly stable in the near term: real income growth and some further decline in private saving are projected to be sufficient to keep private final domestic demand growth resilient in the face of external headwinds and continued fiscal consolidation. But the downward revisions to recent growth, together with the stability of survey indicators, point to a slightly weaker near-term outlook than in November. GDP growth in 2016 Q1 is projected to be 0.5% in both the preliminary and the mature estimates (**Chart 2.1**).

**Chart 2.1 GDP growth was 0.5% in Q4**  
Bank staff's projections for near-term output growth<sup>(a)</sup>

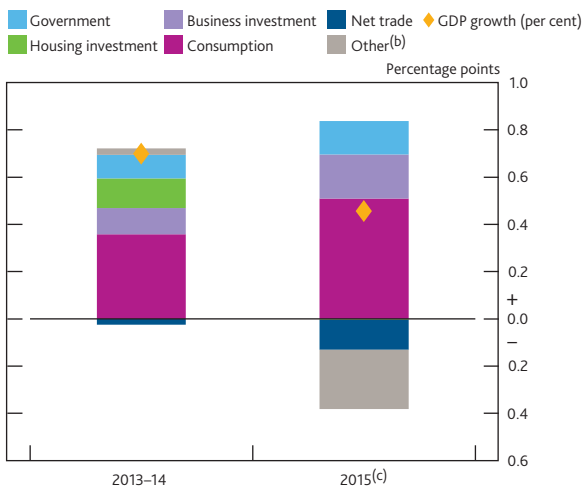


Sources: ONS and Bank calculations.

- (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 Q1, 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 for 2015 Q4 at the time of the November Report. The green diamond shows the current staff projection for the preliminary estimate of GDP growth for 2016 Q1. 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.

**Chart 2.2 Final expenditure does not fully explain the slowing in growth**

Contributions to average quarterly GDP growth by expenditure component<sup>(a)</sup>



- (a) Chained-volume measures.  
 (b) Calculated as a residual. Includes inventories, the alignment adjustment and the statistical discrepancy.  
 (c) As expenditure estimates for Q4 are not yet available, growth rates for 2015 are an average of growth rates in the first three quarters of 2015.

## 2.1 Output

Quarterly GDP growth averaged 0.5% in 2015, compared with 0.7% over the previous two years. Manufacturing is one sector where output growth has slowed (**Chart 2.3**).

According to intelligence from the Bank's Agents, this may be related to the past appreciation of sterling, the slowdown in global growth (Section 1) and weak investment demand from the extraction sector (Section 2.2). This would also be consistent with evidence from some business surveys — such as the quarterly BCC survey — which suggest that export orders have weakened by more than domestic orders.

Much of the slowdown in output growth can be attributed to a slowing in growth in business-focused service subsectors (**Chart 2.3**). Business-focused services tend to export a greater proportion of their output, which may suggest that weak external demand is, in part, responsible for this slowing in growth. Output growth in consumer-focused subsectors, in contrast, has remained resilient.

One domestic-facing sector that has contributed to the slowing in growth since 2013–14 is construction. In part this is likely to reflect the past slowdown in housing market activity (Section 2.2).

## 2.2 Domestic demand

### Household spending

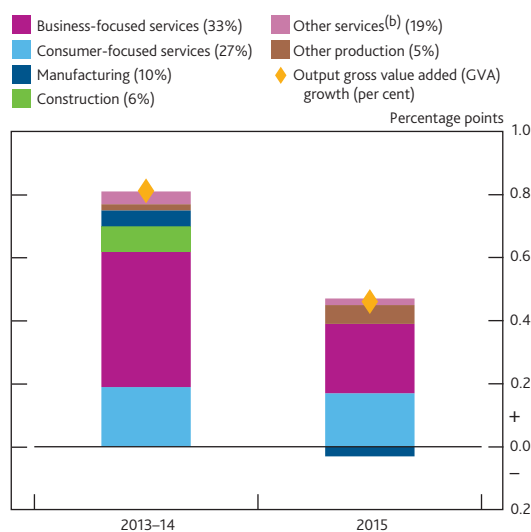
Supported by strong income growth, consumer spending growth has been robust. In 2015 Q3, quarterly consumption growth remained at 0.8% (**Table 2.B**), and growth in real post-tax labour income was 3.7% in the year to 2015 Q3 (**Chart 2.4**), above its pre-crisis average rate of 3.2%. Over the past two years, real incomes have been boosted by a pickup in wage and employment growth and by falling energy and food prices (Section 4).

In the near term, growth in households' total income is likely to be affected by a degree of volatility in investment income. In anticipation of the change in tax treatment in April 2016, some dividend payments from companies to households are likely to be brought forward. Although that has few implications for the level of income in the medium term, it is likely to support total income growth ahead of the change and weigh on it in the following year.

Looking through this volatility, real income growth is projected to remain firm, although slightly weaker than projected three months ago. Since November, the support from lower oil prices has continued: sterling spot oil prices have fallen by a further 34%, which, by itself, would add around ¼% to real incomes. Acting against that, however, the outlook for nominal wage growth has weakened (Section 3),

### Chart 2.3 Construction, manufacturing and service sector output growth have slowed

Contributions to average quarterly GVA growth by output sector<sup>(a)</sup>



(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 2012.

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

### Table 2.B Private sector domestic demand growth was resilient in Q3

Expenditure components of demand<sup>(a)</sup>

Percentage changes on a quarter earlier

	Averages				2015		
	1998–2007	2008–09	2010–12	2013–14	Q1	Q2	Q3
Household consumption <sup>(b)</sup>	0.9	-0.6	0.2	0.6	0.7	0.9	0.8
Private sector investment	0.7	-4.2	1.2	1.6	0.7	2.1	1.0
of which, business investment <sup>(c)</sup>	0.5	-2.8	1.5	1.2	2.6	0.9	2.2
of which, private sector housing investment	0.8	-7.0	0.8	3.0	-3.3	4.7	-1.5
<b>Private sector final domestic demand</b>	<b>0.8</b>	<b>-1.3</b>	<b>0.4</b>	<b>0.9</b>	<b>0.7</b>	<b>1.1</b>	<b>0.8</b>
Government consumption and investment <sup>(c)</sup>	0.8	0.9	-0.1	0.4	0.7	0.8	0.4
<b>Final domestic demand</b>	<b>0.8</b>	<b>-0.8</b>	<b>0.3</b>	<b>0.8</b>	<b>0.7</b>	<b>1.0</b>	<b>0.7</b>
Change in inventories <sup>(d)(e)</sup>	0.0	0.2	0.1	-0.1	0.1	-1.0	0.0
Alignment adjustment <sup>(e)</sup>	0.0	-0.1	0.0	0.1	0.2	-0.8	0.5
<b>Domestic demand<sup>(f)</sup></b>	<b>0.8</b>	<b>-0.7</b>	<b>0.4</b>	<b>0.7</b>	<b>1.3</b>	<b>-1.0</b>	<b>1.4</b>
'Economic' exports <sup>(g)</sup>	1.1	-1.0	0.8	1.0	0.0	2.8	-0.3
'Economic' imports <sup>(g)</sup>	1.4	-1.1	0.8	1.0	3.0	-2.3	2.8
<b>Net trade<sup>(e)(g)</sup></b>	<b>-0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>-1.0</b>	<b>1.6</b>	<b>-1.0</b>
<b>Real GDP at market prices</b>	<b>0.7</b>	<b>-0.7</b>	<b>0.4</b>	<b>0.7</b>	<b>0.4</b>	<b>0.5</b>	<b>0.4</b>
Memo: nominal GDP at market prices	1.3	-0.1	0.9	1.1	0.5	0.8	0.7

(a) Chained-volume measures unless otherwise stated.

(b) Includes non-profit institutions serving households.

(c) Investment data take account of 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. Official MTIC-adjusted data are not available for exports, so the headline exports data have been adjusted by an amount equal to the ONS import adjustment.

such that real income growth over the next year is projected to be slower than anticipated in November.

In addition to real income growth, the outlook for consumption growth will depend on changes in household saving. In Q3, saving out of available income — excluding income that goes directly to pension schemes, which may be less relevant for current spending decisions — remained close to its average rate in the decade prior to the crisis (Chart 2.5). One factor that is likely to influence household saving decisions is confidence about the economic outlook and future income prospects. According to the GfK/EC survey, confidence has improved significantly over the past few years and the balances of all the headline indices are above their historical averages. Debt levels may also have some bearing on household saving. Relative to income, household debt has fallen over the past few years to below its level immediately prior to the crisis. But, while debt affordability has improved, in the September 2015 NMG Consulting survey the proportion of households reporting putting off spending due to credit concerns remained elevated.<sup>(1)</sup>

Conditions in credit and financial markets are also important determinants of households' net saving and, as explained in the box on pages 14–15, were the subject of a recent joint meeting between the MPC and the Financial Policy Committee. Overall, household credit conditions have improved significantly over the past few years, and consumer credit growth in particular — which includes personal loans, overdrafts and credit cards — has recently been robust. Indicative estimates suggest that a significant part of these flows during 2014 and 2015 were for car finance, a large part of which would be closer in nature to secured rather than unsecured debt.<sup>(2)</sup>

In the near term, quarterly consumption growth is projected to be resilient, but to slow a little to around 0.6% in 2016 Q1, in part reflecting slower real income growth.

### The housing market

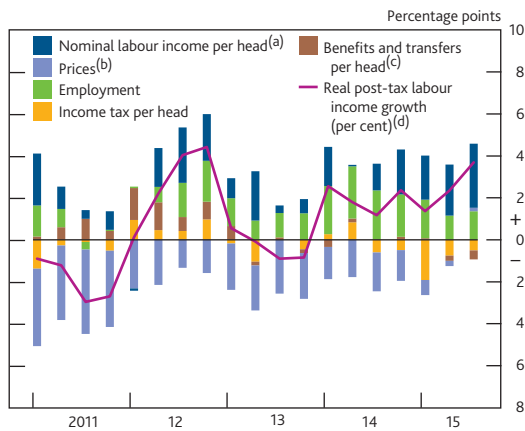
Although consumption growth has remained fairly steady, housing investment growth is estimated to have slowed sharply over the past few quarters following a sharp increase in 2013–14 (Chart 2.6), contributing to the slowdown in GDP growth. Housing investment comprises three distinct parts: around one fifth is spending on services associated with property transactions, while around a third is spending on newly built dwellings and the remainder is spending on improvements to existing dwellings. The growth rates of all three have slowed. This broad-based slowing is likely, in part,

(1) For more detail on the evolution of household debt see the box on page 15 of the November 2015 *Inflation Report*; [www.bankofengland.co.uk/publications/Documents/inflationreport/2015/nov.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2015/nov.pdf).

(2) For more detail on the components of consumer credit see the box on pages 9–11 of the 2015 Q3 *Credit Conditions Review*; [www.bankofengland.co.uk/publications/Documents/creditconditionsreview/2015/ccrq315.pdf](http://www.bankofengland.co.uk/publications/Documents/creditconditionsreview/2015/ccrq315.pdf).

### Chart 2.4 Falling oil prices and a strengthening labour market have supported real income growth

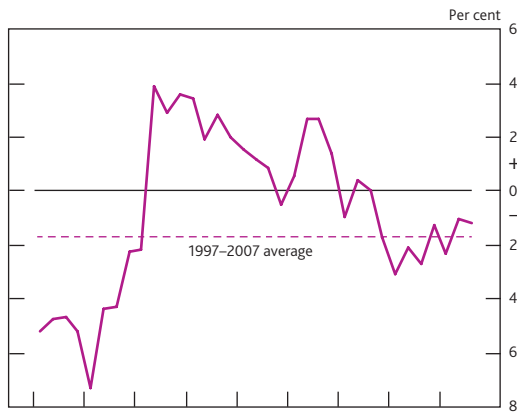
Contributions to four-quarter growth in real post-tax labour income



- (a) Wages and salaries plus mixed income.  
 (b) Measured using the consumption deflator (including non-profit institutions serving households).  
 (c) Net transfers are general government benefits less employees' National Insurance contributions.  
 (d) Nominal post-tax labour income divided by the consumption deflator (including non-profit institutions serving households).

### Chart 2.5 Household saving has been broadly stable recently

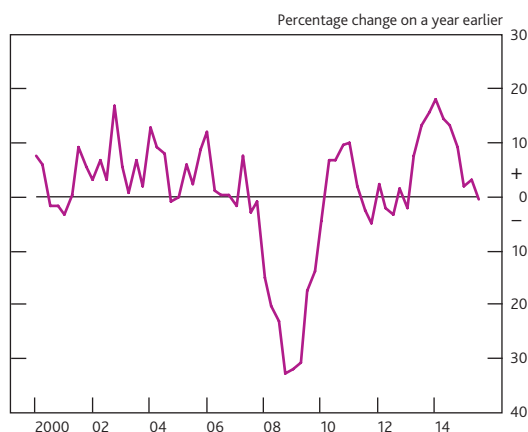
Household saving out of available income<sup>(a)</sup>



- (a) Percentage of household post-tax income excluding flows into employment-related pension schemes.

### Chart 2.6 Housing investment growth has slowed sharply

Housing investment<sup>(a)</sup>



- (a) Chained-volume measure.

to reflect the slowdown in housing market activity in 2014 (Chart 2.7), but supply factors may also increasingly have constrained the building of new, and improvements to existing, dwellings over this period.

The outlook for housing investment — and transaction-related expenditure in particular — will depend on developments in housing market activity. The continued easing in credit conditions over the past few years is likely to have supported activity in the housing market: mortgage interest rates fell significantly during that period and, according to the latest *Credit Conditions Survey*, credit availability continued to improve in 2015 Q4. The number of mortgage approvals for house purchase has picked up slightly over the past three months, although it remains substantially below its 1994–2007 average level (Chart 2.7). Overall housing transactions — including those financed purely with cash — increased by slightly more than mortgage approvals in Q4.

As mortgage approvals have risen, so has the volume of mortgage lending. Much of this growth can be attributed to the buy-to-let sector. In the year to 2015 Q3, the stock of buy-to-let lending rose by 10%, compared to just 0.4% for lending to owner-occupiers.<sup>(1)</sup> Buy-to-let transactions are also likely to have contributed to the increase in cash purchases.

The outlook for the buy-to-let sector, and for overall housing market activity, will depend in part on the impact of planned tax changes. From April 2016, stamp duty land tax on additional properties — including buy-to-let — will be increased by 3 percentage points and, from April 2017, the scope of mortgage interest tax relief will be reduced. Both changes are likely to lower housing demand from buy-to-let investors, although over time some of this may be offset by increased demand from existing and potential owner-occupiers. The pre-announcement of the change in stamp duty is also likely to cause some housing transactions to be brought forward — boosting housing transactions in 2016 Q1, but reducing them commensurately later in the year — although it will affect fewer purchasers than previous pre-announced broader changes in stamp duty (Chart 2.7).

Looking through any near-term volatility resulting from the changes to stamp duty, housing demand is projected to pick up gradually, supported by historically low borrowing rates. There is, however, a risk that the changes in stamp duty and mortgage interest tax relief will weigh more on housing demand than assumed.

The rate at which activity picks up will also depend on growth in new and secondary market housing supply, which has been

(1) For more on developments in the buy-to-let sector, see the December 2015 *Financial Stability Report*; [www.bankofengland.co.uk/publications/Documents/fsr/2015/dec.pdf](http://www.bankofengland.co.uk/publications/Documents/fsr/2015/dec.pdf).

## Conditions in credit and financial markets

On 6 January, members of the Financial Policy Committee (FPC) and the Monetary Policy Committee (MPC) met to discuss, and were presented with material on, conditions in credit and financial markets. This box summarises that material.

### Why do conditions in credit and financial markets matter?

Conditions in credit and financial markets matter for the FPC because they affect the degree of risk faced by the financial system. They matter for the MPC because they may affect GDP growth and consumer price inflation; for example, fluctuations in the prices of financial assets change the value of wealth and collateral against which people can borrow, thereby influencing spending by households and businesses.

Past experience suggests that the dynamics of credit and financial market conditions can differ significantly from those of the real economy. In addition, imbalances and risks in credit and financial markets can grow without necessarily being immediately apparent in other macroeconomic indicators such as inflation or GDP growth. It is important for policymakers — whether their objective is monetary or financial stability — to consider both macroeconomic and financial indicators.

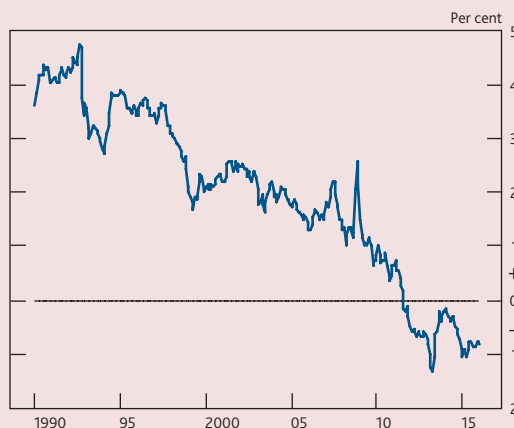
Conditions in credit and financial markets have many dimensions, for example: the price at, and terms on, which credit is granted; the volume of credit; the degree of leverage; and the prices at which financial assets are trading relative to some sense of their equilibrium values. The Committees were shown material on a range of indicators, as well as alternative ways of assessing their sustainability, as these can be sensitive to the assumptions used.

In particular, an assessment of the equilibrium levels of asset prices is sensitive to assumptions about future income streams and the long-term interest rates by which they are discounted. Both are highly uncertain. Long-term real interest rates in the United Kingdom have declined significantly over the past 35 years (**Chart A**), and there is evidence that some of that decline has been driven by global secular trends such as shifting demographics and saving patterns.<sup>(1)</sup>

Some factors that could have driven part of the decline in long-term interest rates — such as lower expected future income growth — would not be expected to have pushed up asset prices or their equilibrium values. Other factors that may have weighed on long-term interest rates, however, such as increased saving as a consequence of global demographic trends, may have put upward pressure on asset prices. The

**Chart A** The UK long-term real interest rate has declined significantly over the past few decades

UK long-term real interest rate<sup>(a)</sup>



Sources: Bloomberg and Bank calculations.

(a) Ten-year spot index-linked gilt rate. Monthly averages. The last data point is for January 2016 and uses data to 27 January 2016.

extent to which that will also be reflected in higher equilibrium values will depend on how persistent these factors are expected to be and how quickly long-term interest rates are likely to rise as those factors wane.

### Indicators of conditions in credit and financial markets

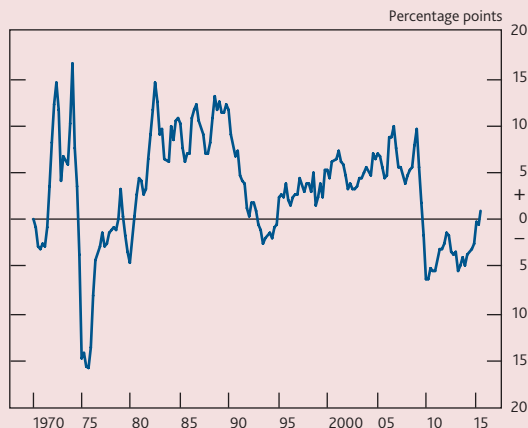
One key measure of conditions in credit and financial markets is the volume or growth rate of overall outstanding credit. The overall credit to GDP ratio has fallen since the onset of the crisis, from around 175% to around 140%. Private sector credit growth has picked up recently and is now broadly in line with nominal GDP growth, having been subdued since the onset of the crisis (**Chart B**).

These measures of aggregate credit conditions, however, might not capture risks in particular financial or credit markets. Further, it is not possible to assess, at an aggregate level, those aspects of financial fragility that depend on the nature and distribution of assets and liabilities. So the Committees were also shown material on indicators relating to individual markets such as those for corporate finance, consumer credit, commercial property — including prime London real estate — and residential property — including the buy-to-let sector. In addition to the stock and flow of credit, indicators of underwriting standards, the distribution of debt, write-off rates, interest rate spreads and affordability are important for judging conditions in credit markets.

(1) For more detail on the potential drivers of long-term interest rates see Rachel, L and Smith, T (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](http://www.bankofengland.co.uk/research/Documents/workingpapers/2015/swp571.pdf); and 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](http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech872.pdf).

**Chart B Private sector credit growth is now in line with GDP growth**

Private sector credit growth relative to GDP growth<sup>(a)</sup>



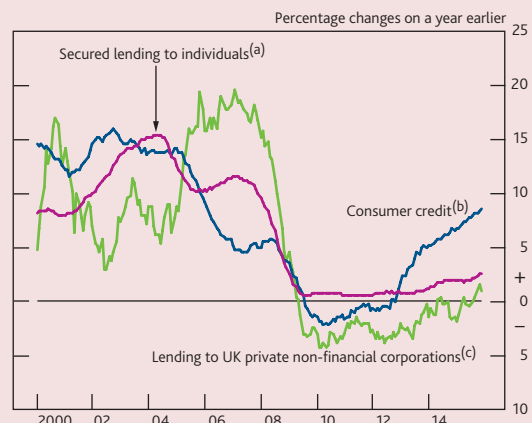
(a) Four-quarter credit growth minus four-quarter GDP growth. Credit growth measured as M4 and M4 lending (excluding the effects of securitisations) prior to 1998 Q4, and equivalent measures excluding the deposits of, and borrowing by, intermediate other financial corporations thereafter. GDP is at current market prices.

Growth in household and corporate lending (**Chart C**) both remain somewhat below their pre-crisis average rates, and the proportion of income used for debt repayments is well below historical averages for both households and companies. Credit growth has been somewhat stronger in certain markets, however, such as for consumer credit and buy-to-let mortgage lending.

The terms and conditions on which credit is granted, including interest rates and associated underwriting standards, may affect the interpretation of credit growth and are often timelier indicators of credit conditions. Interest rate spreads — over and above the rate on safe assets such as government

**Chart C Consumer credit growth has picked up by more than business or secured household lending**

Household and corporate lending



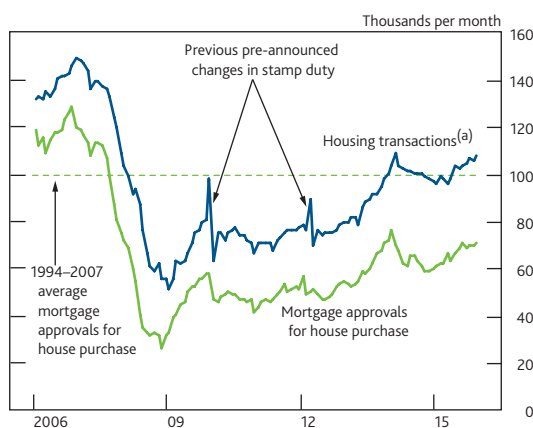
(a) Sterling net lending by UK monetary financial institutions (MFIs) and other lenders.  
(b) Sterling net lending by UK MFIs and other lenders. Consumer credit consists of credit card lending and other unsecured lending (other loans and advances) and excludes student loans.  
(c) Sterling net lending by UK MFIs.

bonds — on bank lending to households and companies have narrowed substantially over recent years, although this partly reflected an unwind of increases during the financial crisis. Spreads on investment-grade and high-yield corporate bonds have widened in recent months (Section 1), which might indicate some tightening in financial conditions.

Overall, the improvement in the price and availability of credit suggested that the UK financial system was normalising following the post-crisis period. Within that, some sectors were experiencing relatively robust lending activity, while others remained more subdued. Both Committees intend to monitor developments closely.

**Chart 2.7 Mortgage approvals and housing transactions increased slightly in Q4**

Mortgage approvals and housing transactions



Sources: Bank of England, HM Revenue and Customs and Bank calculations.

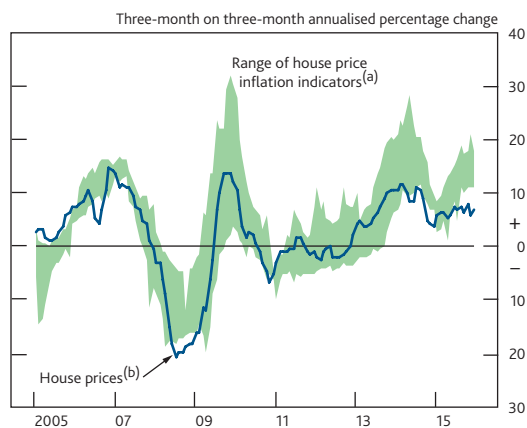
(a) Number of residential property transactions for values of £40,000 or above.

subdued. Over the past few years a number of factors have particularly constrained the supply of newly built dwellings, notably the supplies of skilled labour and materials. According to the latest RICS construction market survey, the shortage of building materials appears to have eased somewhat, which should support housebuilding, although labour and skills shortages remain a constraint on activity.

A consequence of the pickup in housing demand, together with limited supply of both new homes and homes for sale on the secondary market, has been robust house price inflation (**Chart 2.8**). The average of the Halifax and Nationwide measures of house prices increased by 7% in the four quarters to 2015 Q4. This rate of increase is projected to soften only slightly to around 6% in the near term: although indicators of house price inflation have stabilised in recent quarters, they remain elevated.

Overall, the slight easing in supply constraints, together with upward revisions to estimates of dwellings investment growth

**Chart 2.8 House price inflation remains robust**  
House prices and indicators of house price inflation



Sources: Bank of England, Halifax, Nationwide, Royal Institution of Chartered Surveyors (RICS) and Bank calculations.

- (a) Swathe includes RICS balances for prices over the past three months, price expectations over the next three months (lagged three months), the new buyer enquiries balance less the instructions to sell balance (lagged six months) and the sales to stock ratio (lagged one month), scaled to match the mean and variance of three-month on three-month annualised growth in the average of the Halifax and Nationwide measures of house prices since 2000.  
(b) House prices are an average of the Halifax and Nationwide measures.

**Table 2.C Net external finance raised by companies increased in 2015**

Net finance raised by PNFCS<sup>(a)</sup>

£ billions, quarterly averages

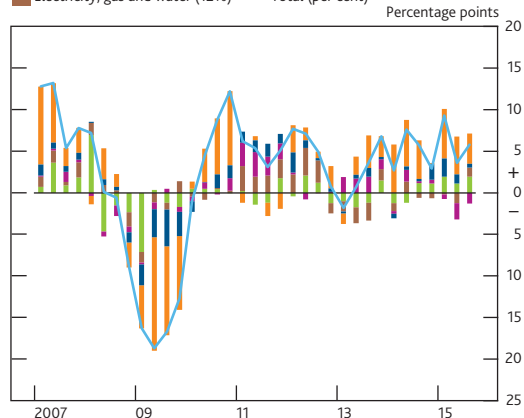
	2003–08	2009–12	2013	2014	2015
Loans	11.7	-6.2	-2.1	-0.9	1.3
Bonds <sup>(b)(c)</sup>	2.9	3.3	2.2	3.6	3.2
Equities <sup>(b)</sup>	-2.1	1.3	-1.2	1.6	1.1
Commercial paper <sup>(b)</sup>	0.0	-0.4	0.0	-0.6	1.5
<b>Total<sup>(d)</sup></b>	<b>12.3</b>	<b>-2.1</b>	<b>-1.1</b>	<b>3.6</b>	<b>7.1</b>
Memo: PNFC loan growth <sup>(e)</sup>	2.8	-0.7	-0.1	-0.4	0.3

- (a) Includes sterling and foreign currency funds from capital markets and UK monetary financial institutions.  
(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.  
(e) Sterling net lending excluding the effects of securitisation. Percentage change on a quarter earlier.

**Chart 2.9 Extraction investment has weighed on overall business investment growth**

Contributions to four-quarter business investment growth<sup>(a)(b)</sup>

Services (58%) Mining and quarrying, oil and gas extraction (6%)  
Manufacturing (15%) Other (10%)<sup>(c)</sup>  
Electricity, gas and water (12%) Total (per cent)



- (a) Chained-volume measures. Contributions prior to 2012 are indicative estimates.  
(b) Figures in parentheses are shares in total nominal business investment in 2012.  
(c) Total business investment, less contributions from the mining and quarrying, oil and gas extraction, utilities, manufacturing and service sectors.

in the past, suggest a stronger near-term outlook for housing investment growth than projected three months ago. Consistent with this, some indicators of residential construction and housing market activity have been strengthening over the past twelve months.

### Business investment

Recent business investment growth has been significantly faster than its pre-crisis average rate and this continued in 2015 Q3 (Table 2.B), although early estimates are often subject to large revisions. Continued demand growth over the past few years, and a desire to increase capacity to fulfil it, has been one driver of this strength, according to evidence from business surveys and intelligence from the Bank's Agents.

External finance is one source of funding for investment. Net external finance raised by private non-financial corporations (PNFCs) averaged around £7 billion per quarter in 2015 (Table 2.C), the highest level since 2008.<sup>(1)</sup> While corporate credit conditions were little changed on the quarter, they have improved significantly over the past few years, as discussed in the latest *Credit Conditions Review*. This should support investment growth, although the outlook for credit conditions will be sensitive to developments in financial markets. The widening in corporate bond spreads since November will have raised the cost of capital for some companies (Section 1), and, although this will have been partly offset by recent falls in reference rates, there is a risk that further financial market volatility leads to higher financing costs.

Internal funds are also an important source of financing for investment. In aggregate, companies appear to be holding higher levels of cash than prior to the crisis and corporate deposit growth has been strong since the end of 2012. This growth in deposits appears to have been strongest for small and medium-sized enterprises, which account for around a third of total business investment. Although, intelligence from the Bank's Agents suggests that while some businesses are holding higher cash balances in anticipation of opportunities for expansion, others are holding them for precautionary reasons.

One factor that has been weighing on overall business investment growth is investment by the oil extraction industry (Chart 2.9), which fell by around 20% between 2014 Q2 and 2015 Q3. While some of this slowing reflected an expected reduction in extraction investment from unusually high levels in early 2014, it was also in part a response to the fall in oil prices since mid-2014. The expected persistence of low oil prices has resulted in further cuts in planned investment, according to intelligence from the Bank's Agents and industry

(1) For more detail on external sources of finance for UK businesses in 2015, see the box on pages 12–14 of the 2015 Q4 *Credit Conditions Review*; [www.bankofengland.co.uk/publications/Documents/creditconditionsreview/2016/ccrq415.pdf](http://www.bankofengland.co.uk/publications/Documents/creditconditionsreview/2016/ccrq415.pdf).

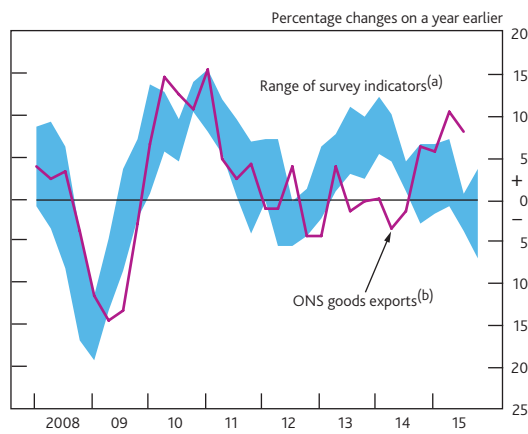


sources. Extraction investment is therefore projected to fall significantly further, reducing the level of overall business investment by around 5% (Section 5). Extraction investment, however, tends to be import-intensive, so weaker import volumes will offset some of the effect on GDP of weaker investment. Overall, the level of GDP is projected to be around ¼% lower as a result.

Reflecting in part the weaker outlook for extraction investment, quarterly business investment growth is projected to slow slightly to around 1% in 2016 H1, a little weaker than projected three months ago. This is, however, still somewhat stronger than its pre-crisis average rate of 0.5%, consistent with surveys of investment intentions, which remain around or above their historical averages.

**Chart 2.10 Export growth appears stronger than suggested by survey indicators**

Exports of goods and survey indicators

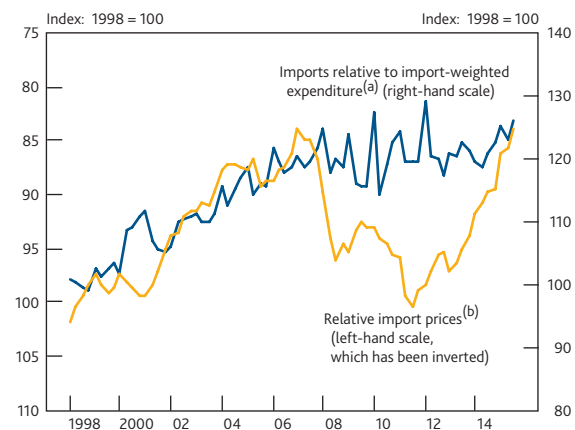


Sources: Bank of England, BCC, CBI, Markit/CIPS, ONS and Bank calculations.

- (a) Includes measures of manufacturing export orders from BCC, CBI and Markit/CIPS, together with scores from the Bank's Agents for manufacturing output for export, scaled to match the mean and variance of four-quarter goods export growth since 2000. BCC data are non seasonally adjusted.
- (b) Chained-volume measure. Data are to 2015 Q3. Goods export data exclude the estimated impact of missing trader intra-community (MTIC) fraud, calculated as nominal MTIC adjustment, divided by the goods import deflator.

**Chart 2.11 Import penetration has picked up**

Relative import prices and imports relative to import-weighted demand



- (a) UK imports as a proportion of import-weighted total expenditure, chained-volume measures. Import-weighted total expenditure is calculated by weighting together household consumption (including non-profit institutions serving households), whole-economy investment (excluding valuables), government spending, inventories (excluding the alignment adjustment) and exports by their respective import intensities, estimated using the *United Kingdom Input-Output Analytical Tables 2010*. Import and export data have been adjusted to exclude the estimated impact of MTIC fraud.
- (b) Import price deflator divided by the market price GDP deflator.

## Government spending

The MPC's forecasts are conditioned on continued fiscal consolidation. Announcements in the 2016 Autumn Statement included changes to expenditure and taxation plans that, overall, increase public sector net borrowing slightly in 2016. This is projected to provide a small boost to GDP growth relative to previous projections, although the overall fiscal consolidation is still expected to weigh on GDP growth over the forecast period. The precise impact of all the changes in government borrowing will depend on a number of factors, including: the distribution of changes to incomes as a result of the consolidation; the degree to which individuals and companies adjust their spending in response; and whether changes are anticipated and therefore already reflected in spending decisions.

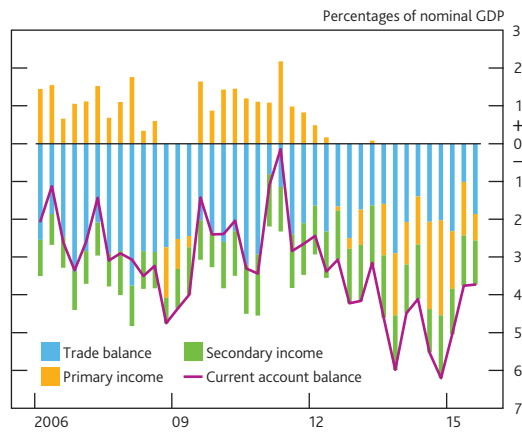
## 2.3 UK net trade

While the output data suggest that weaker external demand may have contributed to the slowing in GDP growth since 2013 (Section 2.1), net trade was only a small drag on growth over 2015 (Table 2.B). In particular, despite weak world demand growth and the past appreciation in sterling, exports are estimated to have increased by 6% in the four quarters to Q3. Since the *November Report*, sterling has depreciated by around 3½%, which might be expected to boost demand for UK exports to some extent. But sterling remains around 13% above its trough in early 2013 and any boost from the recent depreciation is likely to be offset by the weaker outlook for world trade (Section 1). Export growth is expected to moderate slightly in the near term, consistent with the recent falls in survey indicators of goods exports (Chart 2.10).

UK import volumes also increased by 6% in the four quarters to Q3. This strength can partly be explained by the strength of expenditure, although the past appreciation in sterling, which has reduced import prices relative to prices of domestic alternatives (Chart 2.11), is also likely to have played a role. Import penetration — the proportion of demand satisfied

**Chart 2.12 The current account deficit was broadly unchanged in Q3**

UK current account



using imported goods and services — has begun to increase, which suggests that the appreciation has led to some substitution from domestically produced goods to imported alternatives. The most recent depreciation, however, may weigh a little on import growth, as will lower extraction investment (Section 2.2).

After the most recent revisions to the trade data, the official estimate of the UK trade balance — exports less imports in nominal terms — widened by less than expected between Q2 and Q3, to a deficit equivalent to 1.9% of GDP (Chart 2.12). Further, the deficit on primary income — net payments on foreign direct and portfolio investment — narrowed in Q3: this was largely driven by a fall in the profits and dividends of UK companies rather than an increase in profitability of UK residents' overseas assets. As a consequence, the overall current account was broadly unchanged at 3.7% of GDP, against an expectation that it would widen.

# 3 Supply and the labour market

Employment has grown at a strong pace and the unemployment rate has declined further over the past year, to 5.1% in the three months to November. Despite this, nominal wage growth has softened in recent months. There appear to be a number of factors temporarily weighing on wage growth, including continuing shifts in the composition of employment and possibly low headline inflation. Productivity growth also slowed in Q4, but four-quarter growth remains stronger than in recent years.

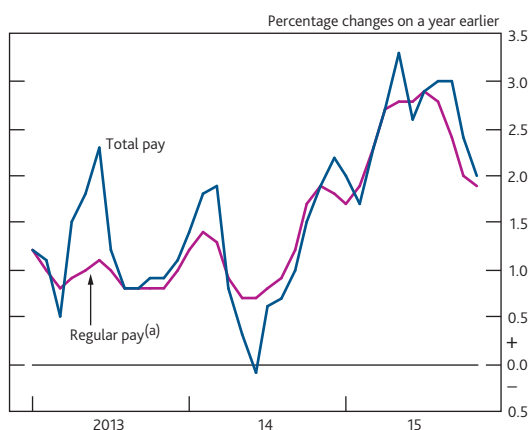
**Table 3.A** Monitoring the MPC's key judgements

Developments anticipated in November	Developments since November
<b>Unemployment</b>	<b>Lower than expected</b>
<ul style="list-style-type: none"> <li>Headline LFS unemployment rate to fall slightly to 5.3% by mid-2016.</li> </ul>	<ul style="list-style-type: none"> <li>The unemployment rate fell to 5.1% in the three months to November.</li> </ul>
<b>Participation</b>	<b>Broadly in line with expectations</b>
<ul style="list-style-type: none"> <li>Participation rate to pick up slightly by mid-2016 to a little under 63½%.</li> </ul>	<ul style="list-style-type: none"> <li>Participation rate rose modestly to 63.5% in the three months to November.</li> </ul>
<b>Average hours</b>	<b>Lower than expected</b>
<ul style="list-style-type: none"> <li>Average hours worked to increase by around ½% by mid-2016.</li> </ul>	<ul style="list-style-type: none"> <li>Average hours rose by less than expected in the three months to November.</li> </ul>
<b>Productivity</b>	<b>In line with expectations</b>
<ul style="list-style-type: none"> <li>Hourly labour productivity growth to average a little under ¼% a quarter.</li> </ul>	<ul style="list-style-type: none"> <li>Hourly labour productivity growth is estimated to have been 1% in the four quarters to Q4.</li> </ul>
<b>Earnings growth</b>	<b>Weaker than expected</b>
<ul style="list-style-type: none"> <li>Four-quarter AWE growth to temporarily dip to 2½% in Q4 due to volatility in bonuses a year earlier, before picking up to 3¼% by mid-2016.</li> </ul>	<ul style="list-style-type: none"> <li>Four-quarter AWE growth was 2% in the three months to November.</li> </ul>

The outlook for output growth depends on demand (Section 2) and the supply capacity of the economy. Potential supply cannot be directly observed and therefore the MPC monitors a range of indicators to ascertain its evolution. Employment growth has remained strong and the unemployment rate has continued to decline to around its pre-crisis level (Section 3.1). Four-quarter hourly labour productivity growth has continued at a stronger pace than in recent years, although it slowed in Q4 (Section 3.2). Having picked up sharply in 2014 (**Chart 3.1**), wage growth has slowed, and by more than expected (**Table 3.A**).

While the weakness in wage growth could indicate that there is still significant slack in the labour market (Section 3.3), there are other factors that appear to be weighing temporarily on wages (Section 3.4). The MPC has reassessed its judgements about the outlook for potential output in this *Report* and judges that, in the near term, supply growth is likely to be softer than previously anticipated. This reflects a weaker outlook for growth in labour supply, in particular the average number of hours worked, which is only partly offset by a stronger contribution from productivity growth. There is, however, considerable uncertainty around the outlook for supply and the MPC will continue to reassess its judgements periodically.

**Chart 3.1** Wage growth has slowed  
Average weekly earnings: total and regular pay



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

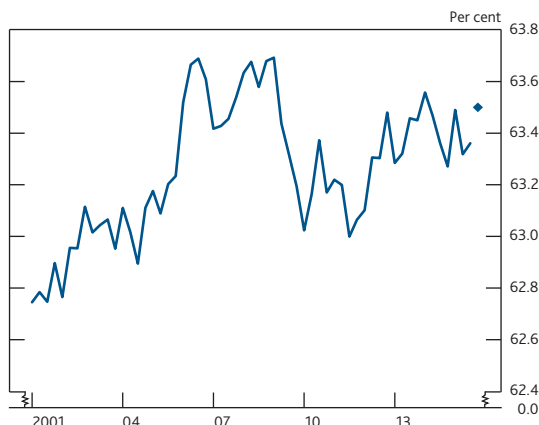
## 3.1 Labour market developments

### Population and participation in the labour market

A key component of potential supply in the economy is labour. Growth in labour supply derives mainly from population growth, which over the past few years has been supported by an increase in net inward migration. In the year to June 2015, net inward migration rose to 336,000, equivalent to around 0.5% of the population. As discussed in the box on pages 30–31 of the May 2015 *Report*, while net migration contributes to labour supply, it also raises domestic demand. Under the ONS projections, population growth is assumed to slow over the next three years, which will weigh on labour supply growth.

### Chart 3.2 The participation rate has been broadly stable in recent years

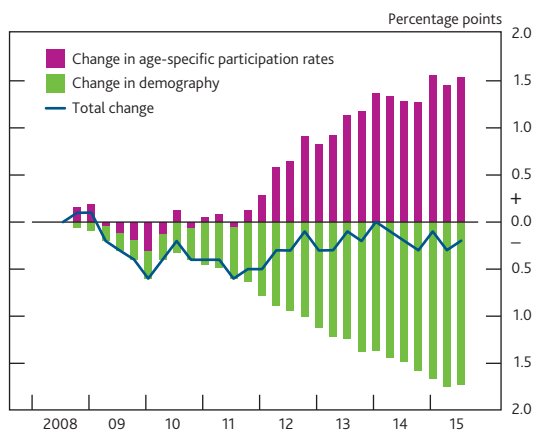
Labour force participation rate<sup>(a)</sup>



(a) Percentages of 16+ population. The diamond shows Bank staff's central projection for 2015 Q4, based on ONS data to November 2015.

### Chart 3.3 The drag from demographics on the participation rate is being offset by increased participation by older people

Contributions to the change in the participation rate since 2008 Q3<sup>(a)</sup>



Sources: Labour Force Survey and Bank calculations.

(a) Percentage of 16+ population. Decomposition calculated using published ONS age groupings. The small cross-product term, reflecting the interaction between changing demographics and age-specific participation rates, has been allocated to the contribution of the change in age-specific participation.

The underlying supply of labour depends also on the proportion of the population actively participating in the labour market. After recovering from a cyclical decline during the crisis, the participation rate has been relatively stable over the past three years at around its rate immediately prior to the crisis (Chart 3.2). Slower natural population growth and higher net inward migration relative to the ONS's previous population projections in 2013 mean that, when updated population estimates are incorporated into the Labour Force Survey (LFS) later this year, the 16+ participation rate over the past year is likely to be revised up by around 0.1 percentage points.

The recent stability in the participation rate has masked two significant and largely offsetting influences. As the average age of the population has risen over the past decade, the declining share of people in age groups with the highest participation rates, particularly 35–49 year olds, has dragged on the overall rate (Chart 3.3). These demographic trends have, however, been broadly offset by changes in participation rates within different age groups. In particular, participation rates of older women have increased.<sup>(1)</sup>

Bank staff estimate that the participation rate is close to its equilibrium level. As the broadly offsetting trends of an ageing population and increased labour participation by older people continue, the participation rate and its equilibrium level are projected to remain largely stable. There is, however, uncertainty around this profile and risks in both directions. On the one hand, the desire to participate may have been boosted by past falls in real income. As real incomes continue to recover, the tendency to participate could fall posing a downside risk to the participation rate. On the other hand, some policy changes, such as the planned increase in government-funded childcare from 2017, could increase the participation rate.

### Employment and average hours

Overall labour supply, and wage growth, will also depend on the demand for labour and the number of hours people want to work. Employment has grown very strongly over the past two years. Having flattened in mid-2015, it grew by 267,000 in the three months to November, close to four times its pre-crisis average rate (Table 3.B). Correspondingly, the unemployment rate fell to 5.1% in the three months to November, and is expected to have averaged 5.0% in Q4 (Chart 3.4).

Average hours worked rose during the post-crisis recovery, but have declined by around ½% since late 2014. As explained in the box on pages 22–23, the fall in average hours is judged to

(1) For a more in-depth discussion of the participation rate and labour supply, see Berry, S, Corder, M, Duffy, C, Hackworth, C and Speigner, B (2015), 'Trends in UK labour supply', *Bank of England Quarterly Bulletin*, Vol. 55, No. 4, pages 344–56; [www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2015/q403.pdf](http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2015/q403.pdf).

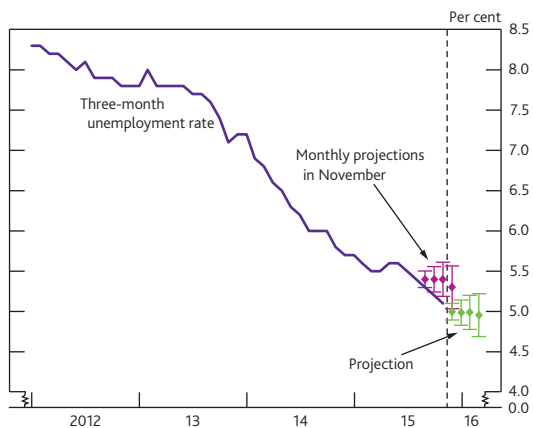
**Table 3.B Labour demand growth remains strong**  
Employment growth, vacancies and survey indicators of employment intentions

	Quarterly averages							
	2000–07 <sup>(a)</sup>	2010–12	2013	2014	2015 Q1	2015 Q2	2015 Q3	2015 Q4
<b>Employment growth<sup>(b)</sup></b>	70	67	95	152	202	-63	176	267
<i>of which, employees<sup>(b)</sup></i>	55	33	62	139	189	-54	146	160
<i>of which, self-employed and other<sup>(b)(c)</sup></i>	16	35	33	14	13	-9	30	107
<b>Vacancies to labour force ratio<sup>(d)</sup></b>	2.07	1.47	1.66	2.04	2.26	2.23	2.25	2.29
<b>Surveys of employment intentions<sup>(e)</sup></b>								
BCC <sup>(f)</sup>	19	8	22	29	27	29	24	20
CBI <sup>(f)</sup>	5.4	-0.4	13.8	26.7	22.3	27.9	7.8	17.6
Agents <sup>(g)</sup>	0.8	0.3	0.4	1.3	1.1	1.3	0.9	0.7

Sources: Bank of England, BCC, CBI, CBI/PwC, ONS (including the Labour Force Survey) and Bank calculations.

- (a) Unless otherwise stated.  
 (b) Changes relative to the previous quarter in thousands. Figures for 2015 Q4 are data for the three months to November 2015.  
 (c) Other comprises unpaid family workers and those on government-supported training and employment programmes classified as being in employment.  
 (d) Excludes vacancies in agriculture, forestry and fishing. Average is 2001 Q2 to 2007. Figure for 2015 Q4 shows vacancies in December relative to economically active population in the three months to November.  
 (e) Measures for the Bank's Agents (manufacturing and services), the BCC (non-services and services) and the CBI (manufacturing, financial services and business/consumer/professional services) are weighted together using employee jobs shares from Workforce Jobs. The BCC data are non seasonally adjusted.  
 (f) Net percentage balance of companies expecting their workforce to increase over the next three months.  
 (g) End-quarter observation. The scores refer to companies' employment intentions over the next six months. The scores are on a scale of -5 to +5.

**Chart 3.4 Unemployment has fallen further**  
Bank staff's near-term unemployment rate projection<sup>(a)</sup>



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

- (a) The magenta diamonds show Bank staff's central projections for the headline unemployment rate for September, October, November and December 2015, at the time of the November Report. The green diamonds show the current staff projections for the headline unemployment rate for December 2015, January, February and March 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.

reflect a decline in the number of hours people want to work, rather than greater slack in the labour market. Average hours are now judged to be close to their equilibrium level, which is lower than previously estimated, and are projected to decline gradually.

While some indicators of labour demand growth have softened, most remain relatively strong (Table 3.B). The consequences of the continued strong demand for labour in the face of falling average hours will depend on how much further the unemployment rate can fall before it generates significant cost pressures — in other words, how close the unemployment rate is to its equilibrium level.

Bank staff estimate that the unemployment rate is currently around its long-run equilibrium level, though there is considerable uncertainty around this judgement. On the one hand, the increased share of older people in the labour force and increases in average educational attainment could suggest a lower equilibrium unemployment rate, as both of these characteristics have been associated with higher employment rates in the past. And some of the weakness in wage growth (Section 3.4) may also indicate that the equilibrium rate is lower. On the other hand, the proportion of people out of work for more than a year remains above its pre-crisis average rate (Chart 3.5). This could indicate that the people in long-term unemployment have become less well matched to the available jobs, reducing the scope for the unemployment rate to remain at 5% without generating significant cost pressures.<sup>(1)</sup>

In the near term, the unemployment rate is projected to remain broadly flat (Chart 3.4) as employment growth slows towards labour force growth.

## 3.2 Productivity and capacity utilisation

The outlook for supply and wage growth will depend fundamentally on the productivity of the workforce. Four-quarter growth in hourly labour productivity — defined as output per hour worked — picked up sharply in 2015 Q2 to 1.4% and, while it is expected to have slowed to 1% in Q4, it remains stronger than in recent years (Chart 3.6).

To understand the drivers of hourly labour productivity growth, it is helpful to decompose it into the contribution from growth in the capital stock and growth in total factor productivity, which is measured as the increase in output over and above the increase in inputs of capital and labour. While the capital stock is estimated to have risen in recent quarters, total factor productivity appears to have accounted for most of the acceleration in labour productivity growth (Chart 3.7). The extent to which this growth rate is sustained will depend

(1) See Berry *et al* (2015) page 350, *op. cit.*, for a discussion of labour market matching.

## Recent developments in average hours worked

The number of hours people want to work is an important aspect of labour supply. Prior to the recession, there had been a long-standing downward trend in average hours worked (Chart A). While shifts between full-time and part-time employment do not account for much of that trend, during the crisis average hours fell sharply as the share of part-time employment rose markedly. The rise in average hours over 2012–14 partly reflected some fallback in the share of part-time work and partly a fall in the amount of leave taken.

In May 2015, the MPC judged that the level of average hours was likely to rise slightly further in the near term, given that the number of additional hours that people reported they wanted to work remained elevated (Chart B), before returning towards its long-term downward trend.<sup>(1)</sup> Over the past year,

### Chart A Average hours worked had been on a long-term downward trend

Average weekly hours<sup>(a)</sup>

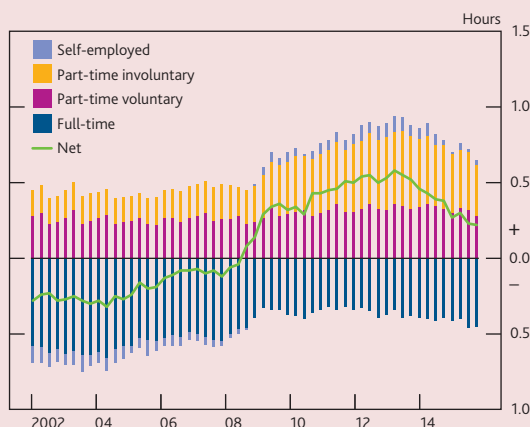


Sources: Labour Force Survey and Bank calculations.

(a) The diamond shows Bank staff's projection for 2015 Q4. Based on ONS data to November 2015.

### Chart B Additional desired hours have declined recently

Net additional desired hours<sup>(a)</sup>



Sources: Labour Force Survey and Bank calculations.

(a) Number of net additional hours that the currently employed report that they would like to work, on average, per week calculated from LFS microdata. Data are non seasonally adjusted. Calculation based on Bell, D and Blanchflower, D (2013), 'How to measure underemployment?', *Peterson Institute for International Economics Working Paper No. 13-7*.

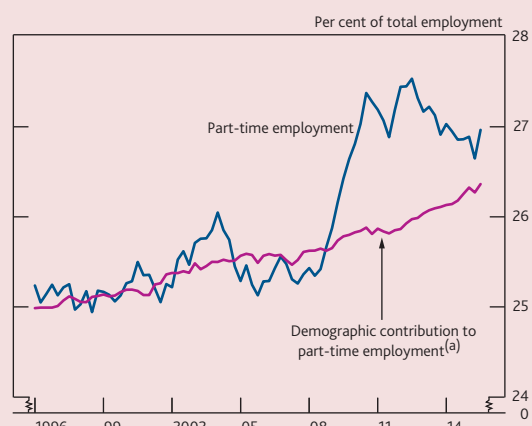
however, average hours have fallen and appear to be returning more rapidly to their underlying trend than previously projected.<sup>(2)</sup> This box examines the recent developments in average hours in more detail and what they imply for the outlook.

### The structural trend towards part-time employment will continue to weigh on average hours

The increase in the share of those in part-time work (Chart C), reflects, in part, the increasing average age of the workforce: older people generally prefer to work fewer hours. An estimate of the effect of the changing population mix on the share of part-time employment, based on the pre-crisis shares in different age and gender cohorts, suggests that this demographic effect is likely to have supported a large part of the increase in part-time employment but not all.

### Chart C Demographic changes have continued to support a rise in the share of part-time work

Share of part-time employment: actual and demographic contribution



Sources: Labour Force Survey, ONS and Bank calculations.

(a) Demographic contribution to part-time employment is calculated by applying average age and gender part-time employment shares for 2002–07 to population data by standard age and gender groupings used in the LFS.

There have also been significant moves around that longer-term trend. During the crisis the part-time share rose markedly, further pushing down average hours worked. At the same time part-time employees responding to the Labour Force Survey (LFS) reported, on average, that they wanted to work more hours (Chart B), suggesting this in part reflected slack in the labour market. Some of the sharp increase in the share of part-time work unwound as the economy began to recover — in particular, as people previously working part-time moved into full-time employment. But that share has been broadly stable since 2014, above a level consistent with the longer-term demographic trend. Despite the part-time share

(1) For a discussion of slack and average hours see Weale, M (2014), 'Slack and the labour market'; [www.bankofengland.co.uk/publications/Documents/speeches/2014/speech716.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2014/speech716.pdf).

(2) For a discussion of the longer-run factors influencing average hours worked see Weale, M (2016), 'What's in a week's work?'; [www.bankofengland.co.uk/publications/Documents/speeches/2016/speech874.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech874.pdf).

remaining elevated, the number of additional hours those working part-time want to work has been declining, in part reflecting a decrease in the share of part-time employees that report they could not find a full-time job. That could suggest that there is little slack remaining in average hours.

While the share of part-time employment is projected to fall back some way further towards its demographic trend in the near term, pushing up average hours, the extent of this fall may be limited: as real wages continue to rise, more people may prefer to work part-time.<sup>(1)</sup>

### The gap between usual and actual hours worked is normalising

In addition to asking about how many hours people actually worked in a week and their desired hours, the LFS also asks households about the number of hours they usually work and the reasons for any difference between that and their actual hours.

Actual average hours rose by more than usual hours during the recovery, which was almost entirely accounted for by a reduction in leave taken (Chart D). Since early 2014, however, this effect has been unwinding as the amount of leave taken has started to recover, though it remains some way below its pre-crisis level. This recovery in leave taken may have been driven by recent strong growth in real wages and increased job security, reducing the desire to work additional hours. If the amount of leave taken continues to return to a more normal level, the past boost to average hours from this factor will continue to unwind.

### Chart D The amount of leave taken is recovering

Average weekly leave<sup>(a)</sup>



Sources: Labour Force Survey and Bank calculations.

(a) Four-quarter average. Exceptional volatility in 1997 Q4, 2004 Q4 and 2005 Q4 has been smoothed by using the average of the adjacent quarters.

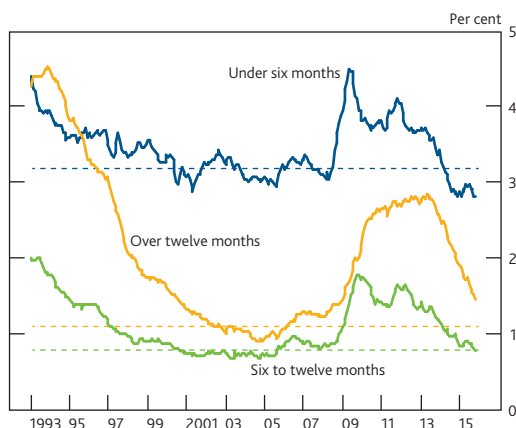
### Average hours worked are projected to decline further

Taking this evidence together, the MPC has reassessed the outlook for average hours, revising down its estimate of the equilibrium level. Average hours are now projected to decline in the near term, reflecting the effect of a continued recovery in leave taken that is only partly offset by a slight fall in the share of part-time work. Beyond this, the structural effect of an ageing workforce is expected to lead to a further gradual decline in average hours worked.

(1) See Chart 6 on page 11 of Weale (2016), *op. cit.*, for evidence of the relationship between real wages and average hours.

### Chart 3.5 Long-term unemployment remains elevated

Unemployment rates by duration<sup>(a)</sup>



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.

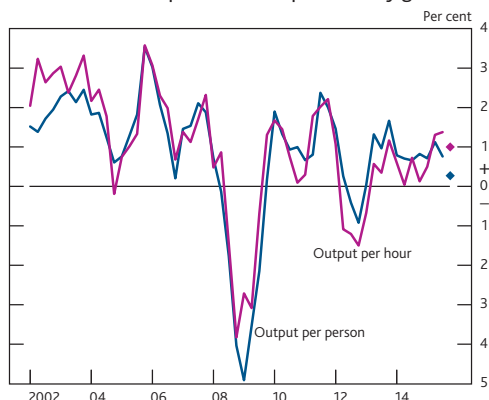
on the degree to which it reflects underlying productivity growth, such as innovation and improved resource allocation, as opposed to temporary cyclical factors.

In November, the MPC judged that some of the recent pickup in productivity growth was likely to have been cyclical, as some indicators of companies' capacity utilisation suggested they were operating above pre-crisis normal levels. The relative stability in these indicators of capacity pressures over the past year or so (Chart 3.8), however, suggests that capacity utilisation is more likely to be around than above normal levels. That, combined with the sustained growth in hourly productivity, has led the MPC to judge that this is more likely to represent underlying productivity growth.

In addition, there are a number of factors that are likely to be temporarily weighing on productivity growth. One of those is the effect of changes in the composition of the workforce. Net employment growth has been concentrated in lower-skilled roles and other characteristics typically associated with lower pay (Section 3.4). To the extent that this is associated with less productive roles, this may have dragged on measured productivity growth. But this drag will

**Chart 3.6 Hourly productivity growth has been stronger than in recent years**

Measures of four-quarter labour productivity growth<sup>(a)</sup>

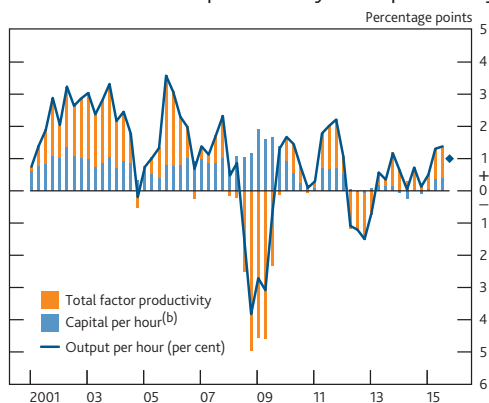


Sources: ONS and Bank calculations.

(a) Output is the backcast for the final estimate of GDP. The diamonds show Bank staff's central projection for 2015 Q4. Adjusted for expected revisions following the incorporation of the latest ONS population estimates and projections.

**Chart 3.7 Total factor productivity has accounted for most of the pickup in labour productivity growth**

Contributions to four-quarter hourly labour productivity growth<sup>(a)</sup>



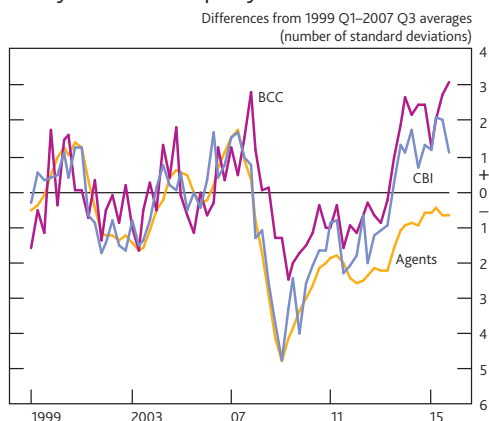
Sources: ONS and Bank calculations.

(a) See footnote (a) to Chart 3.6. Percentage change on a year earlier. Total factor productivity is calculated as a residual. The diamond shows Bank staff's central projection for hourly labour productivity growth in 2015 Q4.

(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.

**Chart 3.8 Little sign of spare capacity within companies**

Survey indicators of capacity utilisation<sup>(a)</sup>



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 surveys are adjusted to have a mean of zero and a variance of one over 1999 Q1 to 2007 Q3. The BCC data are non seasonally adjusted.

only continue for as long as employment growth continues to be relatively concentrated in these lower-skilled jobs.

A factor weighing on productivity growth over a longer period is likely to have been impaired resource reallocation. The share of loss-making companies remains elevated. As these businesses either improve their performance, are taken over or exit the market, that could add to productivity growth. Further, job-to-job flows have been below pre-crisis rates for much of the recovery. To the extent that this has been associated with fewer people than normal moving into roles where they are more productive, that will have weighed on productivity growth. As confidence in the labour market continues to improve, job-to-job flows are likely to rise further, which could support productivity growth.

Four-quarter productivity growth is projected to rise modestly in the near term and continue at a relatively steady pace over the next year, as the temporary factors weighing on it dissipate. Moreover, strong growth in business investment (Section 2) should also support labour productivity through increases in the capital stock.

### 3.3 Overall slack in the economy

The bottom-up indicators discussed above — such as unemployment — suggest that overall slack has continued to be absorbed and point to only a small degree of slack remaining in the economy, broadly consistent with the MPC's expectation in November. There is a great degree of uncertainty around any such estimates, however, as potential supply cannot be directly observed. An alternative perspective is provided by top-down statistical filters that decompose output into a trend and cyclical component. The central tendency of a range of these measures also indicates that only a small degree of slack is likely to remain in the economy. The MPC's best collective judgement is, therefore, that output is currently likely to be close to its potential level. There is considerable uncertainty around that judgement and a range of views among MPC members.

### 3.4 Wages

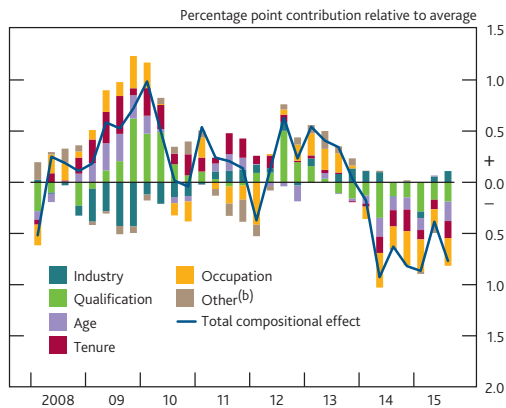
Average pay growth remains weak and softened during the second half of 2015 (Chart 3.1). While some easing in pay growth was projected at the time of the November Report, as the sharp pickup in wages in late 2014 dropped out of the annual comparison, four-quarter pay growth was weaker than expected at 2% in the three months to November.

The weakness in pay growth and recent slowing are at odds with the continued improvement in other labour market conditions, such as the sharp falls in unemployment (Section 3.2). While it is possible that this reflects greater



### Chart 3.9 The changing composition of employment continued to weigh on wage growth in Q3

Estimates of the contribution of employment characteristics to four-quarter wage growth<sup>(a)</sup>

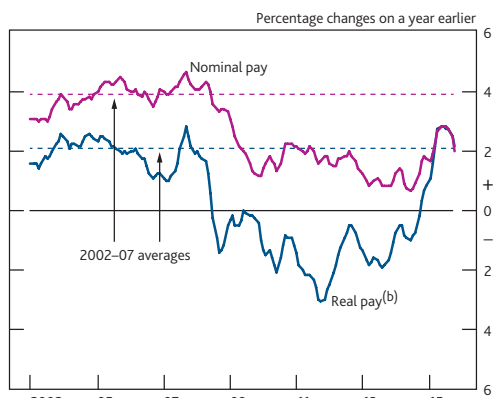


Sources: Labour Force Survey and Bank calculations.

- (a) Estimates are shown relative to their averages over 1995 Q2–2015 Q3. 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. The estimate of the total compositional effect is obtained by combining these estimates with changes in the composition of the labour force.
- (b) Other includes gender, region of residence, whether working full-time and whether in public sector employment.

### Chart 3.10 Real wage growth is close to its pre-crisis average rate

Regular average weekly earnings: real and nominal<sup>(a)</sup>



- (a) Whole-economy total pay excluding bonuses and arrears of pay.
- (b) Deflated by CPI.

### Table 3.C Most survey measures point to little acceleration in wage growth

Indicators of wage growth

	Averages					
	2002-07	2010-12 <sup>(a)</sup>	2014	2015 H1	2015 Q3	2015 Q4
CBI <sup>(b)</sup>	n.a.	1.6	2.0	2.1	2.4	2.5
REC <sup>(c)</sup>	56.7	52.4	63.1	63.1	61.1	60.2
Agents <sup>(d)</sup>	2.4	1.3	1.9	2.1	2.0	2.0
CIPD <sup>(e)</sup>	n.a.	1.2	2.0	1.9	2.0	n.a.

Sources: Bank of England, BCC, CBI (all rights reserved), CIPD, KPMG/REC/Markit and Bank calculations.

- (a) Unless otherwise stated.
- (b) Measures of expected wages over the year ahead for manufacturing, financial services, distribution and service sector, weighted together using employee job shares from Workforce Jobs.
- (c) Quarterly averages of measures for permanent and temporary placements weighted together using employee job shares. A reading above 50.0 indicates growth on the previous month and those below 50.0 indicate a decrease. The greater the divergence from 50.0, the greater the rate of change signalled by the index.
- (d) 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. The scores are on a scale of -5 to +5.
- (e) Pay increase intentions (excluding bonuses) over the coming year. Data only available since 2012.

slack in the labour market, there are a number of other factors that appear to be temporarily weighing on wage growth. Not all explain the precise pattern of wage growth, however.

One factor that may have contributed to the softening in wage growth is slower productivity growth (Section 3.2). Indeed, when calculated on a per head basis, which is most relevant for pay per person, productivity growth is likely to have slowed to 0.3% in the four quarters to Q4, following a period of growth around 0.8% (Chart 3.6). An influence on measured wage growth, which may also be reflected in productivity growth, is changes in the composition of the workforce. Roles that tend to be associated with lower pay, such as lower-skilled positions, have continued to form a larger-than-usual share of net employment growth. Although data for Q4 are not yet available, Bank staff estimate that the drag from these compositional factors increased to around 1 percentage point in 2015 Q3 (Chart 3.9). Such effects will, however, only drag on wage growth for as long as the composition of the workforce continues to shift.

The low level of headline inflation (Section 4) may have also contributed to the softening in wage growth. Following falls in the prices of energy, food and other imported goods, real wage growth has picked up strongly and is close to its pre-crisis average rate (Chart 3.10). The strength in real wage growth and, thereby, households' purchasing power may have reduced the pressure on employers to increase nominal wage growth, temporarily offsetting some of the impact of tightening labour market conditions. As the external influences on inflation wane, those pressures are likely to reassert themselves, pushing up nominal wage growth.

Subdued labour market turnover may have also limited the pressure on employers to raise wages substantially to retain staff and so contributed to the broader weakness in wage growth. Job-to-job flows have been below pre-crisis levels for much of the recovery and the Bank's Agents report that businesses are awarding larger pay increases only to key staff, rather than across the board. As confidence in the labour market and the flow of people changing roles rises, employers might find it necessary to award greater pay rises more broadly to retain staff. It is also possible that for some occupations an increased ability to hire people from abroad could have reduced the sensitivity of wage growth to domestic labour market conditions.

Overall, the near-term outlook for wage growth is projected to be somewhat weaker than in November. Most survey measures of wage pressures suggest wage growth is unlikely to pick up significantly in the near term (Table 3.C). But as the factors weighing on wage growth dissipate, it is projected to rise towards its pre-crisis average rate (Section 5).

# 4 Costs and prices

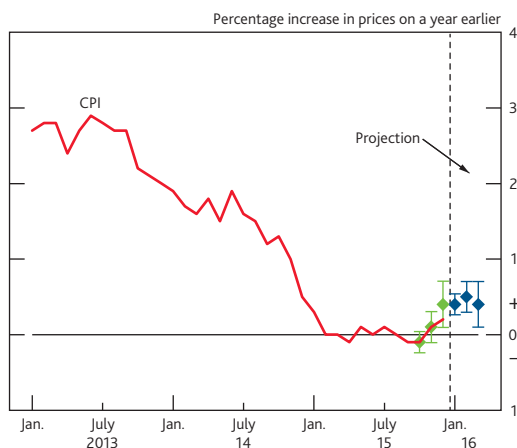
CPI inflation picked up to 0.2% in December, as the past falls in energy prices began to drop out of the annual comparison and core inflation strengthened. Inflation is projected to increase further in the coming months but a little less quickly than anticipated in November, largely reflecting recent falls in oil prices. The depreciation of sterling, however, should mean the drag from import prices fades a little more rapidly than previously projected. Four-quarter unit labour cost growth probably fell to 1.4% in Q4 but is projected to strengthen over 2016, reducing the drag on CPI inflation from subdued domestic costs. Inflation expectations remain broadly consistent with the MPC's 2% target.

**Table 4.A** Monitoring the MPC's key judgements

Developments anticipated in November	Developments since November
<b>Household energy prices</b>	<b>Broadly on track</b>
<ul style="list-style-type: none"> <li>Domestic gas prices to fall by 5% by the spring.</li> <li>Domestic electricity prices to remain unchanged.</li> </ul>	<ul style="list-style-type: none"> <li>Still expect domestic gas prices to fall by 5% by the spring.</li> <li>Still expect domestic electricity prices to remain unchanged.</li> </ul>
<b>Import prices</b>	<b>Stronger than expected</b>
<ul style="list-style-type: none"> <li>Import prices expected to remain little changed in 2016 H1.</li> </ul>	<ul style="list-style-type: none"> <li>Although import prices excluding fuels fell in the four quarters to 2015 Q3, they are expected to rise in 2016 H1.</li> </ul>
<b>Unit labour costs</b>	<b>Weaker than expected</b>
<ul style="list-style-type: none"> <li>Four-quarter growth in whole-economy unit labour costs to reach 2¼% by Q1.</li> </ul>	<ul style="list-style-type: none"> <li>Whole-economy unit labour cost growth expected to have fallen to 1.4% in Q4.</li> </ul>
<b>Inflation expectations</b>	<b>Broadly on track</b>
<ul style="list-style-type: none"> <li>Indicators of inflation expectations continue to be broadly consistent with the 2% target.</li> </ul>	<ul style="list-style-type: none"> <li>Most measures of inflation expectations have been broadly flat over 2015 H2 as a whole. On balance, measures are broadly consistent with the 2% target.</li> </ul>

**Chart 4.1** CPI inflation expected to have picked up further in January

Bank staff's projection for near-term CPI inflation<sup>(a)</sup>



(a) The green diamonds show Bank staff's central projection for CPI inflation in October, November and December 2015 at the time of the November *Inflation Report*. The blue diamonds show the current staff projection for January, February and March 2016. The bands on each side of the 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

CPI inflation picked up to 0.2% in December, from -0.1% in September (**Chart 4.1**). Since inflation remains more than 1 percentage point away from the MPC's 2% target, the Governor has written a fifth consecutive open letter to the Chancellor as required by the MPC's remit.<sup>(1)</sup> As explained in that letter, the vast majority of the current weakness in inflation relative to the target is accounted for by energy, food and other goods prices (**Chart 4.2**).

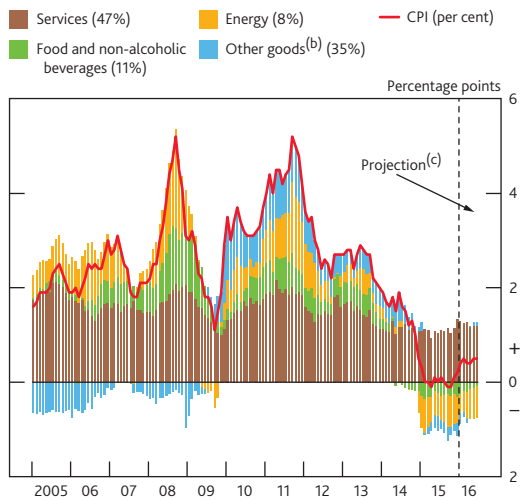
The increase in inflation over the past three months mainly reflects the effects of past falls in energy, food and other goods prices beginning to drop out of the annual comparison. In addition, the contribution from airfares, which can be volatile, increased. CPI inflation was, however, 0.2 percentage points weaker in December than expected at the time of the November *Report*, mainly reflecting further falls in oil and food prices (Section 4.2).

A range of measures of core inflation also picked up in December, averaging 1.3%, compared with 1.0% in September (**Chart 4.3**).<sup>(2)</sup> In addition to the pickup in the contribution of airfares, the increase in core inflation reflects a broader pickup in services inflation, with contacts of the Bank's Agents reporting buoyant demand in some consumer services sectors. Nevertheless, core inflation remains relatively low, largely reflecting past falls in import prices and muted domestic cost growth (Section 4.3).

(1) The letter can be found at [www.bankofengland.co.uk/monetarypolicy/Documents/pdf/cpiletter040216.pdf](http://www.bankofengland.co.uk/monetarypolicy/Documents/pdf/cpiletter040216.pdf).  
 (2) For a detailed discussion of core inflation measures see the box on pages 28–29 of the August 2015 *Report*; [www.bankofengland.co.uk/publications/Documents/inflationreport/2015/aug.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2015/aug.pdf).

**Chart 4.2 The drag on inflation from energy price falls is likely to persist in 2016 H1**

Contributions to CPI inflation<sup>(a)</sup>



Sources: Bloomberg, Department of Energy and Climate Change, ONS and Bank calculations.

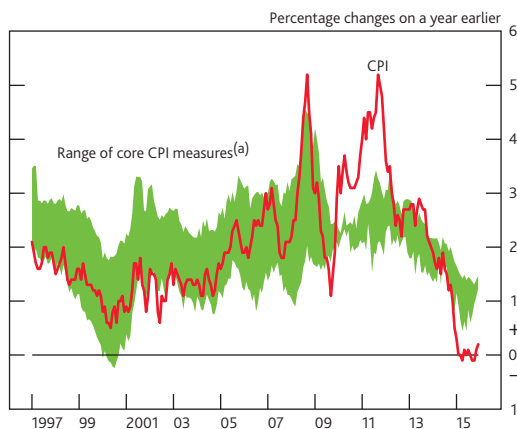
(a) Contributions to annual CPI inflation. Figures in parentheses are weights in the CPI basket in 2015, and may not sum to 100 due to rounding.

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

(c) Bank staff estimates. Electricity, gas and other fuels estimates are conditioned on the assumption that utilities companies reduce gas prices by an average of 5% in early 2016. Fuels and lubricants estimates use Department of Energy and Climate Change petrol price data for January 2016 and are then based on the February 2016 sterling oil futures curve shown in Chart 4.4.

**Chart 4.3 Core inflation measures have risen but remain relatively low**

CPI inflation and measures of core CPI inflation



Sources: ONS and Bank calculations.

(a) Swathe includes measures of core CPI, all adjusted by Bank staff for changes in the rate of VAT, though there is uncertainty around the precise impact of those changes. It includes measures of CPI excluding: food and energy; food, non-alcoholic beverages and energy; food, alcohol, energy and tobacco; food, alcohol, energy, tobacco and education; food, non-alcoholic beverages, alcohol, energy and tobacco; food, non-alcoholic beverages, alcohol, energy, tobacco and education. It also includes the weighted median inflation rate of the 85 CPI sub-components and a measure where component weights in CPI are multiplied by the inverse of the past volatility of that component.

CPI inflation is expected to have picked up to 0.4% in January (Chart 4.1), as past falls in energy and food prices continued to drop out of the annual comparison, more than offsetting a fallback in the contribution of airfares. Over the first half of 2016 as a whole, however, inflation is projected to be broadly stable: past falls in food prices will continue to drop out of the annual comparison, and core inflation is projected to pick up slightly, but these effects are likely to be broadly offset by the drag from the recent falls in oil prices (Chart 4.2).

Further ahead, the outlook for inflation will depend on the pace at which the drags on inflation from imported price pressures and subdued domestic costs, in particular unit labour costs, fade (Section 4.3). The outlook for inflation is also likely to depend on developments in inflation expectations and other nominal indicators (Section 4.4).

## 4.2 Near-term cost pressures

CPI inflation is sensitive to global pricing pressures. Changes in global energy and food prices, in particular, affect inflation relatively quickly and, in the absence of further shocks, will drop out of the annual inflation rate further ahead. Global energy and food prices fell materially over 2015. These factors account for the vast majority of the 0.7 percentage point average reduction in the projection for CPI inflation over 2016 H1, since the August 2015 Report.

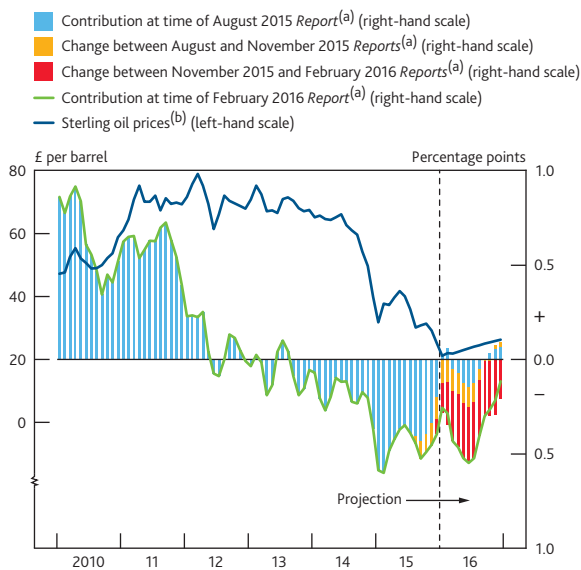
### Energy prices

Reflecting falls in spot oil prices (Section 1), petrol prices remain lower than a year ago and subtracted 0.4 percentage points from CPI inflation in December (Chart 4.4). US dollar oil futures prices, on which the MPC's projections are conditioned, are on average US\$18 per barrel lower over the next three years than in the run-up to the November Report, a fall of 31%. In sterling terms, futures prices are 26% lower than in November. Those falls in oil prices mean that the drag from petrol prices on inflation in 2016 is now projected to be 0.3 percentage points larger than anticipated in November, and to drop out of the annual rate by early 2017, several months later than projected in November.

Wholesale gas spot and futures prices, which make up a significant proportion of the cost of retail gas, have also fallen, by around 20% since the November Report, and by around 50% over the past two years (Chart 4.5). The speed at which changes in wholesale gas prices are passed through to domestic energy bills is variable and will depend on how persistent the change is expected to be and the extent to which energy suppliers have already agreed contracts for future wholesale gas supplies at previous prices. The major domestic energy suppliers cut their gas prices in early 2015 by around 5%, and one supplier cut its gas prices by a further 5% in 2015 Q3. In the run-up to the February Report, two other suppliers had also announced a cut to their gas prices of 5% —

### Chart 4.4 Fuel prices projected to drag on inflation for longer than in the November Report

Sterling oil prices and contribution of fuels to CPI inflation

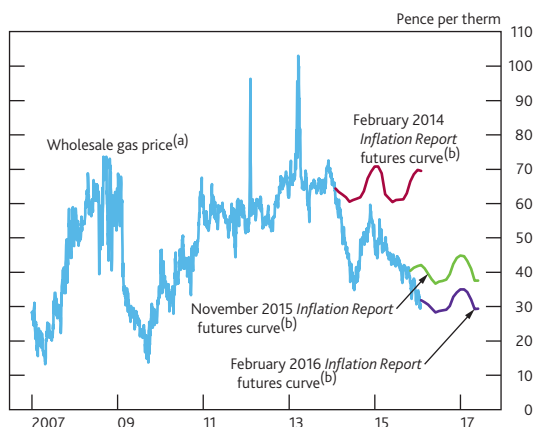


Sources: Bank of England, Bloomberg, Department of Energy and Climate Change, ONS, Thomson Reuters Datastream and Bank calculations.

- (a) Bank staff estimates of the fuels and lubricants component of CPI inflation at the time of the August 2015, November 2015 and February 2016 Reports use Department of Energy and Climate Change petrol price data for July 2015, October 2015 and January 2016 respectively, and are then based on the August 2015, November 2015 and February 2016 sterling oil futures curve respectively. For a description of the August and November 2015 futures curves, see footnote (c) to Chart 4.4 in the November 2015 Report.
- (b) Monthly averages of the oil price and the futures curve. The oil price is the Brent forward price for delivery in 10–25 days' time, converted into sterling. The futures curve is the average during the fifteen working days to 27 January 2016.

### Chart 4.5 Wholesale gas prices have fallen further since November

Sterling wholesale gas prices



Sources: Bloomberg and Bank calculations.

- (a) One-day forward price of UK natural gas.
- (b) Averages during the fifteen working days to 5 February 2014, 28 October 2015 and 27 January 2016 respectively.

one from February and one from March. In the MPC's projections, the other three major household suppliers are assumed to reduce their prices by a similar amount in early 2016, in line with the assumption in November (Table 4.A). Due to the recent further falls in wholesale prices, domestic suppliers are assumed to reduce gas prices in late 2016 by a greater amount than previously assumed, and to reduce them a little further in 2017. There is, however, a great deal of uncertainty around how quickly any cuts in gas prices will take place. Overall, the drag from domestic energy prices on CPI inflation is assumed to wane slightly to around 0.1 percentage points in the near term, before picking up again to around a quarter of a percentage point over the year from 2016 Q3.

### Food prices

Although US dollar prices of agricultural commodities have decreased by 4% since the November Report (Section 1), in sterling terms they have risen. Food prices are expected to be broadly stable in the near term, and, as past falls drop out of the annual comparison, the negative contribution of food to CPI inflation is projected to fade (Chart 4.2).

### Near-term indicators of supply chain pricing pressure

In addition to the effects described above, falls in food and energy prices will also have indirect effects on inflation through their impact on the costs of other goods and services. More generally, the degree to which companies pass through changes in the cost of their overall inputs to consumer prices is a key factor influencing inflation in the near term. There currently appears to be little sign of inflationary pressure at the start of the supply chain. Manufacturing sector output prices have fallen in recent months and, excluding food and energy, output prices have been broadly flat. Services producer price inflation also remains subdued.

Judging how quickly supply chain developments affect CPI inflation is not straightforward. A recent survey of corporate pricing carried out by the Bank's Agents found that pricing intentions among consumer-facing companies had generally remained soft.<sup>(1)</sup> Respondents expected further downward pressure on prices over the next year from energy costs, competition and higher productivity. Partly offsetting those, respondents expected upward pressure from higher costs of labour and domestic inputs and planned increases in margins.

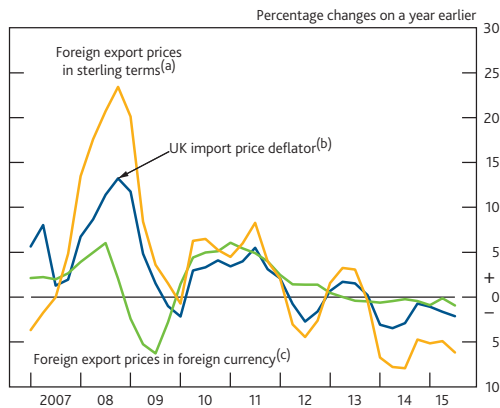
## 4.3 Medium-term cost pressures

Beyond the near term, and absent further large movements in global energy and food prices, the outlook for inflation will depend on the pace at which the drags on inflation from other imported price pressures and subdued domestic costs, in particular labour costs, fade.

(1) For more details, see the box on page 6 of the 2015 Q4 Agents' summary of business conditions; [www.bankofengland.co.uk/publications/Documents/agentssummary/2015/q4.pdf](http://www.bankofengland.co.uk/publications/Documents/agentssummary/2015/q4.pdf).

### Chart 4.6 Past sterling appreciation has dragged on UK import price inflation

UK import and foreign export prices excluding fuel

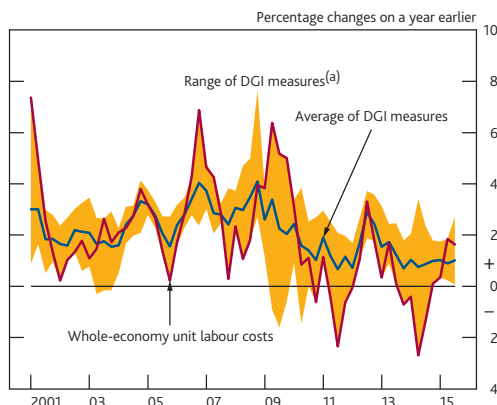


Sources: Bank of England, CEIC, Eurostat, ONS, Thomson Reuters Datastream and Bank calculations.

- (a) Domestic currency non-oil export prices of goods and services of 51 countries weighted according to their share in UK imports, divided by the sterling effective exchange rate. The sample does not include any major oil exporters.  
 (b) Goods and services deflator excluding fuels and the impact of MTIC fraud.  
 (c) Domestic currency non-oil export prices as defined in footnote (a).

### Chart 4.7 Domestically generated inflation remained broadly flat in Q3

Measures of domestically generated inflation (DGI)

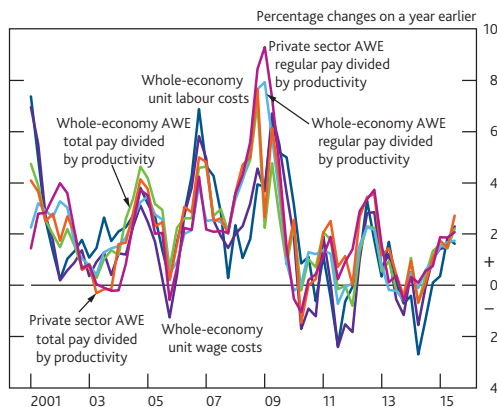


Sources: ONS and Bank calculations.

- (a) Includes: whole-economy unit labour costs and private sector AWE total pay divided by private sector productivity, as defined in Table 4.B; the GDP deflator; the GDP deflator excluding government; and the services producer prices index.

### Chart 4.8 Measures of unit labour cost growth have strengthened over the past year

Measures of unit labour costs<sup>(a)</sup>



Sources: ONS and Bank calculations.

- (a) Based on the measures defined in Table 4.B.

### Import prices

One factor reducing businesses' costs and CPI inflation has been falls in non-fuel import prices. That mainly reflects the impact of the past appreciation of sterling: between the start of 2013 and 2015 Q2, foreign export prices in foreign currency terms fell by around 1%, whereas in sterling terms they fell by 13% (Chart 4.6). UK import prices excluding fuels are estimated by the ONS to have fallen by 5% during that period.<sup>(1)</sup> Changes in foreign export prices tend to be passed through to import prices rapidly and, therefore, no further impact on import prices from the past appreciation in sterling is anticipated.

Since Q2, foreign export prices in foreign currency terms appear to have fallen further (Section 1), which will weigh on import price inflation. But that effect is likely to be more than offset by the 3½% depreciation in sterling since November, such that import price inflation is projected to rise in the near term. As explained in the box on pages 28–29 of the November Report, the precise speed of pass-through of changes in the exchange rate will vary over time and will depend on the factors driving the change and economic conditions, including how persistent the depreciation proves to be.

What will also matter for CPI inflation is the extent and timing of the pass-through of those changes in import prices to consumer prices. As explained in the November Report, that pass-through is uncertain. It is estimated to be full but gradual, on average, with most of the change passed through over a three-year period. On balance, the MPC judges that the fall in import prices weighed on CPI inflation by around half a percentage point in 2015 Q4. That drag is projected to diminish more rapidly than anticipated in November, with the impact of sterling's depreciation more than offsetting softer world export price inflation (Section 5).

### Labour costs

In addition to imported costs, domestic cost pressures are a key driver of CPI inflation. In Q3, indicators of domestically generated inflation, on average, remained subdued but broadly stable (Chart 4.7). Labour costs represent the majority of the domestic cost of producing output. So growth in unit labour costs, the average labour cost of producing a unit of output, will be an important indicator and determinant of cost pressures.

There are several ways of measuring unit labour costs (Table 4.B). The rates of growth in these measures generally tend to move closely together, although at times they diverge (Chart 4.8). In the four quarters to Q3, growth in these measures was between 1¾% and 2¾%, a relatively narrow

(1) As discussed in the November Report, the MPC did not take a steer from the import price data available at that time because of greater-than-usual uncertainty due to a number of data issues. The ONS has since published revised import price data.

**Table 4.B** There are a number of ways of measuring unit labour costsMeasures of unit labour costs<sup>(a)</sup>

	Includes non-wage costs <sup>(b)</sup>	Includes self-employment income <sup>(c)</sup>	Includes bonuses	Includes the public sector	Main advantage of measure	Percentage change in four quarters to 2015 Q3
Whole-economy unit labour costs <sup>(d)</sup>	✓	✓	✓	✓	Most comprehensive measure	1.6
Whole-economy unit wage costs <sup>(d)</sup>		✓	✓	✓	Excludes changes in non-wage costs, which can be erratic and so may not affect prices in the short term	2.3
Whole-economy AWE total pay divided by productivity <sup>(e)</sup>			✓	✓	AWE data are more timely than National Accounts data on wages and salaries	2.2
Whole-economy AWE regular pay divided by productivity <sup>(e)</sup>				✓	Excludes bonuses, which can be volatile and tend to reflect labour market conditions with a lag	1.7
Private sector AWE total pay divided by productivity <sup>(e)</sup>			✓		Excludes the public sector, which forms only a small share of costs for companies providing consumer goods and services	2.7
Private sector AWE regular pay divided by productivity <sup>(e)</sup>					Excludes the public sector and bonuses	2.1

Sources: ONS and Bank calculations.

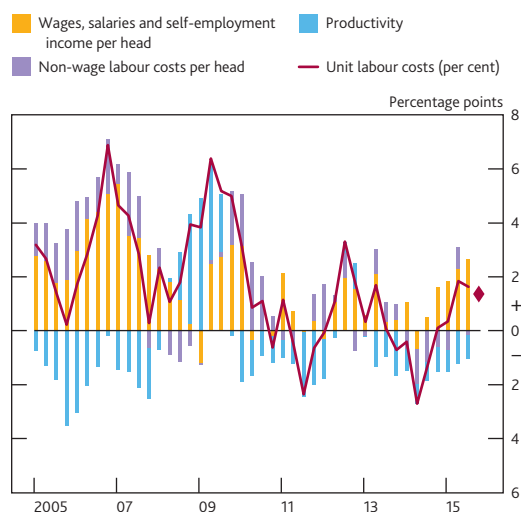
(a) Based on the backcast for the final estimate of GDP (or private sector output, in the case of the private sector measures).

(b) Employers' social contributions.

(c) 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.

(d) Calculated as whole-economy labour (wage) costs divided by GDP.

(e) Productivity per head, where employment data have been adjusted for expected revisions to the Labour Force Survey to incorporate the latest ONS population estimates and projections.

**Chart 4.9** Unit labour cost growth expected to ease a little in Q4Decomposition of four-quarter whole-economy unit labour cost growth<sup>(a)</sup>

Sources: ONS and Bank calculations.

(a) Based on the whole-economy unit labour cost measure defined in Table 4.B. The diamond shows Bank staff's projection for 2015 Q4. Employment data have been adjusted for expected revisions to the Labour Force Survey to incorporate the latest ONS population estimates and projections.

range and a material pickup compared to the negative rates observed during 2013–14.

The broadest measure, whole-economy unit labour cost growth, which uses National Accounts compensation data and the backcast for GDP growth, eased slightly to 1.6% in Q3 (Chart 4.9). That was lower than the 2.2% expected in the November Report, and unit labour cost growth is expected to have edged down further to 1.4% in Q4. The fallback in unit labour cost growth in 2015 H2 reflects slowing wage growth (Section 3), as well as softer growth in non-wage costs, which include National Insurance and pension contributions. The slowing in these components has been only partially offset by weaker productivity growth. As wage growth strengthens, further outstripping productivity growth, unit labour cost growth is projected to recover to around 2% by 2016 Q2, reducing the drag on inflation from domestic costs.

The extent to which increases in labour costs put upward pressure on CPI inflation will depend on the extent to which businesses pass them through to consumer prices, rather than absorbing them in their margins. An estimate of consumer-facing companies' profit margins, in aggregate, appears to be above its past average. So, as labour cost growth picks up, some of that may be absorbed in lower margins, rather than being reflected in higher prices.

## 4.4 Inflation expectations and other nominal indicators

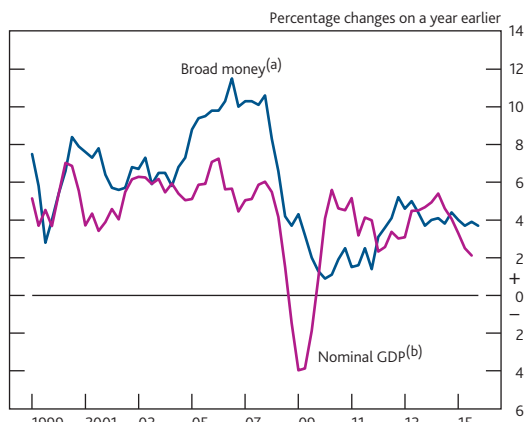
Inflation expectations may be one factor influencing the speed at which inflation returns to target. Together with actual inflation, these can influence households' and companies' wage and price-setting behaviour. The MPC monitors a range of indicators to assess whether inflation expectations are well anchored.

**Table 4.C** Indicators of inflation expectations<sup>(a)</sup>

Per cent	2000 (or start of series) to 2007 averages <sup>(b)</sup>	Averages since 2008	2013 2014		2015				2016
			2013	2014	Q1	Q2	Q3	Q4	Q1 <sup>(c)</sup>
<b>One year ahead inflation expectations</b>									
<b>Households<sup>(d)</sup></b>									
Bank/GfK	2.4	3.1	3.5	2.7	1.9	2.2	2.0	2.0	n.a.
Barclays Basix	2.8	2.9	2.8	2.3	1.7	1.3	1.6	1.3	n.a.
YouGov/Citigroup (Nov. 2005)	2.5	2.5	2.7	2.0	1.2	1.2	1.5	1.3	1.2
<b>Companies (2008 Q2)<sup>(e)</sup></b>	n.a.	0.5	0.4	0.6	0.3	0.3	0.4	0.5	n.a.
<b>Financial markets (Oct. 2004)<sup>(f)</sup></b>	2.6	2.7	3.0	2.8	2.5	2.6	2.5	2.5	2.4
<b>Two to three year ahead expectations</b>									
<b>Households<sup>(d)</sup></b>									
Bank/GfK (2009 Q1)	n.a.	2.8	3.3	2.7	2.1	2.3	2.3	2.3	n.a.
Barclays Basix	3.2	3.1	3.2	2.6	2.2	1.7	2.0	1.7	n.a.
<b>Professional forecasters (2006 Q2)<sup>(g)</sup></b>	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.0
<b>Financial markets (Oct. 2004)<sup>(h)</sup></b>	2.8	3.0	3.1	3.1	2.9	3.1	3.1	2.9	2.9
<b>Five to ten year ahead expectations</b>									
<b>Households<sup>(d)</sup></b>									
Bank/GfK (2009 Q1)	n.a.	3.2	3.6	3.1	2.8	2.8	2.8	2.9	n.a.
Barclays Basix (2008 Q3)	n.a.	3.7	3.8	3.6	3.4	2.8	3.0	3.0	n.a.
YouGov/Citigroup (Nov. 2005)	3.5	3.2	3.5	3.0	2.7	2.6	2.7	2.7	2.7
<b>Financial markets (Oct. 2004)<sup>(i)</sup></b>	3.0	3.4	3.5	3.4	3.1	3.3	3.4	3.3	3.2
<b>Memo: CPI inflation</b>	1.6	2.6	2.6	1.5	0.1	0.0	0.0	0.1	n.a.

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

- (a) Data are non seasonally adjusted.  
 (b) Dates in parentheses indicate start dates of the data series.  
 (c) Financial markets data are averages from 4 January to 27 January 2016. YouGov/Citigroup data are for January.  
 (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) CBI data for the manufacturing, business/consumer services and distribution 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.  
 (f) Instantaneous RPI inflation one year ahead implied from swaps.  
 (g) Bank's survey of external forecasters, inflation rate three years ahead.  
 (h) Instantaneous RPI inflation three years ahead implied from swaps.  
 (i) Five-year, five-year forward RPI inflation implied from swaps.

**Chart 4.10** Broad money growth remains stable  
Broad money and nominal GDP

- (a) M4 excluding intermediate other financial corporations (OFCs). Intermediate OFCs are: mortgage and housing credit corporations; non-bank credit grantors; bank holding companies; securitisation special purpose vehicles; other activities auxiliary to financial intermediation; and 'other financial intermediaries' belonging to the same financial group.  
 (b) At current market prices. The latest observation is 2015 Q3.

Most measures of households' short-term inflation expectations fell slightly in 2015 Q4 (**Table 4.C**), reversing rises in Q3, and they remain below their historical averages. These would, however, be expected to respond to actual inflation and the near-term inflation outlook, both of which remain relatively low. In contrast to households, companies' short-term inflation expectations and measures derived from financial market instruments remained broadly around their past averages in Q4.

Medium and longer-term inflation expectations may be more informative when considering whether expectations are well anchored. Measures of households' medium and longer-term inflation expectations were, on balance, little changed in Q4 — but remain below their historical averages. And according to the Deloitte survey of chief financial officers, the proportion of large companies that expected inflation to be below 1.5% in two years' time increased to slightly over half in Q4, from around a third in 2015 H1 and almost none two years earlier. In contrast, medium-term expectations of professional forecasters and those derived from financial market prices remain close to their past averages.

Overall, many measures of inflation expectations have been broadly flat throughout 2015. On balance, the MPC judges that inflation expectations remain well anchored and will continue to monitor developments in inflation expectations carefully.

The rate of increase of nominal demand relative to growth in potential supply (Section 3) is one factor that will determine the level of inflation in the medium term. One indicator of future nominal demand is broad money.<sup>(1)</sup> Structural changes in the demand for money and the difficulty of observing potential supply, however, mean that the signal provided by money growth can be difficult to assess in the short term.

Annual growth in aggregate broad money has remained stable at close to 4% over the past two years (**Chart 4.10**). Within that, money holdings of the corporate sector have grown rapidly (Section 2). Nominal GDP growth, however, fell to 2.1% in the four quarters to Q3 from 4.6% a year earlier, reflecting a lower rate of increase of the GDP deflator and the slowing in real activity (Section 2). Looking ahead, broad money growth is projected to be consistent with a pickup in nominal GDP growth towards its past average rate in the medium term, broadly consistent with CPI inflation at target.

(1) See King, M (2002), 'No money, no inflation — the role of money in the economy', *Bank of England Quarterly Bulletin*, Vol. 42, No. 2, pages 162–77; [www.bankofengland.co.uk/archive/Documents/historicpubs/qb/2002/qb020203.pdf](http://www.bankofengland.co.uk/archive/Documents/historicpubs/qb/2002/qb020203.pdf).

# 5 Prospects for inflation

CPI inflation has begun to rise, but remains close to zero due primarily to falls in the prices of energy, food and other imported goods prices. Following a period of above-average growth, four-quarter GDP growth has slowed by slightly more than expected. The prices of risky assets have fallen since the November *Report* and oil prices, the sterling exchange rate and the yield curve are lower. In the MPC's central projection, conditioned on Bank Rate rising very gradually, four-quarter GDP growth rises back to around 2½%. Although CPI inflation is likely to remain low in the near term, once the temporary drag from energy and other imported goods prices has faded, strengthening domestic cost growth is projected to take inflation back to the 2% target in around two years and then slightly above it.

**Table 5.A** Conditioning path for Bank Rate implied by forward market interest rates<sup>(a)</sup>

Per cent	2016				2017				2018				2019
	Q1 <sup>(b)</sup>	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
	February	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8	0.9	0.9	1.0	1.1
November	0.5	0.5	0.6	0.6	0.7	0.8	0.9	1.0	1.1	1.1	1.2	1.3	

(a) The data are fifteen working day averages of one-day forward rates to 27 January 2016 and 28 October 2015 respectively. The curve is based on overnight index swap rates.

(b) February figure for 2016 Q1 is an average of realised spot rates to 27 January 2016, and forward rates thereafter.

Since the November *Report*, global output and trade growth have slowed further and the latest data suggest a softer picture for UK activity in 2015 than previously assumed, with four-quarter growth slowing to 2¼% by Q4 on the MPC's backcast. CPI inflation rose to 0.2% in December.<sup>(1)</sup> There have been substantial falls in the prices of risky assets and oil and gas. The MPC's projections are conditioned on asset prices in the fifteen working days to 27 January, when spot oil prices were 34% lower in sterling terms than at the time of the November *Report* and the sterling exchange rate was 3½% lower.<sup>(2)</sup> The path for Bank Rate implied by market interest rates was lower, and implies that Bank Rate remains at its current level until the end of the year before rising to only 1.1% by 2019 (Table 5.A).

**Table 5.B** Forecast summary<sup>(a)</sup>

	Projections			
	2015	2016	2017	2018
GDP <sup>(b)</sup>	2.5 (2.7)	2.2 (2.5)	2.4 (2.7)	2.5 (2.6)
Excluding backcast <sup>(c)</sup>	2.2 (2.4)	2.2 (2.5)	2.4 (2.7)	2.5 (2.6)
	2016 Q1	2017 Q1	2018 Q1	2019 Q1
CPI inflation <sup>(d)</sup>	0.4 (0.7)	1.2 (1.5)	2.1 (2.1)	2.2
LFS unemployment rate	5.0 (5.3)	4.8 (5.2)	4.7 (4.9)	4.7
Bank Rate <sup>(e)</sup>	0.5 (0.5)	0.5 (0.7)	0.8 (1.1)	1.1

(a) Modal projections for GDP, CPI inflation and LFS unemployment. Figures in parentheses show the corresponding projections in the November 2015 *Inflation Report*. Projections were only available to 2018 Q4 in November.

(b) 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. Figure for 2015 is the MPC backcast.

(c) Figure for 2015 shows the outturn.

(d) Four-quarter inflation rate.

(e) Conditioning path for Bank Rate implied by forward market interest rates. See footnotes (a) and (b) to Table 5.A. Per cent.

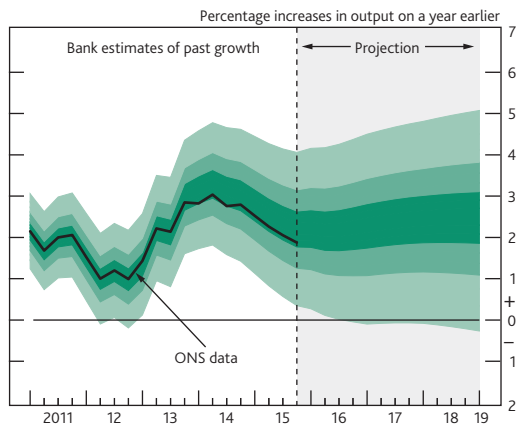
The MPC's central projections, summarised in Table 5.B, depend on a number of judgements, each with substantial uncertainty around it. Global growth is projected to pick up, but to below past average rates. That reflects continued steady growth in the advanced economies and a slow, modest recovery in those emerging economies that have seen a slowdown in growth recently. Global growth is marginally weaker than in November and it is associated with a lower path for world trade. The risks to the central projection for global growth remain to the downside. Domestically, private sector spending is projected to remain resilient in the face of

(1) The reasons why inflation remains well below the 2% target and the MPC's response are set out in the Governor's letter to the Chancellor; [www.bankofengland.co.uk/monetarypolicy/Documents/pdf/cpiletter040216.pdf](http://www.bankofengland.co.uk/monetarypolicy/Documents/pdf/cpiletter040216.pdf).

(2) Unless otherwise stated, the projections shown in this section are conditioned on: Bank Rate following a path implied by market yields; a constant stock of asset purchases; 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 November 2015 Spending Review and Autumn Statement; commodity prices following market paths; and the sterling exchange rate remaining broadly stable. The main assumptions are set out in a table at [www.bankofengland.co.uk/publications/Documents/inflationreport/2016/febca.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2016/febca.pdf).



**Chart 5.1** GDP projection based on market interest rate expectations and £375 billion purchased assets



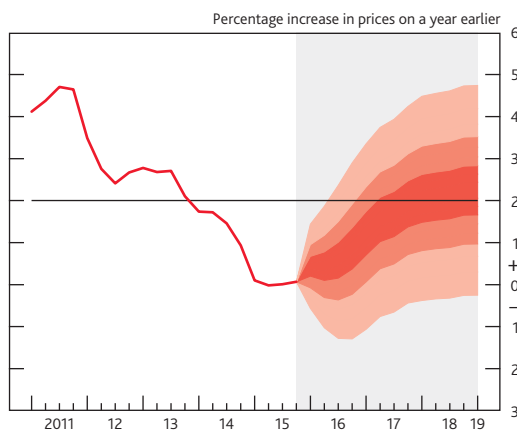
The fan chart depicts the probability of various outcomes for GDP growth. It has been conditioned on the assumption that the stock of purchased assets financed by the issuance of central bank reserves remains at £375 billion throughout the forecast period. To the left of the vertical dashed line, the 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.

financial market volatility, continued subdued global growth and domestic fiscal consolidation. The outlook is supported by a further pickup in annual productivity growth, though growth in average hours, and hence labour supply, is slower in the first couple of years of the forecast than previously projected.

In the central projection conditioned on market rates, four-quarter GDP growth rises back to around 2½% (Chart 5.1). The risks to the growth projection lie to the downside (Chart 5.4). That profile is weaker than in November; but weaker demand is matched by a lower projection for potential supply. As in November, growth is associated with a gradual build-up of capacity pressures, and hence a pickup in domestic cost growth. This returns inflation to the 2% target once the drag from external factors fades and then pushes it slightly above the target (Chart 5.2). The central projection for CPI inflation is modestly below that of three months ago (Chart 5.3) for much of the forecast period — reflecting a greater drag from energy prices and a lower path for wage growth, only partly offset by a smaller drag from other import prices — but broadly similar by the end. The risks to the central projection are judged to lie to the downside in the near term, reflecting the possibility of greater persistence in low inflation, but to be broadly balanced further out.

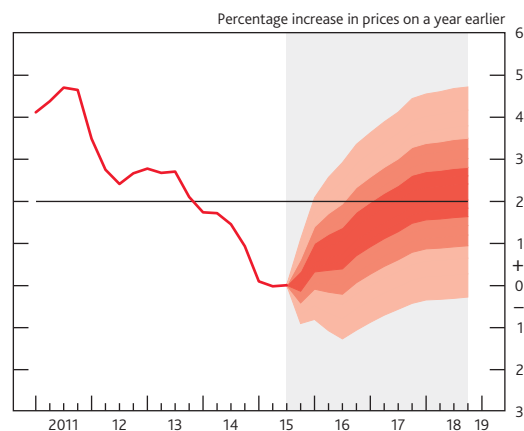
In light of the economic outlook, at its meeting ending on 3 February the MPC voted to maintain Bank Rate at 0.5% and the stock of purchased assets at £375 billion. The factors behind that decision are set out in the Monetary Policy Summary on pages i–ii of this *Report*, and in more detail in the Minutes of the meeting.<sup>(1)</sup>

**Chart 5.2** CPI inflation projection based on market interest rate expectations and £375 billion purchased assets



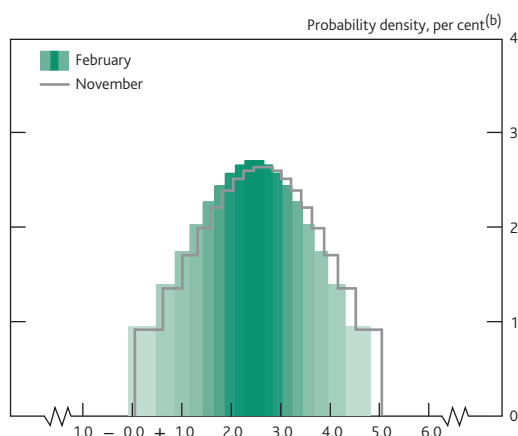
Charts 5.2 and 5.3 depict the probability of various outcomes for CPI inflation in the future. They have been conditioned on the assumption that the stock of purchased assets financed by the issuance of central bank reserves remains at £375 billion throughout the forecast period. If economic circumstances 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 November based on market interest rate expectations and £375 billion purchased assets



(1) The Minutes are available at [www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2016/feb.pdf](http://www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2016/feb.pdf).

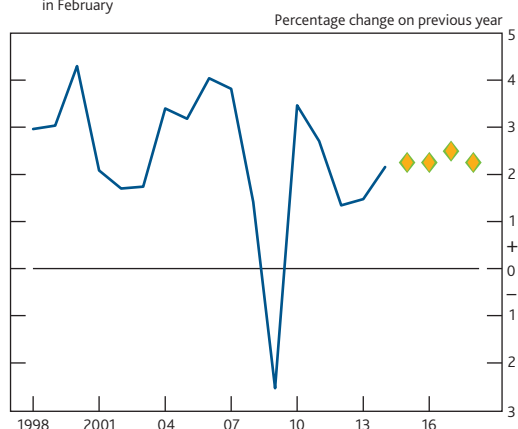
**Chart 5.4** Projected probabilities of GDP growth in 2018 Q1 (central 90% of the distribution)<sup>(a)</sup>



- (a) Chart 5.4 represents the cross-section of the GDP growth fan chart in 2018 Q1 for the market interest rate projection. It has been conditioned on the assumption that the stock of purchased assets remains at £375 billion throughout the forecast period. The coloured bands in Chart 5.4 have a similar interpretation to those on the fan charts. Like the fan charts, they portray the central 90% of the probability distribution. The grey outline represents the corresponding cross-section of the November 2015 *Inflation Report* fan chart, which was conditioned on market interest rates and the same assumption about the stock of purchased assets financed by the issuance of central bank reserves.
- (b) Average probability within each band; the figures on the y-axis indicate the probability of growth being within  $\pm 0.05$  percentage points of any given growth rate, specified to one decimal place.

**Chart 5.5** World GDP (UK-weighted)<sup>(a)</sup>

- ◆ Projection at the time of the November *Report*
- ◆ Projection consistent with MPC key judgements in February



Sources: IMF *World Economic Outlook* and Bank calculations.

- (a) Calendar-year growth rates. Chained-volume measure. Constructed using real GDP growth rates of 146 countries weighted according to their shares in UK exports.

## 5.1 Key judgements and risks

The Committee's four key judgements are described in more detail below. Table 5.D provides projections for variables that illustrate those judgements; Table 5.C provides a range of indicators to monitor them; and Table 5.E shows indicative projections for a range of other variables.

### Key Judgement 1: global growth picks up a little but remains below past average rates

Global growth has fallen back further over the past three months, as emerging economies generally continued to slow and the US economy grew by less than expected. There have also been considerable falls in the prices of risky assets and another significant fall in oil prices.

Developments in financial markets — including widespread falls in equity prices and rises in corporate bond spreads — in part seem to reflect an increase in market participants' perceptions of risks around the global outlook stemming from developments in China and other emerging economies. Those financial market developments will tend to raise the cost of capital across advanced and emerging economies.

The price of Brent crude was US\$29 a barrel in the fifteen working days to 27 January — a level last seen in 2004 and US\$19 lower than at the time of the November *Report*. Much of the fall probably reflects positive news on supply — for example, as OPEC showed increased flexibility around its production targets. It could also in part reflect concerns about future demand; consistent with that, industrial metals prices have also fallen since the November *Report*. On balance, more of the fall is judged likely to reflect supply factors, such that the lower oil price is expected to support activity in net oil-importing countries, including the United Kingdom. That said, lower prices are likely to weigh further on activity in commodity-exporting countries.

Annual euro-area growth has picked up, supported by past falls in energy prices, together with an improvement in credit conditions, and the public sector asset purchase programme that the ECB commenced in early 2015. Headline and core inflation have remained low, however, and since the November *Report* the ECB has increased the planned size of its asset purchase programme and reduced interest rates further. Over the forecast period, euro-area growth is projected to remain close to current rates such that slack continues slowly to be absorbed and inflation gradually picks up; growth is similar to the path three months ago, reflecting offsetting news on asset and oil prices.

In the United States, following a further tightening of the labour market, the FOMC raised the target range for the federal funds rate by 25 basis points in December 2015. US output expanded by only 0.2% in 2015 Q4, less than

## Table 5.C 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 Q1 to 2016 Q3 if judgements evolve as expected
<b>1: global growth picks up a little but remains below past average rates</b>	<ul style="list-style-type: none"> <li>• Quarterly euro-area growth to average a little below ½%.</li> <li>• Annual euro-area HICP inflation remains close to zero in the coming months reflecting recent falls in oil prices.</li> <li>• Quarterly US GDP growth to average a little above ½%.</li> <li>• Annual US PCE inflation of around 1%.</li> <li>• Indicators of activity consistent with four-quarter PPP-weighted emerging-economy growth of around 3¼%; within that, Chinese GDP growth to average around 6½%.</li> <li>• Average quarterly growth in UK exports of around ½%.</li> </ul>
<b>2: UK household and corporate spending remains resilient</b>	<ul style="list-style-type: none"> <li>• Quarterly consumption growth of around ¾%.</li> <li>• Quarterly business investment growth of around 1¼%.</li> <li>• Credit spreads to be broadly flat in 2016.</li> <li>• Quarterly housing investment growth to average around ¾%.</li> <li>• Mortgage approvals for house purchase are expected to be around 76,000 a month, on average, in 2016 Q3, following a period of volatility in transactions immediately before and after the introduction of a higher rate of stamp duty on additional properties in April 2016.</li> <li>• Rates of increase in the main indices of national house prices to average around ½% per month.</li> </ul>
<b>3: annual productivity growth picks up a little further</b>	<ul style="list-style-type: none"> <li>• Participation rate to remain broadly flat over the first half of this year.</li> <li>• Headline LFS unemployment rate to fall slightly below 5% by the middle of the year.</li> <li>• Average hours to fall by ½% by the middle of the year.</li> <li>• Hourly labour productivity to increase by around 1% in the first half of this year.</li> </ul>
<b>4: a pickup in domestic cost growth returns inflation to the 2% target once the drag from external factors fades</b>	<ul style="list-style-type: none"> <li>• Commodity prices and sterling ERI to evolve in line with the conditioning assumptions set out in <a href="http://www.bankofengland.co.uk/publications/Documents/inflationreport/2016/febca.pdf">www.bankofengland.co.uk/publications/Documents/inflationreport/2016/febca.pdf</a>.</li> <li>• Domestic gas prices to fall by 5% over the spring. Domestic electricity prices to remain unchanged.</li> <li>• Four-quarter AWE growth to remain broadly flat at around 2% over the first half of this year.</li> <li>• Four-quarter growth in whole-economy unit labour costs to pick up to 2¼% by 2016 Q3.</li> <li>• Non-fuel import prices to rise by 1½% in the year to 2016 Q3.</li> <li>• Indicators of inflation expectations continue to be broadly consistent with the 2% target.</li> </ul>

expected in the *November Report*. Over the forecast period, growth is projected to remain well below past average rates (Table 5.D), as productivity growth also remains modest. The risks around the projections for productivity and output growth are broadly balanced.

As advanced-economy growth has recovered, emerging-economy growth has slowed. Although headline growth in China remained around 7% in 2015 on official data, that in part reflected policy support and there remain concerns about the sustainability of such rates of growth. Those concerns have been associated with net outflows of private sector capital and falls in asset prices. In China, growth is expected to decelerate further over the next three years as the authorities continue to rebalance the economy away from exports and investment and towards domestic consumption.

**Table 5.D MPC key judgements<sup>(a)(b)</sup>****Key Judgement 1: global growth picks up a little but remains below past average rates**

	Average 1998– 2007	Projections			
		2015	2016	2017	2018
World GDP (UK-weighted) <sup>(c)</sup>	3	2¼ (2¼)	2¼ (2¼)	2½ (2½)	2¼ (2¼)
World GDP (PPP-weighted) <sup>(d)</sup>	4	3¼ (3)	3 (3¼)	3¼ (3¼)	3¼ (3¼)
Euro-area GDP <sup>(e)</sup>	2¼	1½ (1½)	1½ (1¾)	1¾ (1¾)	1½ (1½)
US GDP <sup>(f)</sup>	3	2½ (2½)	2¼ (2½)	2¼ (2¼)	2 (2)
Dollar oil prices <sup>(g)</sup>	39	43 (49)	37 (56)	42 (59)	46 (62)

**Key Judgement 2: UK household and corporate spending remains resilient**

	Average 1998– 2007	Projections			
		2015	2016	2017	2018
Credit spreads <sup>(h)</sup>	¾ <sup>(i)</sup>	2¼ (2¼)	2¼ (2)	2 (2)	2 (2)
Household saving ratio <sup>(j)</sup>	8¾	4¾ (4¾)	3 (4)	2¾ (3¼)	2¼ (2¾)
Business investment to GDP ratio <sup>(k)</sup>	9¾	9¾ (9¾)	10¼ (10¼)	10½ (10¾)	11 (11¼)

**Key Judgement 3: annual productivity growth picks up a little further**

	Average 1998– 2007	Projections			
		2015	2016	2017	2018
Productivity <sup>(l)</sup>	2¼	1 (1¼)	1¼ (1)	1¾ (1½)	1¾ (1¾)
Participation rate <sup>(m)</sup>	63	63½ (63½)	63½ (63½)	63½ (63½)	63¾ (63½)
Average hours <sup>(n)</sup>	32¼	32 (32)	31¾ (32¼)	31¾ (32¼)	31¾ (32¼)

**Key Judgement 4: a pickup in domestic cost growth returns inflation to the 2% target once the drag from external factors fades**

	Average 1998– 2007	Projections			
		2015	2016	2017	2018
UK import prices <sup>(o)</sup>	¼	-6¾ (-4¾)	¾ (¾)	1¼ (1)	1¼ (1)
Unit labour costs <sup>(p)</sup>	3	1¼ (2)	2¼ (2¾)	2¼ (2¾)	2¾ (2¾)

Sources: Bank of England, BDRC Continental *SME Finance Monitor*, Bloomberg, BofA Merrill Lynch Global Research, British Household Panel Survey, Department for Business, Innovation and Skills, 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 November 2015 *Inflation Report*.
- (c) Chained-volume measure. Constructed using real GDP growth rates of 146 countries weighted according to their shares in UK exports.
- (d) Chained-volume measure. Constructed using real GDP growth rates of 147 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. Figure for 2015 is an outturn.
- (g) Average level in Q4. Dollars per barrel. Projection based on monthly Brent futures prices. Figure for 2015 is an outturn.
- (h) 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.
- (i) 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.
- (j) Calendar-year average. Percentage of total available household resources.
- (k) Calendar-year average. Chained-volume business investment as a percentage of GDP.
- (l) GDP per hour worked. GDP at market prices is based on the mode of the MPC's backcast. Hours worked have been adjusted for expected revisions to the LFS to incorporate the latest ONS population estimates and projections.
- (m) Level in Q4. Percentage of the 16+ population. The participation rate has been adjusted for expected revisions to the LFS to incorporate the latest ONS population estimates and projections.
- (n) Level in Q4. Average weekly hours worked, in main job and second job.
- (o) Four-quarter inflation rate in Q4 of a weighted average of the goods excluding oil and erratics imports price index and the services imports deflator.
- (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.

The rebalancing to date appears to have been associated with a marked slowing in Chinese import growth. That is one factor weighing on activity in other emerging economies, where growth has slowed markedly in recent years, and appears to have been particularly weak in Q4. Some of that slowing also reflects idiosyncratic factors in individual economies and a drag from lower prices for commodities in those countries that export them. Financial conditions are also tightening: there were net private sector capital outflows from China and other emerging economies in 2015 for the first year since the 1980s (see the box on page 7). These factors are likely to continue to weigh on emerging-economy growth this year and even as growth recovers it is judged likely to settle at rates below pre-crisis averages. As discussed in the November *Report*, that modest medium-term growth outlook in part reflects structural factors such as less favourable demographic trends. Significant downside risks remain to the outlook for emerging economies, including China, which could have wide-ranging impacts on other economies through commodity and financial market prices as well as through demand.

In PPP-weighted terms, world GDP growth is projected to grow by only 3% in 2016, below the projection three months ago, with growth picking up only a little thereafter (Table 5.D). That projection remains a little below those of other forecasters. Growth is also projected to remain modest when weighted according to UK export shares (Chart 5.5). Downside risks to the global outlook remain. Moreover, the global growth profile is now associated with somewhat slower growth in world trade, largely reflecting a judgement that Chinese import demand will continue to grow less quickly than previously assumed.

Overall, net trade detracts from UK growth over the forecast period but, given the 3½% depreciation in the sterling effective exchange rate, by a little less than in the November *Report*. Export and import growth are both lower than the profiles three months ago: weaker world trade weighs on UK exports and imports are depressed by reductions in imports of capital goods in the oil sector (Key Judgement 2). The current account deficit is projected to remain close to 4% of GDP.

**Key Judgement 2: UK household and corporate spending remains resilient**

UK private final domestic demand has grown at above-average rates in recent years. That reflects both a recovery in real incomes, as employment has grown and the costs of energy and other imported items have fallen, and support from receding uncertainty and an improvement in the cost and availability of credit.

Household consumption growth was probably around 2¾% in 2015, and is projected to remain around that rate over the forecast period. Real labour income growth is

**Table 5.E** Indicative projections consistent with the MPC's modal projections<sup>(a)</sup>

	Average 1998– 2007	Projections			
		2015	2016	2017	2018
Household consumption <sup>(b)</sup>	3¾	2¾ (3)	2¾ (3)	2½ (3)	2¾ (2¾)
Business investment <sup>(c)</sup>	2½	6½ (5½)	5½ (7½)	6 (8¾)	6¼ (7¾)
Housing investment <sup>(d)</sup>	3½	2¼ (¼)	4 (4½)	5½ (5¾)	5¾ (4¾)
Exports <sup>(e)</sup>	4½	5½ (3¾)	2¼ (2½)	1¼ (1¾)	2 (2½)
Imports <sup>(f)</sup>	6	6¼ (3)	2½ (3¾)	2¼ (3¼)	2½ (3¼)
Real post-tax household income <sup>(g)</sup>	3	2 (3)	1 (2¼)	2¼ (2¼)	2¼ (2¼)
Employment <sup>(h)</sup>	1	2 (1½)	¾ (1)	¾ (1)	¾ (¾)
Average weekly earnings <sup>(i)</sup>	4¼	1¾ (2½)	3 (3¾)	3¾ (4)	4¼ (4¼)

(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 November 2015 *Inflation Report*.

(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. Official MTIC-adjusted data are not available for exports, so headline exports data have been adjusted by Bank staff for MTIC fraud by an amount equal to the ONS import adjustment.

(f) Chained-volume measure. The historical data exclude the impact of MTIC fraud.

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

(h) Four-quarter growth rate in Q4. Employment has been adjusted for expected revisions to the LFS to incorporate the latest ONS population estimates and projections.

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

underpinned by a further pickup in annual productivity growth (Key Judgement 3), although the support from falls in energy and other imported goods prices lessens. The near-term profile for growth in households' total income is affected by a degree of volatility in investment income, with some dividend payments from companies to households likely to have been brought forward in anticipation of a change in tax treatment in 2016. Although that has few implications for the level of income in the medium term, it is likely to have supported total income growth in 2015, and is projected to weigh on it in 2016. Robust consumer confidence — the GfK consumer confidence balance remains close to record highs — together with the past easing in credit conditions continue to support household spending growth such that the saving ratio falls back further. It is possible that consumers will decide to save even less: in aggregate, households' financial wealth to income ratio remains close to past highs and the debt to income ratio picks up only modestly over the forecast period. Aggregate data mask variation across households, however, and it is also possible that concerns about debt weigh more on some households' spending than assumed. In addition, the continuing fiscal consolidation could act as a larger drag on consumption growth than projected.

In contrast to the steady rise in consumption growth in recent years, housing investment growth has been very volatile, rising sharply in 2014 before dropping back last year. Growth is projected to pick up over the forecast period, reaching nearly 6% in 2018. Underlying that there is a slightly larger rise in housing starts than assumed three months ago but a slightly smaller rise in housing transactions. The outlook depends in part on the impact of government policies affecting the buy-to-let sector, which has accounted for a substantial share of the increase in mortgage lending in recent years (Section 2). Transactions are likely to rise in anticipation of increases in stamp duty on additional properties, including buy-to-let, in April 2016, but fall back afterwards. Changes to the income tax treatment of rental income in 2017 will weigh further on the outlook. In the central projection there is a notable effect on buy-to-let transactions but a much smaller effect on overall housing investment. House price inflation is projected to average 6% over the forecast period, but there is considerable uncertainty around that projection.

Business investment has been growing around 6% a year and that trend is judged likely to continue over the forecast period. That is despite sharply lower capital expenditure in the oil and gas sector, which is assumed to reduce the level of overall business investment by around 5% by the end of the forecast period, more than assumed three months ago (Section 2). Outside the oil sector, companies report that they continue to need to build capacity to meet demand, and credit conditions remain favourable. The projection for business investment relies, however, on companies' continuing confidence in the outlook: should uncertainty rise, for example about the global

outlook, companies may put some investment plans on hold. On the upside, however, the rate of return on corporate capital remains high and, as the economy continues to normalise, that could be associated with a greater boost to capital spending.

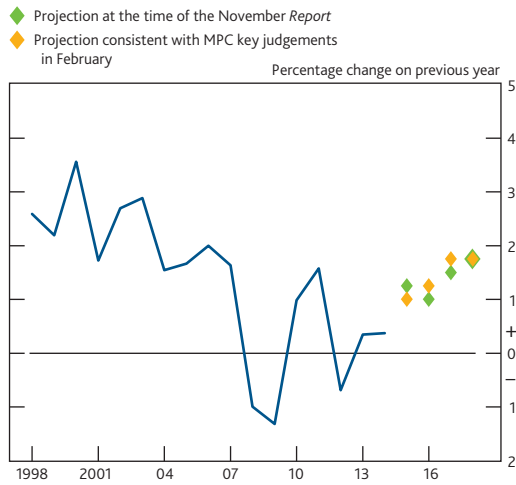
**Key Judgement 3: annual productivity growth picks up a little further**

Demand has grown faster than potential supply over the past couple of years, reducing the extent of slack in the economy. There is considerable uncertainty around how much slack remains, however, and a range of views among MPC members. In the central projection, it is assumed that slack declined a little further in the first quarter, as expected in November, and that only a little spare capacity remains. Over the forecast period, the extent to which the economy can grow without generating excess inflationary pressure therefore depends on how quickly the economy's supply capacity expands, and how that affects wage and price inflation.

Although overall supply growth has been fairly stable, recent years have been characterised by unusually rapid labour supply growth and unusually slow productivity growth. Over the past year, there have been signs that potential growth in both labour supply and productivity may be returning to more normal rates. Within labour supply, it appears that trend participation has flattened off as has the medium-term equilibrium unemployment rate. Although net inward migration has risen recently, the latest ONS projections suggest a slowing in population growth over the next three years. The assumed medium-term equilibrium levels for participation and unemployment are unchanged from those three months ago although, following news in the data, the central projection for the unemployment rate is a little lower.

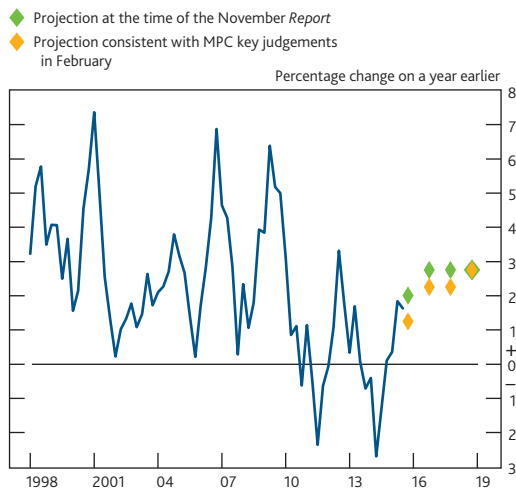
The profile for average hours worked has, however, been revised down substantially. Over 2015, average hours unwound some of the sharp rises seen since 2012 and are estimated to be lower in Q4 than expected in the November *Report*. Evidence from the LFS suggests that much of the fall reflects voluntary reductions in hours worked by employees rather than lower demand from employers. In light of that, the MPC has revised down the assumed level of equilibrium average hours over the past year or so and over the forecast period (see the box on pages 22–23). Over the forecast period, average hours are projected to fall a little further, reflecting a further normalisation in working practices and the increasing share of older workers, who typically work fewer hours, in the labour force.

As labour supply growth has slowed, productivity growth has picked up. In 2015 hourly productivity growth was probably the fastest in four years, despite a fall in Q4 (Section 3). In the MPC's current view, the pickup is judged largely to reflect an underlying recovery, perhaps as resources begin to be

**Chart 5.6 Productivity<sup>(a)</sup>**

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. Hours worked have been adjusted for expected revisions to the LFS to incorporate the latest ONS population estimates and projections.

**Chart 5.7 Unit labour costs<sup>(a)</sup>**

Sources: ONS and Bank calculations.

(a) 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. The chart shows data to 2015 Q3 and projections for four-quarter growth in Q4 thereafter.

**Table 5.F Calendar-year GDP growth rates of the modal, median and mean paths<sup>(a)</sup>**

	Mode	Median	Mean
2016 <sup>(b)</sup>	2.2 (2.5)	2.2 (2.5)	2.2 (2.5)
2017	2.4 (2.7)	2.3 (2.6)	2.3 (2.6)
2018	2.5 (2.6)	2.4 (2.5)	2.4 (2.5)

(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 November *Inflation Report*. The February and November projections have been conditioned on market interest rates, and the assumption that the stock of purchased assets financed by the issuance of central bank reserves remains at £375 billion throughout the forecast period.

(b) The anticipated revisions to recent estimates of quarterly GDP growth do not have implications for the calendar-year data shown in this table.

reallocated towards more productive uses. That means productivity is projected to grow a little more quickly this year than previously projected, reaching 1¾% by 2017 and settling around that rate (Chart 5.6).

Overall, potential supply growth is projected to rise steadily over the forecast and its composition is expected to be more in line with historical trends as labour supply grows more slowly and productivity more quickly than in recent years. Relative to the paths assumed three months ago, the lower path for average hours is judged to have weakened potential supply growth over the past year and into the forecast period.

There remains considerable uncertainty about how quickly supply can grow. Productivity has frequently disappointed in recent years, in the United Kingdom as well as in other countries, but it is possible that growth picks up faster than anticipated given the gap between the level of UK productivity and that in some other advanced economies. There is also uncertainty about the extent to which strong labour supply growth over the past few years has reflected temporary factors such as the past weakness in real wages, which may unwind even more than assumed in the central projection, or a longer-lasting change in the labour market. There is also uncertainty about how much unemployment can fall without generating upward pressure on wages. Bank staff estimate that the long-run equilibrium unemployment rate is around 5%, but there are risks on both sides of that estimate (Section 3).

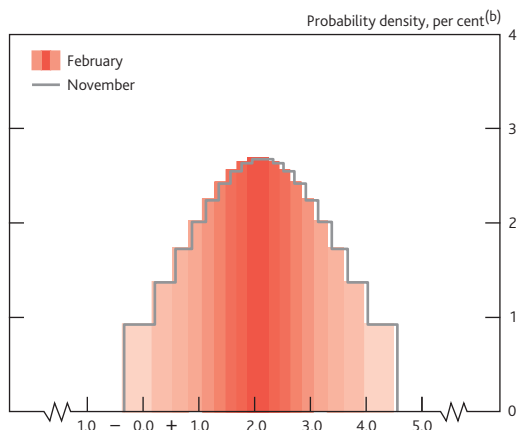
**Key Judgement 4: a pickup in domestic cost growth returns inflation to the 2% target once the drag from external factors fades**

Annual CPI inflation ticked up to 0.2% in December. Although the overwhelming majority of the weakness in CPI inflation relative to the 2% target continues to reflect energy, food and other goods prices, a risk remains that low inflation may weigh on wage growth and hence prove more persistent.

The 34% decline in spot sterling oil prices since the November *Report* implies that the drag on annual inflation from petrol prices is likely to intensify again in coming months, before falling to zero in around a year's time, assuming that oil prices rise modestly in line with the oil futures curve. The drag from domestic energy bills is assumed to last a little longer: falls in wholesale gas prices are expected to lead to further reductions in households' gas bills this autumn and next (Section 4). Overall, energy prices are projected to continue to weigh on CPI inflation relative to the 2% target until late 2018, but the precise path will depend on developments in energy markets and the timing and scale of adjustments in domestic energy bills.

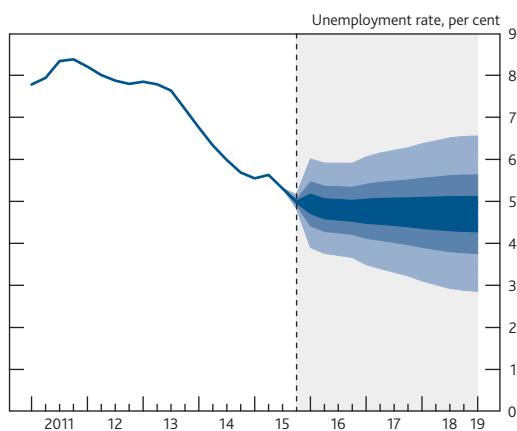
Going in the other direction, the 3½% depreciation of the sterling effective exchange rate implies less downward

**Chart 5.8** Projected probabilities of CPI inflation in 2018 Q1 (central 90% of the distribution)<sup>(a)</sup>



- (a) Chart 5.8 represents the cross-section of the CPI inflation fan chart in 2018 Q1 for the market interest rate projection. It has been conditioned on the assumption that the stock of purchased assets remains at £375 billion throughout the forecast period. The coloured bands in Chart 5.8 have a similar interpretation to those on the fan charts. Like the fan charts, they portray the central 90% of the probability distribution. The grey outline represents the corresponding cross-section of the November 2015 *Inflation Report* fan chart, which was conditioned on market interest rates and the same assumption about the stock of purchased assets.
- (b) Average probability within each band; the figures on the y-axis indicate the probability of inflation being within  $\pm 0.05$  percentage points of any given inflation rate, specified to one decimal place.

**Chart 5.9** Unemployment projection based on market interest rate expectations and £375 billion purchased assets



The fan chart depicts the probability of various outcomes for LFS unemployment. It has been conditioned on the assumption that the stock of purchased assets financed by the issuance of central bank reserves remains at £375 billion throughout the forecast period. 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 2015 Q4, a quarter earlier than the fan for CPI inflation. That is because Q4 is a staff projection for the unemployment rate, based in part on data for October and November. The unemployment rate was 5.1% in the three months to November, and is projected to be 5.0% in Q4 as a whole. In the later part of the forecast period, 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.

**Table 5.G** Q4 CPI inflation

	Mode	Median	Mean
2016 Q4	0.9 (1.2)	0.8 (1.2)	0.8 (1.1)
2017 Q4	1.9 (2.1)	1.9 (2.0)	1.9 (2.0)
2018 Q4	2.2 (2.2)	2.2 (2.2)	2.2 (2.2)

The table shows projections for Q4 four-quarter CPI inflation. The figures in parentheses show the corresponding projections in the November *Inflation Report*. The February and November projections have been conditioned on market interest rates, and the assumption that the stock of purchased assets financed by the issuance of central bank reserves remains at £375 billion throughout the forecast period.

pressure from non-energy import prices than assumed in the November *Report*, although that is partly offset by softer world export price inflation. UK non-energy import prices have fallen over the past year or so due to the combination of the past appreciation of sterling and weak world export price inflation. The drag from non-energy import prices on CPI inflation is projected to have dissipated by the two-year forecast point and their contribution turns slightly positive in the third year. There is, however, considerable uncertainty around how much and how quickly changes in sterling pass through into consumer prices: if more of the past appreciation is already reflected in CPI inflation, the drag over the forecast period will be correspondingly smaller.

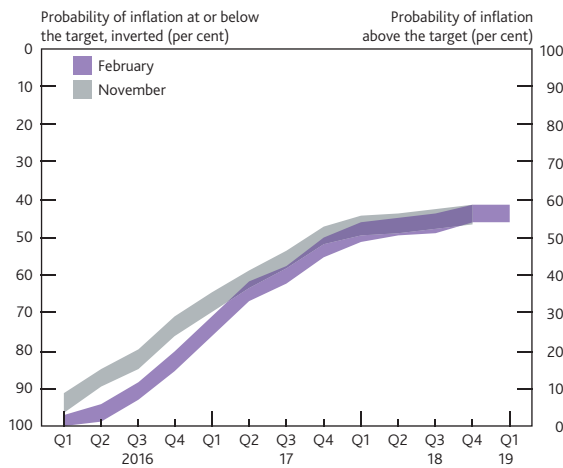
Overall, the drag on inflation, relative to the target, from energy, food and other imported goods prices is projected to have shrunk substantially by the two-year point. Although there is uncertainty about the paths for these components and their impact on CPI, the key uncertainty that underlies the outlook for inflation in the medium term is the extent to which domestic cost growth strengthens.

In recent years, growth in unit labour costs — companies' wage costs relative to productivity, a key indicator of domestic cost pressure — has been below rates consistent with meeting the inflation target. Consistent with the tightening in the labour market seen since 2013, annual cost growth picked up, with indicators of unit labour cost inflation changing from negative to positive (Section 4). But, more recently, four-quarter growth in wages and labour costs weakened by more than expected towards the end of 2015 (Section 3).

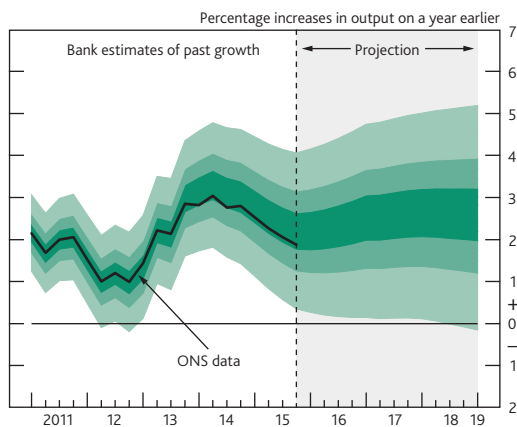
The weakening could suggest more slack than assumed. Alternatively the period of low inflation may have weighed on wage settlements. For example, pressure for higher pay settlements as the labour market has tightened may have been attenuated by the fall in energy prices and corresponding boost to real wage growth. As the drag from external factors on CPI inflation lessens and headline inflation picks up, nominal wages should grow faster.

In the central projection, some of the weakness in domestic costs is assumed to persist, so that wage and unit labour cost growth (Chart 5.7) is weaker this year and next than in the November projections. Under the path for Bank Rate implied by market rates, labour market and hence domestic cost pressures nonetheless build up sufficiently such that CPI inflation slightly exceeds the 2% target at the two-year point (Chart 5.8) and then rises slightly further. There are risks on both sides of that path. On the one hand, nominal wages could prove more sensitive to the current period of low inflation. On the other hand, the underlying tightness in the labour market may start feeding through to inflation more rapidly.

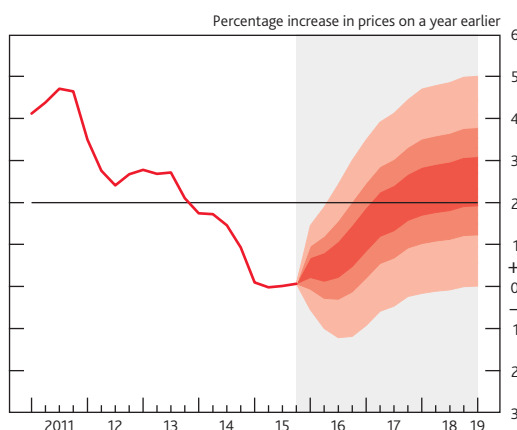


**Chart 5.10** Inflation probabilities relative to the target

The February and November swaths 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 swaths 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** GDP projection based on constant nominal interest rates at 0.5% and £375 billion purchased assets

See footnote to Chart 5.1.

**Chart 5.12** CPI inflation projection based on constant nominal interest rates at 0.5% and £375 billion purchased assets

See footnote to Chart 5.2.

## 5.2 The projections for demand, unemployment and inflation

Based on these judgements and the risks around them, and under the conditioning path for Bank Rate based on market yields, which reaches 1.1% by 2019 Q1, GDP growth is projected to rise to around 2½% over the forecast period. That growth is driven by resilient private domestic demand, in the face of subdued global activity and a continuing fiscal consolidation at home. Growth starts the forecast weaker than projected three months ago, but ends the projection at a similar rate. Relative to November, falls in the prices of risky assets and a weaker profile for world trade bear down on activity, but there is more support from sterling, oil prices and the yield curve. The risks to the outlook remain weighted to the downside (Table 5.F), reflecting the possibility that global activity and, in particular, growth in emerging economies may disappoint.

UK activity is supported by steady, albeit below average, productivity growth. Overall supply growth is weaker than assumed three months ago, however, reflecting the lower assumed equilibrium path for average hours. Unemployment has fallen to 5.1%, close to its estimated long-run equilibrium rate: overall, although the precise extent of slack in the economy is uncertain, only a little is judged to remain, as expected in November. Over the forecast period, the unemployment rate falls a touch further (Chart 5.9) and capacity pressures build. There remains considerable uncertainty about supply growth, with risks on both sides of the central projection.

CPI inflation is projected to pick up as the drags from energy and other imported goods prices unwind. Under the path implied by market interest rates, domestic cost pressures are projected to build up sufficiently such that CPI inflation slightly exceeds the 2% target at the two-year point and then rises slightly further. The central projection for CPI inflation is modestly below that of three months ago for much of the forecast period — reflecting a greater drag from energy prices and a lower path for wage growth, only partly offset by a smaller drag from other import prices — but broadly similar by the end. The risks to the central projection are judged to be to the downside over the next year (Table 5.G), reflecting the possibility of greater persistence in low inflation, but broadly balanced thereafter. Overall, inflation is judged a little more likely to be above the target than below it at the three-year horizon (Chart 5.10).

Charts 5.11 and 5.12 show the MPC's projections under the alternative constant rate assumption. That assumption is that Bank Rate remains at 0.5% throughout the three years of the forecast period, before rising towards the market path over the subsequent three years. Under that path, relative to the market rate profile, growth is stronger and inflation returns to the 2% target a little more quickly and is projected to be around 2½% at the end of the forecast period.

## Other forecasters' expectations

This box reports the results of the Bank's most recent survey of external forecasters, carried out in January.<sup>(1)</sup> On average, respondents expected four-quarter GDP growth to remain at around 2¼% throughout the next three years (Table 1). This is a touch weaker than expected three months ago, and marginally below the MPC's latest central forecast (Chart A).

**Table 1** Averages of other forecasters' central projections<sup>(a)</sup>

	2017 Q1	2018 Q1	2019 Q1
CPI inflation <sup>(b)</sup>	1.6	2.0	2.0
GDP growth <sup>(c)</sup>	2.2	2.3	2.2
LFS unemployment rate	5.0	4.8	4.8
Bank Rate (per cent)	0.9	1.6	2.1
Stock of purchased assets (£ billions) <sup>(d)</sup>	375	372	360
Sterling ERI	90.7	90.0	89.5

Source: Projections of outside forecasters as of 21 January 2016.

(a) For 2017 Q1, there were 25 forecasts for GDP growth, 24 for CPI inflation and Bank Rate, 23 for the unemployment rate, 16 for the stock of asset purchases and 11 for the sterling ERI. For 2018 Q1, there were 20 forecasts for CPI inflation, GDP growth and Bank Rate, 18 for the unemployment rate, 13 for the stock of asset purchases and 10 for the sterling ERI. For 2019 Q1, there were 19 forecasts for CPI inflation, GDP growth and Bank Rate, 17 for the unemployment rate, 12 for the stock of asset purchases and 10 for the sterling ERI.

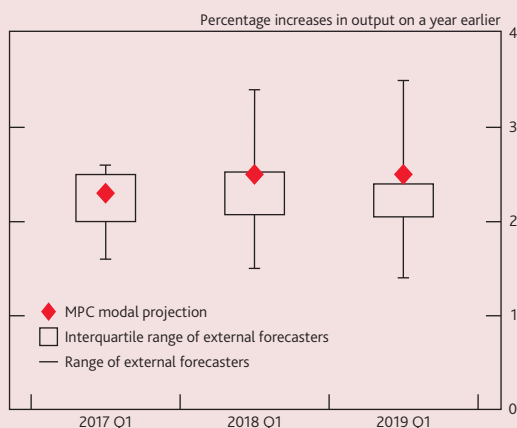
(b) Twelve-month rate.

(c) Four-quarter percentage change.

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

### Chart A Most forecasters expect broadly stable GDP growth over the next three years

Forecasters' central projections of GDP growth

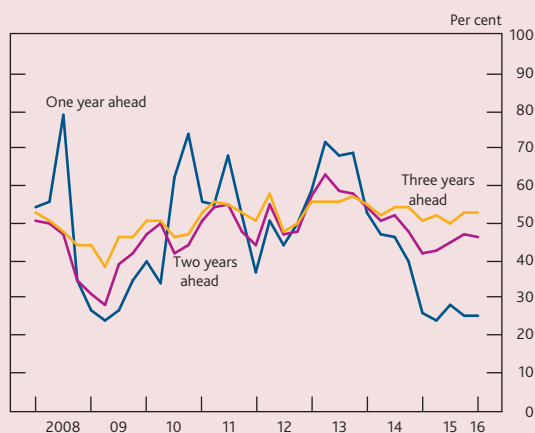


Source: Projections of outside forecasters as of 21 January 2016.

The average of respondents' central expectations for CPI inflation in one year's time, at 1.6%, remained above the MPC's forecast of 1.2%, while expectations further ahead were slightly below the MPC's central projection, which is conditional on the path for Bank Rate implied by market interest rates. On average, external forecasters thought there was around a 25% probability that CPI inflation will be above the target in one year's time, while that probability was just below 50% in two years' time and just above it looking three years ahead (Chart B).

### Chart B Perceived risks around inflation relative to target in the medium term are broadly balanced

Average probability of above-target CPI inflation

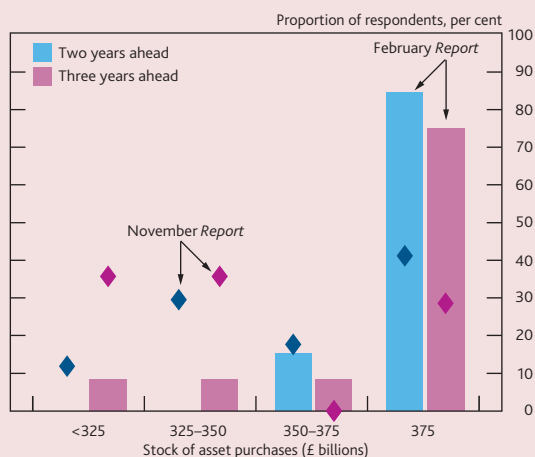


Source: Projections of outside forecasters provided for *Inflation Reports* between February 2008 and February 2016.

External forecasters, on average, expect Bank Rate to rise more gradually than projected at the time of the *November Report*, with an average expectation of 2.1% in three years' time. This is, however, still materially higher than implied by market interest rates. In the box on page 34 of the *November Report*, the MPC set out its latest expectations about the stock of asset purchases. Since then, central expectations for the stock of asset purchases have moved towards there being little change over the next three years (Chart C). The stock is expected, on average, to fall by around £15 billion in total over the next three years, £35 billion less than anticipated three months ago.

### Chart C Most forecasters expect the stock of asset purchases to be unchanged over the next three years

Distribution of central expectations for the stock of asset purchases<sup>(a)</sup>



Source: Projections of outside forecasters provided for *Inflation Reports* in November 2015 and February 2016.

(a) Projections on the boundary of these ranges are included in the upper range, eg a projection of the stock being £350 billion is in the £350 billion–£375 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/febefe.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2016/febefe.pdf).

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# Glossary and other information

## Glossary of selected data and instruments

**AWE** – average weekly earnings.

**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.

**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.

**CEIC** – CEIC Data Company Ltd.

**CIPS** – Chartered Institute of Purchasing and Supply.

**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.

**IIF** – Institute of International Finance.

**IMF** – International Monetary Fund.

**MPC** – Monetary Policy Committee.

**MSCI** – Morgan Stanley Capital International Inc.

**MTIC** – missing trader intra-community.

**OECD** – Organisation for Economic Co-operation and Development.

**ONS** – Office for National Statistics.

**OPEC** – Organization of the Petroleum Exporting Countries.

**PNFCs** – private non-financial corporations.

**PPP** – purchasing power parity.

**PwC** – PricewaterhouseCoopers.

**R&D** – research and development.

**REC** – Recruitment and Employment Confederation.

**RICS** – Royal Institution of Chartered Surveyors.

**S&P** – Standard & Poor's.

**SMEs** – small and medium-sized enterprises.

**VAT** – Value Added Tax.

**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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