

# Inflation Report

May 2017



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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Ben Broadbent, Deputy Governor responsible for monetary policy

Jon Cunliffe, Deputy Governor responsible for financial stability

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Andrew Haldane

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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/2017/may.aspx](http://www.bankofengland.co.uk/publications/Pages/inflationreport/2017/may.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 10 May 2017, the Committee voted by a majority of 7–1 to maintain Bank Rate at 0.25%. The Committee voted unanimously to maintain the stock of sterling non-financial investment-grade corporate bond purchases, financed by the issuance of central bank reserves, at £10 billion. The Committee also voted unanimously to maintain the stock of UK government bond purchases, financed by the issuance of central bank reserves, at £435 billion.

As the MPC observed at the time of the United Kingdom's referendum on EU membership, the appropriate path for monetary policy depends on the evolution of demand, potential supply, the exchange rate, and therefore inflation. Aggregate demand slowed markedly in 2017 Q1, and the MPC's central projection contained in the May *Inflation Report* is now for quarterly growth to remain around current rates, and close to trend. The slowdown appears to be concentrated in consumer-facing sectors, partly reflecting the impact of sterling's past depreciation on household income and spending. The Committee judges that consumption growth will be slower in the near term than previously anticipated before recovering in the latter part of the forecast period as real income picks up.

In the MPC's central forecast, weaker consumption this year is largely balanced by rising net trade and investment. The outlook for global activity continues to improve. Business surveys and Bank Agents' reports imply that business investment growth is likely to be higher in 2017 than previously projected. The stronger global outlook and the level of sterling are providing incentives for many exporters to renew and increase capacity.

Sterling appreciated by 2.5% between the February and May *Inflation Reports*, although it remained 16% below its November 2015 peak. Over the same time period, shorter-term UK interest rates fell, with the sterling yield curve used to condition the forecast close to its lowest level since the start of the year.

CPI inflation has risen above the MPC's 2% target as the depreciation of sterling has begun to feed through to consumer prices. This impact has been offset to some extent by continued subdued growth in domestic costs. In particular, wage growth has been notably weaker than expected. The MPC expects inflation to rise further above the target in the coming months, peaking a little below 3% in the fourth quarter. Conditioned on the market yield curve underlying the May projections, inflation is forecast to remain above the MPC's target throughout the forecast period. The projected overshoot entirely reflects the effects of the falls in sterling since late November 2015 on import prices. This effect is expected to diminish towards the end of the forecast period. With unemployment falling to its estimated equilibrium rate, however, wage growth is expected to recover significantly, and the drag from domestic costs to lessen, over the same period.

Monetary policy cannot prevent either the necessary real adjustment as the United Kingdom moves towards its new international trading arrangements or the weaker real income growth that is likely to accompany that adjustment over the next few years. Attempting to offset fully the effect of weaker sterling on inflation would be achievable only at the cost of higher unemployment and, in all likelihood, even weaker income growth. For this reason, the MPC's remit specifies that, in such exceptional circumstances, the Committee must balance any trade-off between the speed at which it intends to return inflation sustainably to the target and the support that monetary policy provides to jobs and activity.

In the MPC's latest projections there is such a trade-off through most of the forecast period, with a degree of spare capacity and inflation remaining above the 2% target. In the final year of the forecast, however, the output gap closes and inflation rises slightly further above the target. This is conditioned on the assumptions that the adjustment to the United Kingdom's new relationship with the European Union is smooth, and that Bank Rate follows the market-implied path for interest rates. At its May meeting, seven members thought that the current monetary policy setting remained appropriate to balance the demands of the Committee's remit. Kristin Forbes considered it appropriate to increase Bank Rate by 25 basis points.

As the Committee has previously noted, there are limits to the extent to which above-target inflation can be tolerated. The continuing suitability of the current policy stance depends on the trade-off between above-target inflation and slack in the economy, as well as the prospects for inflation to return sustainably to target. These projections depend importantly on three main judgements: that the lower level of sterling continues to boost consumer prices broadly as projected, and without adverse consequences for inflation expectations further ahead; that regular pay growth remains modest in the near term but picks up significantly over the forecast period; and that more subdued household spending growth is largely balanced by a pickup in other components of demand.

In judging the appropriate policy stance, the Committee will be monitoring closely the incoming evidence regarding these and other factors. Monetary policy can respond in either direction to changes to the economic outlook as they unfold to ensure a sustainable return of inflation to the 2% target. On the whole, the Committee judges that, if the economy follows a path broadly consistent with the May central projection, then monetary policy could need to be tightened by a somewhat greater extent over the forecast period than the very gently rising path implied by the market yield curve underlying the May projections.

# 1 Global economic and financial market developments

Indicators point to continued solid global GDP growth in the near term, and equity prices have risen further. Probably reflecting changing perceptions among investors over the risks to growth, market interest rates have fluctuated in many advanced economies, and they have fallen in the United Kingdom. The sustainability of current rates of global GDP growth in the medium term is likely to depend on a recovery in productivity growth in many advanced economies.

**Table 1.A** The slight slowing in global activity growth in Q1 is expected to be temporary

GDP in selected countries and regions<sup>(a)</sup>

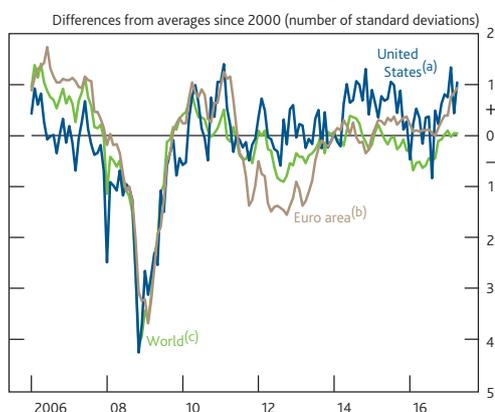
	Averages			2016		2017
	1998–2007	2012–13	2014–15	H1	H2	Q1
	United Kingdom	2.9	1.9	2.6	1.5	2.3
Euro area (38%)	2.3	-0.2	1.7	1.8	1.8	1.8
United States (19%)	3.0	2.0	2.2	1.1	2.8	0.7
China (3%) <sup>(b)</sup>	10.0	7.8	7.1	6.7	6.8	6.9
Japan (2%)	1.1	1.6	0.5	2.0	1.2	n.a.
India (1%) <sup>(b)</sup>	n.a.	6.1	7.2	7.9	7.2	n.a.
Russia (1%) <sup>(c)</sup>	7.6	1.7	-1.9	-0.5	n.a.	n.a.
Brazil (1%)	3.1	2.6	-3.0	-1.8	-3.1	n.a.
UK-weighted world GDP <sup>(d)</sup>	3.0	1.7	2.2	2.0	2.5	2.1

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

- (a) Real GDP measures. Figures in parentheses are shares in UK goods and services exports in 2015.  
 (b) Data are four-quarter growth. The earliest observation for India is 2012 Q2.  
 (c) The earliest observation for Russia is 2003 Q2.  
 (d) Constructed using data for real GDP growth rates for 180 countries weighted according to their shares in UK exports. For the vast majority of countries, the latest observation is 2016 Q4. For those countries where data are not yet available, Bank staff projections are used.

**Chart 1.1** Survey indicators point to continued solid advanced-economy growth

Survey measures of international output growth



Sources: IHS Markit, JPMorgan, Thomson Reuters Datastream, US Bureau of Economic Analysis and US Institute for Supply Management (ISM).

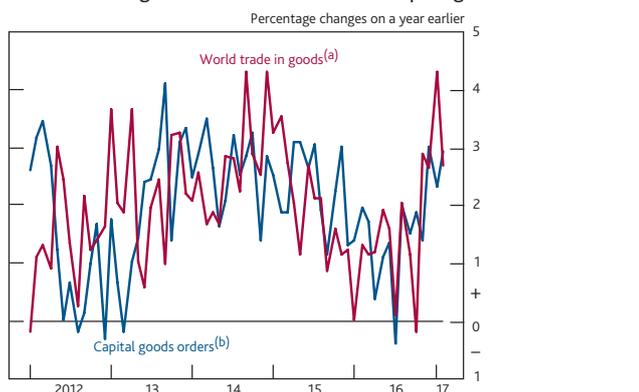
- (a) Manufacturing production and non-manufacturing business activity ISM survey indices of monthly output growth, weighted together using their nominal shares in value added.  
 (b) Composite (manufacturing and services) purchasing managers' index (PMI) survey of monthly output growth.  
 (c) Composite (manufacturing and services) PMI survey of monthly output growth. Based on the results of surveys in over 30 countries. Together these countries account for an estimated 87% of global GDP.

The outlook for global growth is somewhat stronger than anticipated in February. While quarterly global GDP growth, weighted by countries' shares in UK exports, is estimated to have slowed slightly to 0.5% in 2017 Q1 (**Table 1.A**), growth is projected to recover to 0.7% in Q2. The slowing in Q1 largely reflected a weaker-than-expected figure for the United States, but that appears to reflect temporary factors (**Section 1.2**). Growth was in line with expectations in the euro area (**Section 1.1**) and slightly stronger than expected in China (**Section 1.3**).

A range of indicators point to continued momentum across a number of countries, particularly in the euro area and United States. Survey indicators of current activity growth have remained high (**Chart 1.1**), while there has been a sharp rise in growth in global trade and capital goods orders (**Chart 1.2**), and consumer and business confidence remain buoyant (**Chart 1.3**). These developments have been associated with upward revisions to growth forecasts for 2017. For example, the International Monetary Fund (IMF) has revised up its projection for global GDP growth in 2017, its first upward revision to near-term growth since 2011.

Since the February *Report*, US and euro-area short-term and long-term interest rates have fluctuated. While most of those rates were, overall, little changed in the run-up to the May *Report*, US long-term interest rates had fallen slightly (**Chart 1.4**). According to market contacts, those fluctuations were likely to have reflected changing expectations over: the scale and timing of fiscal stimulus in the United States; the implications of European political developments; and broader geopolitical risks. Financial market implied volatilities rose from low levels in mid-April, but have since fallen back (**Chart 1.5**). In contrast to moves in other countries, the market-implied path for UK short-term interest rates flattened (**Chart 1.6** and **Section 1.4**) and UK longer-term interest rates fell steadily (**Chart 1.4**). That may in part reflect a less optimistic view among market participants of likely UK growth prospects in coming years relative to growth in other countries.

**Chart 1.2 Global trade growth has picked up sharply**  
World trade in goods and euro-area and US capital goods orders

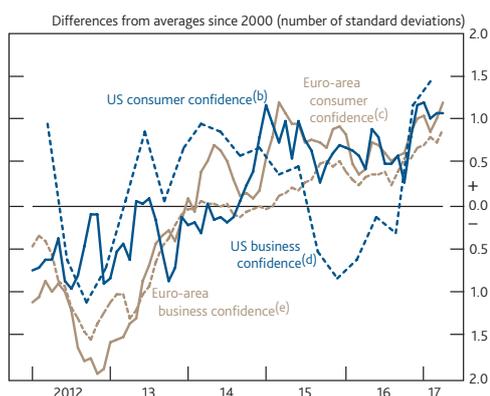


Sources: CPB Netherlands Bureau for Economic Policy Analysis, European Central Bank, Thomson Reuters Datastream, US Bureau of Labor Statistics, US Census Bureau and Bank calculations.

- (a) Volume measure.  
(b) US new orders for non-defence capital goods excluding aircraft, deflated by the private capital equipment producer price index, and euro-area volume of new orders for capital goods, weighted together using 2014 US and euro-area manufacturing value-added data. Adjusted to match the mean and variance of annual growth in world trade in goods since 2012.

**Chart 1.3 Measures of euro-area and US confidence remain buoyant**

Euro-area and US consumer and business confidence<sup>(a)</sup>

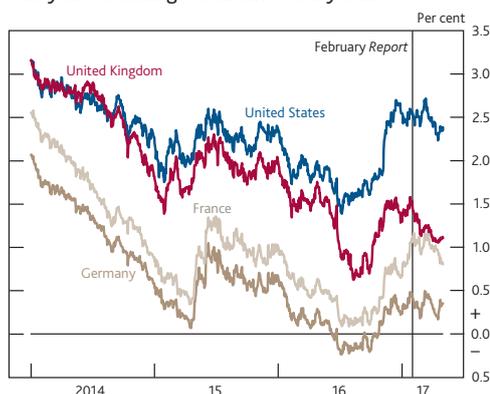


Sources: European Commission (EC), The Conference Board, Thomson Reuters Datastream, University of Michigan and Bank calculations.

- (a) Monthly data unless stated.  
(b) University of Michigan consumer sentiment index. Data are non seasonally adjusted.  
(c) Overall EC consumer confidence indicator.  
(d) The Conference Board — Measure of CEO Confidence™. © 2017 The Conference Board. Content reproduced with permission. All rights reserved. Data are quarterly and non seasonally adjusted.  
(e) Headline EC sentiment index, reweighted to exclude consumer confidence. Average of overall confidence in the industrial (50%), services (38%), retail trade (6%) and construction (6%) sectors.

**Chart 1.4 Long-term interest rates in many advanced economies have fluctuated**

Ten-year nominal government bond yields<sup>(a)</sup>



Sources: Bloomberg and Bank calculations.

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

Euro-area and US equity prices have risen further since February (**Chart 1.7**), largely reflecting higher earnings expectations as a result of the stronger outlook for growth, on top of an improvement in risk sentiment over the past six months. UK equity prices have also risen since February, but only slightly (**Chart 1.7**). That underperformance is in part likely to reflect the effects of the recent appreciation in sterling on the value of companies' foreign currency earnings. In the run-up to the *May Report*, the sterling ERI was 2½% higher than three months earlier, but was still 16% lower than its peak in November 2015 (**Chart 1.8**).

The recoveries in GDP growth across advanced economies in recent years have been largely met by increased employment, with productivity growth remaining weak (**Chart 1.9**).<sup>(1)</sup> As a result, much of the slack in labour markets in many countries that opened up following the financial crisis appears to have been absorbed. The medium-term sustainability of the recent pace of global GDP growth is therefore likely to depend on a recovery in trend productivity growth.

The extent of the remaining spare capacity differs across economies, however. For example, the unemployment rate is around its pre-crisis low in the United Kingdom and United States, but remains above it in the euro area (**Chart 1.10**). Probably reflecting that additional degree of spare capacity, wage growth and core inflation remain weaker in the euro area than in other advanced economies, although even in the United States core inflation is slightly below its past average (**Table 1.B**).

Measures of headline consumer price inflation in the euro area, the United States and globally have all risen more sharply than core inflation over the past year, to broadly around past averages (**Table 1.B**). That largely reflects the rise in global oil prices during 2016, following falls in 2014–15 (**Chart 1.11**). That rise is in turn likely to have been driven by both the recovery in global demand growth and an agreement in November between OPEC and some non-OPEC oil producers to reduce oil production. In the near term, world consumer price inflation is projected to pick up further.

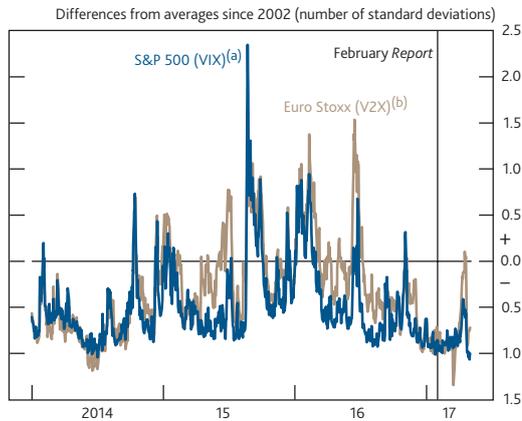
Since the *February Report*, US dollar oil prices have been volatile. In the fifteen working days to 3 May, oil prices were on average 5% lower than in February (**Chart 1.11**). They have, however, fallen further since the MPC's projections were finalised. One driver of those falls appears to have been higher oil production and inventories in the United States.

By influencing production and transport costs, global commodity prices and inflation more broadly are also important drivers of the prices of other internationally traded

(1) See Haldane, A (2017), 'Productivity puzzles'; [www.bankofengland.co.uk/publications/Documents/speeches/2017/speech968.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2017/speech968.pdf).

### Chart 1.5 Measures of financial market uncertainty are low

Implied volatilities for US and euro-area equity prices

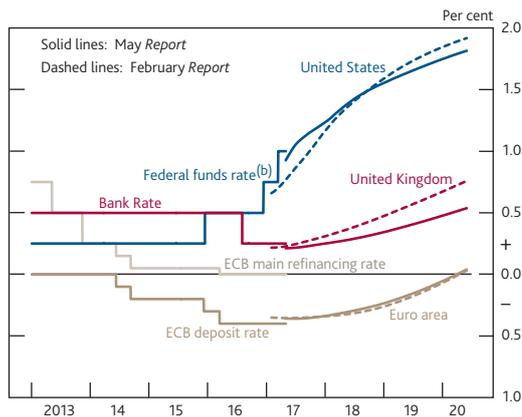


Sources: Bloomberg and Bank calculations.

- (a) VIX measure of 30-day implied volatility of the S&P 500 equity index.  
 (b) V2X measure of 30-day implied volatility of the Euro Stoxx equity index.

### Chart 1.6 The market-implied path for UK short-term interest rates has fallen

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



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

- (a) The May 2017 and February 2017 curves are estimated using instantaneous forward overnight index swap rates in the fifteen working days to 3 May and 25 January 2017 respectively.  
 (b) Upper bound of the target range.

### Chart 1.7 Equity prices have risen further globally

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



Sources: MSCI, Thomson Reuters Datastream and Bank calculations.

- (a) In local currency terms, except for MSCI Emerging Markets, which is in US dollar terms. The MSCI Inc. disclaimer of liability, which applies to the data provided, is available at [www.bankofengland.co.uk/publications/Pages/inflationreport/2017/may.aspx](http://www.bankofengland.co.uk/publications/Pages/inflationreport/2017/may.aspx).

goods. Annual world export price inflation excluding oil is estimated to have risen sharply over the past year, to 2.4% in 2017 Q1 (Table 1.B). That will push up UK import price inflation (Section 4), as will the past fall in sterling.

## 1.1 The euro area

As the United Kingdom's largest trading partner, developments in the euro-area economy are important for UK growth. Quarterly euro-area GDP growth was stable at 0.5% in Q1 (Table 1.A). That was as expected in February (Table 1.C), and slightly higher than average growth in recent years.

The recovery in euro-area growth in recent years has narrowed the degree of slack in the economy. The unemployment rate has continued to fall steadily reaching 9.5% in March, around 2 percentage points above its 2007–08 low (Chart 1.10). Despite that, four-quarter wage growth remained well below its past average rate at 1.5% in Q4. While weak productivity growth (Chart 1.9) is likely to have weighed on wage growth, a degree of spare capacity appears to persist.

Despite the weakness in euro-area wage growth, core inflation has risen in recent months to 1.2% in April (Table 1.B). Much of that rise is likely to have been erratic, however, reflecting the timing of the Easter holidays relative to 2016. Core inflation is projected to fall back in May.

Financial conditions in the euro area remain supportive of growth. As expected by market contacts, the European Central Bank (ECB) made no changes to monetary policy at its March and April meetings. As announced in December 2016, the ECB reduced its rate of asset purchases from €80 billion per month to €60 billion in April, and intends to continue these purchases until December 2017. The market-implied path for short-term interest rates (Chart 1.6) and longer-term government bond yields (Chart 1.4) have fluctuated, however, as have measures of investors' uncertainty (Chart 1.5). Market contacts attributed these developments in part to rising uncertainty ahead of the first round of the French presidential election on 23 April. Retail interest rates remain supportive of spending and, according to the ECB *Bank Lending Survey*, credit supply has improved. Credit conditions should also be supported by a substantial increase in March in the amount banks borrowed under the ECB's targeted longer-term refinancing operations, the interest rates on which are structured to incentivise lending to the real economy.

Survey indicators of euro-area activity (Chart 1.1) and sentiment (Chart 1.3) have risen further in recent months. Consistent with those buoyant indicators, quarterly GDP growth is expected to pick up slightly to 0.6% in Q2, a little stronger than projected at the time of the February Report

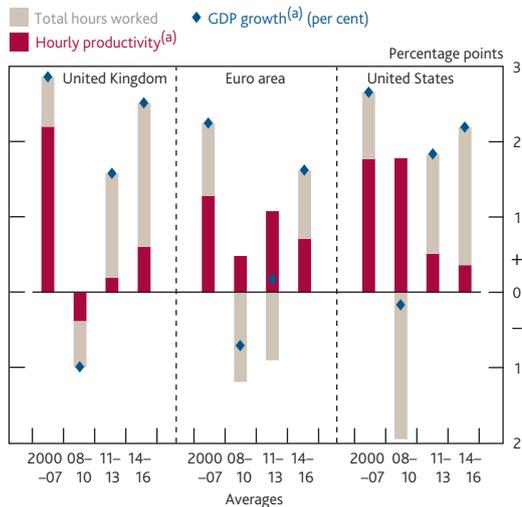
**Chart 1.8 Sterling has risen slightly since the February Report**

Sterling effective exchange rate



**Chart 1.9 Productivity growth has been weak in advanced economies in recent years**

Contributions to four-quarter GDP growth in selected advanced economies

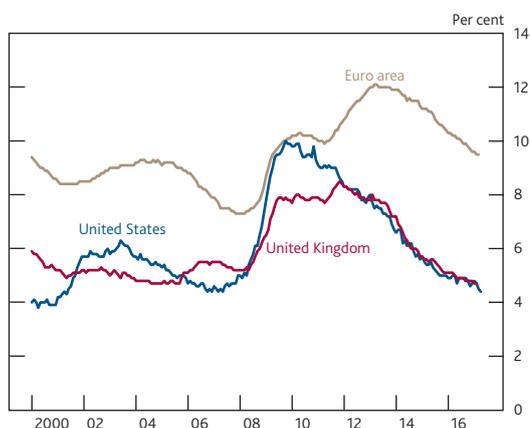


Sources: Eurostat, ONS, Thomson Reuters Datastream, US Bureau of Economic Analysis, US Bureau of Labor Statistics and Bank calculations.

(a) Chained-volume measures. UK measure is based on the backcast for the final estimate of GDP.

**Chart 1.10 Unemployment has continued to fall across advanced economies**

Unemployment rates in selected advanced economies<sup>(a)</sup>



Sources: Eurostat, ONS, Thomson Reuters Datastream, US Bureau of Labor Statistics and Bank calculations.

(a) UK data are a three-month measure and are to February 2017. Euro-area and US data are monthly measures and are to March 2017 and April 2017 respectively.

(Table 1.C). Further ahead, the outlook for growth is also stronger (Section 5).

## 1.2 The United States

Developments in the United States matter for the United Kingdom both due to their implications for trade and via their impact on global financial markets. Quarterly US GDP growth dipped from 0.5% in Q4 to 0.2% in Q1 (Table 1.A), lower than expected in the February Report (Table 1.C). That appears to have been due to erratic factors. Consumption growth was weak, partly reflecting both a delay to the implementation of a rebate on income tax and unusually warm weather depressing utilities consumption. In addition, stockbuilding dragged on growth. The GDP growth outturn in Q1 was in contrast to robust survey indicators of activity growth and confidence (Charts 1.1 and 1.3), and growth in investment was strong. Most of the weakness in GDP is therefore projected to unwind in Q2.

Monthly US employment growth remained solid at 180,000 on average in the first four months of the year, and the unemployment rate fell further to 4.4% in April (Chart 1.10). That is around its pre-crisis trough and, overall, most of the slack remaining in the US labour market appears to have been absorbed. Reflecting that, as well as a modest pickup in productivity growth, wage growth is projected to continue to rise steadily in coming quarters back towards its pre-crisis average rate.

Reflecting the improving economic outlook, on 15 March the Federal Open Market Committee (FOMC) increased the target range for the federal funds rate from between ½% and ¾% to between ¾% and 1% (Chart 1.6). That was in line with market expectations. The median of FOMC members' expected future paths for interest rates, which embody further rises in coming years, was unrevised for 2017 and 2018 but revised up slightly for 2019. At the FOMC meeting on 3 May, policy was unchanged.

Having tightened somewhat in response to the improving growth outlook between the November 2016 and February 2017 Reports, US financial conditions have overall been broadly stable over the past three months. In the run-up to the May Report, the path for short-term interest rates was broadly unchanged (Chart 1.6), while long-term government bond yields (Chart 1.4) and the US dollar were both slightly lower than in February. Equity prices have risen further in recent months (Chart 1.7), but lending to the corporate sector has moderated.

US GDP growth is projected to rise to 0.8% in Q2, as some of the weakness in Q1 is unwound, before falling back a little through the rest of the year (Table 1.C). Growth in coming years is projected to be supported by some degree of fiscal

**Table 1.B** Headline inflation in advanced economies has picked up over the past year

Inflation in selected countries and regions

	Per cent								
	Monthly averages					2017			
	1998– 2007	2015	2016			Jan.	Feb.	Mar.	Apr.
		H1	Q3	Q4					
<b>Annual headline consumer price inflation</b>									
United Kingdom	1.6	0.0	0.4	0.7	1.2	1.8	2.3	2.3	n.a.
Euro area <sup>(a)</sup>	2.0	0.0	0.0	0.3	0.7	1.8	2.0	1.5	1.9
United States <sup>(b)</sup>	2.0	0.3	0.9	1.0	1.4	1.9	2.1	1.8	n.a.
UK-weighted world inflation <sup>(c)</sup>	2.0	0.4	0.7	0.7	1.1	n.a.	n.a.	1.9	n.a.
<b>Annual core consumer price inflation (excluding food and energy)<sup>(d)</sup></b>									
United Kingdom	1.2	1.1	1.3	1.4	1.4	1.6	2.0	1.8	n.a.
Euro area <sup>(a)</sup>	1.6	0.8	0.9	0.8	0.8	0.9	0.9	0.7	1.2
United States <sup>(b)</sup>	1.8	1.4	1.6	1.7	1.7	1.8	1.8	1.6	n.a.
<b>Annual UK-weighted world export price inflation excluding oil<sup>(c)</sup></b>									
	1.1	-1.0	-2.6	-1.9	-0.1	n.a.	n.a.	2.4	n.a.

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

(a) Data points for April 2017 are flash estimates.

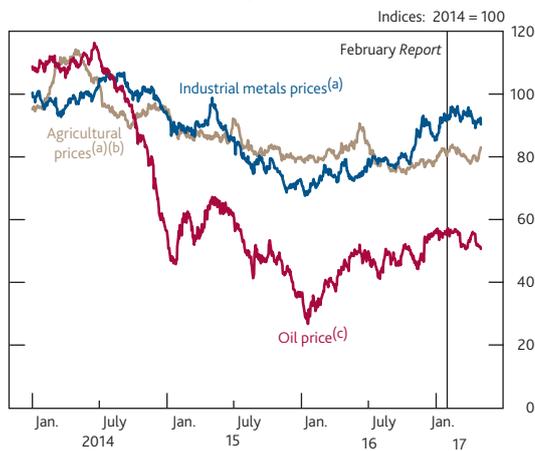
(b) Personal consumption expenditure price index inflation. Data points for March 2017 are preliminary estimates.

(c) UK-weighted world consumer price inflation is constructed using data for consumption deflators for 51 countries, weighted according to their shares in UK exports. UK-weighted world export price inflation excluding oil is constructed using data for non-oil export deflators for 51 countries, excluding major oil exporters, weighted according to their shares in UK exports. For the vast majority of countries, the latest observations are 2016 Q4. Where data are not yet available, Bank staff projections are used. Figures for March are Bank staff projections for 2017 Q1.

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

**Chart 1.11** Oil prices have fallen since February, but remain higher than over much of 2016

US dollar oil and commodity prices



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

(a) Calculated using S&amp;P GSCI US dollar commodity price indices.

(b) Total agricultural and livestock S&amp;P commodity index.

(c) US dollar Brent forward prices for delivery in 10–25 days' time.

stimulus, but there remains considerable uncertainty about the precise composition, timing and scale of any fiscal package (Section 5).

### 1.3 Emerging market economies

Four-quarter growth in China has been robust in recent quarters and was 6.9% in 2017 Q1 (Table 1.A). That was stronger than expected in February (Table 1.C), in part reflecting strength in industrial and infrastructure activity. Survey indicators, such as the Caixin composite PMI and consumer confidence measures, together with the authorities' growth target for 2017, point to continued robust growth in the near term. That outlook is slightly stronger than projected in February.

Credit growth in China has remained very strong, raising concerns about financial stability over the medium term. Total social financing — a broad measure of private sector credit — grew by around 13% in the year to March. The authorities have raised short-term interest rates in recent months, in part to reduce the risk of capital outflows and to slow the rate of build-up of risks to financial stability more broadly. Aggregate house price inflation has eased following the introduction of macroprudential measures to slow the market, but it remained robust at around 11% in the year to March. Overall, there remain significant challenges for the authorities in maintaining GDP growth while reducing risks to financial stability.

Having slowed in preceding years (Table 1.A), growth in other emerging market economies (EMEs) appears to have stabilised over the past year. Recent survey indicators of activity suggest that Russia has emerged from recession in recent quarters and that the pace of contraction in the Brazilian economy has eased, broadly consistent with the modest rise in overall EME growth projected at the time of the February Report.

That stabilisation in EME growth is likely in part to have reflected an easing in financial conditions and, in those EMEs that are net commodity exporters, the recovery in commodity prices. Investor confidence appears to have recovered somewhat, with net inflows of private sector capital into EMEs and rises in EME equity prices (Chart 1.7) and currencies in recent months. In recent years, several major EMEs appear to have increased their resilience to macroeconomic shocks, which may have supported investor sentiment. Current account deficits have narrowed and foreign exchange reserves have risen in some countries. EMEs should also benefit from the improvement in the outlook for advanced-economy growth. Nevertheless, the stock of dollar-denominated debt in some EMEs remains high and the cost of repaying that debt may be sensitive to faster-than-expected increases in US interest rates and any further strengthening in the US dollar.

## The long-term outlook for interest rates

As set out in the box on pages 8–9 of the November 2016 *Report*, both short-term and longer-term interest rates have fallen over the past few decades across advanced economies. Some of the recent declines are likely to reflect cyclical factors, such as heightened risk aversion, with many economies having experienced similar shocks and policy responses during and after the financial crisis. Interest rates have been declining globally for some time, however. The transition in many advanced economies to a lower inflation environment will have contributed to some of that decline. But measures of real interest rates — which strip out the effects of inflation — have also declined significantly over time. Given the highly integrated nature of global capital markets, a key factor behind the declines in real interest rates is likely to have been structural shifts in global investment and saving preferences, such as those arising from the increasing average age of the population.<sup>(1)</sup>

The long-term outlook for interest rates is uncertain, but is of key importance for both the Monetary Policy Committee (MPC) and the Financial Policy Committee (FPC). On 5 April, the Committees met to discuss, and were presented with material from ongoing work on, the long-term outlook for interest rates. This box summarises the material presented at that meeting.

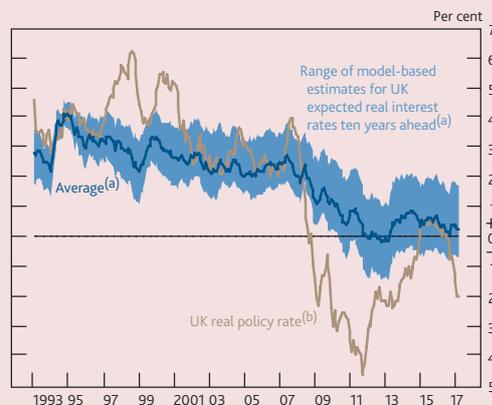
### Financial market expectations of future UK interest rates

One set of market-based measures of the outlook for real interest rates are those implied by long-term government bond yields. Those long-term real interest rates will reflect both expected future short-term rates and term premia, the additional compensation that investors require for holding longer-maturity assets. In order to isolate the expected future short-term real interest rates embodied in bond yields, it is therefore necessary to strip out an estimate of term premia.

One way of estimating those term premia and expected future interest rates is by using so-called ‘term structure’ models of the past relationship between bond yields at different horizons. **Chart A** shows expected UK short-term real interest rates ten years ahead, based on four of those models. The models suggest that, even though term premia have declined in recent decades, there has been a substantial decline in expected future short-term real interest rates, with a marked fall following the financial crisis. The average of the estimates is currently ¼%, far below the 1993–2007 average of around 2¾%. That is consistent with the real policy rate — the difference between Bank Rate and CPI inflation — staying low for some time to come. There is, however, a wide range of estimates from these models, and uncertainty about how well they capture expectations.

### Chart A Financial market prices imply that UK interest rates will stay low for some time

UK real policy rate and financial market estimates of expected short-term real interest rates ten years ahead



Sources: Bloomberg, Consensus Economics, HM Treasury, ONS and Bank calculations.

- (a) End-month data to March 2017. The swathe shows estimates from four models. Three of the models estimate the nominal policy rate, and are adjusted for inflation expectations; one model jointly estimates nominal and real interest rates using RPI inflation. Nominal interest rates are zero-coupon ten-year forward rates derived from UK government bond prices. Inflation expectations estimates are for inflation five to ten years ahead from the half-yearly Consensus survey, and are assumed constant in the intervening months. They are based on RPI inflation until 2005 and CPI inflation thereafter; prior to 2005, the estimates are adjusted by the difference between RPI and CPI inflation. Expected policy rates are derived by stripping out term premia estimated using the following four models: the benchmark model in Malik, S and Meldrum, A (2014), ‘Evaluating the robustness of UK term structure decompositions using linear regression methods’, *Bank of England Working Paper No. 578*, [www.bankofengland.co.uk/research/Documents/workingpapers/2014/wp518.pdf](http://www.bankofengland.co.uk/research/Documents/workingpapers/2014/wp518.pdf); Vlieghe, G (2016), ‘Monetary policy expectations and long-term interest rates’, [www.bankofengland.co.uk/publications/Documents/speeches/2016/speech909.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech909.pdf); Meldrum, A and Roberts-Sklar, M (2015), ‘Long-run priors for term structure models’, *Bank of England Staff Working Paper No. 575*, [www.bankofengland.co.uk/research/Pages/workingpapers/2015/swp575.aspx](http://www.bankofengland.co.uk/research/Pages/workingpapers/2015/swp575.aspx); Abrahams, M, Adrian, T, Crump, R, Moench, E and Yu, R (2016), ‘Decomposing real and nominal yield curves’, *Journal of Monetary Economics*, Vol. 84, December, pages 182–200.
- (b) Monthly averages of Bank Rate minus CPI inflation.

### Drivers of low current and expected future interest rates

As set out in the box in the November *Report*, there are several factors that are likely to have pushed down real interest rates over time. One will have been the impact of global demographic trends on desired saving. Increasing life expectancy is likely to have led individuals to seek to save a greater proportion of their income if they expect to spend longer in retirement. And the share of the global population at stages of life associated with higher rates of saving — in particular, those in the 45–64 age group — has risen. That increase in desired saving will have weighed on real interest rates.

In addition, desired investment appears to have fallen, particularly following the financial crisis. That is likely to reflect heightened risk aversion and perceptions of downside risks to the outlook for demand, while downward revisions to expected growth of global GDP and productivity will also have lowered investment demand.

(1) For more on these structural shifts in saving and investment behaviour, see, for example, Rachel, L and Smith, T D (2015), ‘Secular drivers of the global real interest rate’, *Bank of England Staff Working Paper No. 571*; [www.bankofengland.co.uk/research/Documents/workingpapers/2015/swp571.pdf](http://www.bankofengland.co.uk/research/Documents/workingpapers/2015/swp571.pdf).

## Implications for the MPC and FPC

One consequence of these trends is the low levels of interest rates set by monetary policy makers in many countries, including those in the United Kingdom. Had the MPC failed to track this trend, policy would have been too tight and inflation and output too low.

The persistence of these factors will be crucial for the long-term outlook for UK real interest rates and for the path of monetary policy over coming years. Demographic effects are likely to persist for a long time yet. And global productivity growth may well remain below pre-crisis rates for some time to come. But the future rate of productivity growth is highly uncertain, and market expectations of interest rates can change quickly and may be influenced by perceptions of risk. There is, therefore, considerable uncertainty over how persistent the period of low global interest rates will be.

The outlook for interest rates will also be important for the FPC in identifying, monitoring, and taking action to reduce, risks to financial stability. As set out in the November 2016 *Financial Stability Report*, a rapid rise in interest rates could be associated with falls in a range of asset prices, particularly if it does not coincide with a substantially improved macroeconomic outlook. Persistently low interest rates, however, could adversely affect the profitability of financial institutions, and this is one element of the exploratory scenario in the Bank's 2017 stress test of the UK banking system.<sup>(1)</sup>

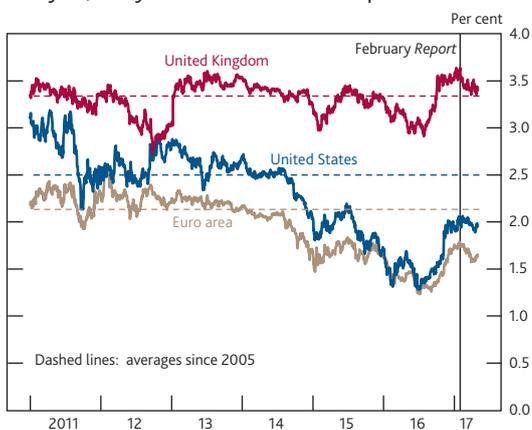
(1) [www.bankofengland.co.uk/financialstability/Documents/stresstesting/2017/keyelements.pdf](http://www.bankofengland.co.uk/financialstability/Documents/stresstesting/2017/keyelements.pdf).

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

Developments anticipated in February during 2017 Q1–Q3	Developments now anticipated during 2017 Q2–Q4
<b>Advanced economies</b>	<b>Revised up slightly</b>
<ul style="list-style-type: none"> <li>Quarterly euro-area growth to average around ½%. Annual euro-area HICP inflation to be a little above 1½%.</li> <li>Quarterly US GDP growth to average a little above ½%. Annual US PCE inflation to pick up to around 2%.</li> </ul>	<ul style="list-style-type: none"> <li>Quarterly euro-area growth to average a little above ½%. Annual euro-area HICP inflation to fall back and then remain around 1½% during the rest of the year.</li> <li>Quarterly US GDP growth to average between ½% and ¾%. Annual US PCE inflation to remain at around 2%.</li> </ul>
<b>Rest of the world</b>	<b>Revised up slightly</b>
<ul style="list-style-type: none"> <li>Average four-quarter PPP-weighted EME growth of around 4¼%; GDP growth in China to average around 6½%.</li> </ul>	<ul style="list-style-type: none"> <li>Average four-quarter PPP-weighted EME growth of around 4½%; GDP growth in China to average around 6½%.</li> </ul>
<b>The exchange rate</b>	<b>Higher than expected</b>
<ul style="list-style-type: none"> <li>Sterling ERI to evolve in line with the conditioning assumptions.</li> </ul>	<ul style="list-style-type: none"> <li>The sterling ERI is 2½% higher. Sterling ERI to evolve in line with the conditioning assumption.</li> </ul>

**Chart 1.12** UK inflation compensation is around its past average rate

Five-year, five-year forward inflation compensation<sup>(a)</sup>



Sources: Bloomberg and Bank calculations.

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

## 1.4 Sterling financial markets

The strengthening in global GDP growth should support UK exports (Section 2). Global developments, alongside domestic conditions, also matter for UK asset prices. As described in the box on pages 39–41, one factor supporting UK GDP growth over the past year appears to have been an improvement in UK asset prices and financial conditions, which in part reflects the pickup in global sentiment over that period.

### Interest rates and exchange rates

The MPC voted to make no changes to monetary policy at its March meeting, as set out in the box on page 8. The details of the May decision are contained in the Monetary Policy Summary on pages i–ii of this *Report*, and in more detail in the Minutes of the meeting.

In the run-up to the May *Report*, both the market-implied path for short-term UK interest rates (Chart 1.6) and longer-term interest rates (Chart 1.4) were lower than at the time of the February *Report*. In recent months, the difference between long-term rates in the United States and the United Kingdom has been around its widest since 2000. According to market contacts, these developments appear to reflect a less optimistic view among market participants of UK growth prospects in coming years relative to those in the rest of the world.

Changes in nominal interest rates will reflect movements in both real interest rates and inflation compensation. The fall in UK long-term interest rates between the February and May *Reports* reflects falls in both components. The level of inflation compensation is broadly around its past average (Chart 1.12). Real interest rates remain low globally and the box on pages 6–7 discusses some of the factors that are likely

## Monetary policy since the February Report

The MPC's central projection in the February *Report* was for four-quarter GDP growth to slow over 2017 and continue to be subdued during 2018–19. Consumption growth was projected to slow, as households adjusted their spending to lower real income growth. In addition, the anticipation of changes in future trading arrangements, and the uncertainty around those, was expected to restrain business activity and supply growth. Largely due to the depreciation in sterling, CPI inflation was expected soon to rise above the 2% target and to reach around 2¾% in mid-2018, before falling back gradually. That central projection was conditioned on: the path for Bank Rate implied by market interest rates; the announced Term Funding Scheme; the stock of purchased gilts remaining at £435 billion; and the stock of purchased corporate bonds reaching and remaining at £10 billion.

At its meeting ending on 15 March, the MPC noted that measures of overall UK activity growth had continued to be resilient, and there had been relatively little evidence so far from the output indicators of a slowdown. Several indicators had, however, been consistent with a slowing in consumer spending growth, particularly successive falls in retail sales,

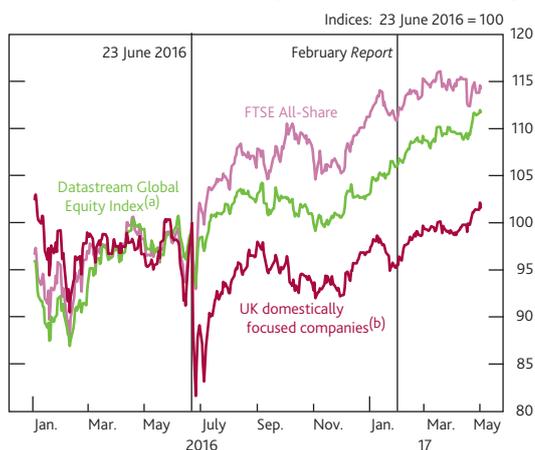
although evidence of a broader consumption slowdown had been mixed. Given more positive global survey data, the central outlook for global activity appeared to be stronger.

CPI inflation had been 1.8% in January, fractionally below Bank staff's expectation at the time of the February *Report*. The net result of the news in the January CPI outturn, the announced utility price rises in excess of the February forecast assumptions, and the decline in the sterling oil price was to leave the staff's expectation for CPI inflation broadly similar to the February projection. Wage growth had, however, been notably softer than expected, despite a further fall in the unemployment rate.

The MPC's best collective view was that the conditioning assumption that had underpinned the February projections — that there would be some modest withdrawal of monetary stimulus over the course of the forecast period — remained appropriate. Some members noted that it would take relatively little further upside news on the prospects for activity or inflation for them to consider a more immediate reduction in policy support. For one member, the monetary policy trade-off had evolved to justify an immediate increase in Bank Rate.

**Chart 1.13 UK domestically focused companies' equity prices have risen by less than global equity prices over the past year**

Global, UK and UK domestically focused companies' equity prices



Sources: Bloomberg, Thomson Reuters Datastream and Bank calculations.

(a) Based on 53 countries.

(b) UK domestically focused companies are defined as those generating at least 70% of their revenues in the United Kingdom, based on annual financial accounts data on companies' geographic revenue breakdown.

to have contributed to the low level of UK real interest rates in recent years.

Sterling has continued to be volatile, with a sharp appreciation on the day that a UK general election was announced, possibly reflecting an increase in the weight that market participants are placing on a smooth, rather than disorderly, Brexit process. In the run-up to the May *Report*, the sterling ERI was 2½% higher than at the time of the February *Report*, though it was 16% lower than its peak in November 2015 (**Chart 1.8**).

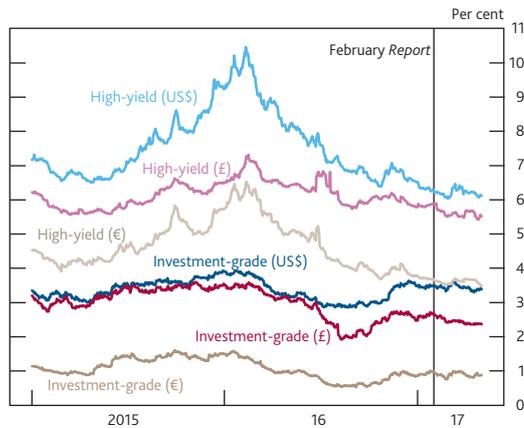
### Corporate capital markets

Developments in capital markets matter for the ability and cost with which UK companies can raise finance. While it has underperformed its international equivalents in recent weeks, the FTSE All-Share index has risen somewhat over the past year (**Chart 1.7**). Nevertheless, that pickup may not have materially reduced the cost of equity finance for many companies, as much of it is likely simply to reflect the direct impact of the depreciation in the exchange rate on the sterling value of foreign currency earnings. Consistent with that, the equity prices of UK domestically focused companies — those for which at least 70% of revenue is earned in the United Kingdom — have risen by less than global equity prices over the past year (**Chart 1.13**).

Companies can also raise finance by issuing corporate bonds. In April, the Bank completed its purchase of £10 billion of investment-grade corporate bonds under the Corporate Bond

### Chart 1.14 Sterling corporate bond yields have fallen since February

International non-financial corporate bond yields<sup>(a)</sup>

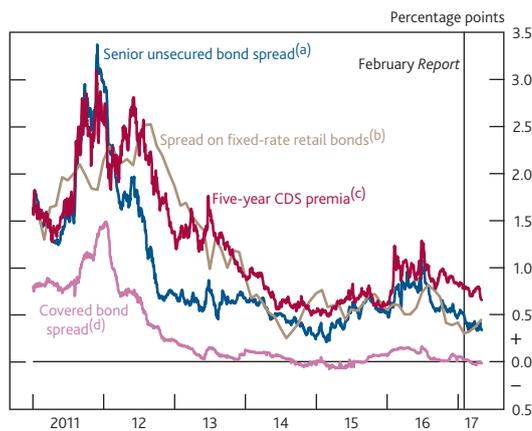


Sources: Bank of America Merrill Lynch Global Research, Thomson Reuters Datastream and Bank calculations.

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

### Chart 1.15 Most UK bank funding spreads have fallen slightly further

UK banks' indicative longer-term funding spreads



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

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

Purchase Scheme, announced as part of the MPC's policy package in August 2016.<sup>(1)</sup> Following the August announcement, the cost of issuing sterling corporate bonds fell and corporate bond issuance rose sharply for a period.

The yields on both investment-grade and riskier, so-called 'high-yield', sterling corporate bonds have fallen since the February Report (Chart 1.14). That reflects the fall in UK government bond yields (Chart 1.4), with little change in the additional compensation that investors require for the riskiness of the company. Despite that fall in yields, overall net external finance raised by companies was slightly lower in Q1 than in Q4 (Section 2).

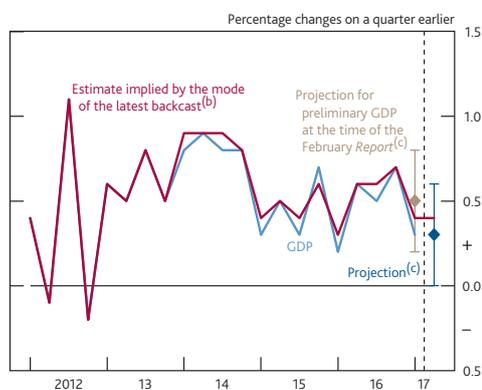
Capital markets also matter for broader credit conditions through their influence on bank funding costs. The spreads that banks pay for funding over and above benchmark interest rates have, on average, fallen slightly further since February (Chart 1.15). Bank funding and lending conditions overall remain broadly supportive of growth, although the *Credit Conditions Survey* suggests some tightening in consumer credit supply (Section 2).

(1) For more detail on the Scheme, see [www.bankofengland.co.uk/markets/Pages/apf/corporatebondpurchases/default.aspx](http://www.bankofengland.co.uk/markets/Pages/apf/corporatebondpurchases/default.aspx).

## 2 Demand and output

Output growth slowed to 0.3% in the preliminary estimate for Q1. That was probably driven by slower household spending growth, which is projected to remain weak over 2017 as higher import prices weigh on households' purchasing power. Business investment fell in 2016 but most surveys point to a modest pickup in investment growth over 2017. The depreciation of sterling and strength in global demand have supported net trade and should continue to do so.

**Chart 2.1 GDP growth slowed in Q1**  
Output growth and Bank staff's near-term projection<sup>(a)</sup>

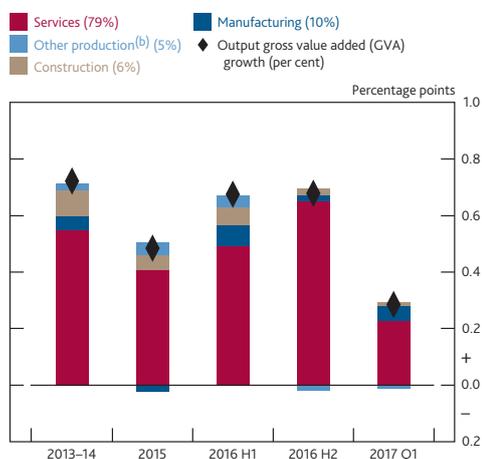


Sources: ONS and Bank calculations.

- (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 2017 Q2, to the right of the vertical line, is consistent with the MPC's central projection.  
 (c) The beige diamond shows Bank staff's central projection for the preliminary estimate of GDP growth in 2017 Q1 at the time of the February Report. The blue diamond shows the current staff projection for the preliminary estimate of GDP growth in 2017 Q2. 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 The slowing in Q1 output growth was driven by the service sector**

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



Sources: ONS and Bank calculations.

- (a) Chained-volume measures at basic prices. Figures in parentheses are weights in nominal GDP in 2013.  
 (b) Other production includes utilities, extraction and agriculture.

GDP growth slowed sharply in Q1 to 0.3%, according to the preliminary estimate, although growth is projected to be revised up to 0.4% in the mature estimate (Chart 2.1). That was 0.1 percentage points weaker than expected at the time of the February Report. GDP growth is projected to be stable at 0.4% in Q2, consistent with a preliminary estimate of 0.3%. The CBI and Markit/CIPS indicators of current activity growth rose in April but the measures of expected growth fell. Taken together with other indicators, such as weak new car registrations in April, these are consistent with broadly unchanged growth in Q2.

Much of the slowing in GDP growth in Q1 was concentrated in the service sector (Chart 2.2). Within that, growth in certain consumer-facing subsectors, such as retail trade and accommodation services, was particularly weak. That is consistent with a slowing in real household spending growth as higher import prices weigh on households' purchasing power (Section 2.1). Household consumption growth is projected to remain weak in coming quarters (Table 2.A) as rises in import prices continue to pass through.

In contrast, manufacturing output growth in Q1 remained at around its average pace over 2016. This is likely to have reflected support to the export sector from sterling's depreciation. Net trade is expected to continue to be supported by the depreciation and strength in global demand (Section 2.3). The supportive conditions facing the export sector should contribute towards a modest recovery in business investment growth in 2017 (Section 2.4).

### 2.1 Household spending and the housing market

Household consumption growth was robust at 0.7% in Q4 (Table 2.B). But weaker-than-expected output growth, together with the sharp fall in retail sales in Q1 (Chart 2.3), suggest that consumption growth slowed sharply in Q1 and by more than expected in February.

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

Developments anticipated in February during 2017 Q1–Q3	Developments now anticipated during 2017 Q2–Q4
<b>Cost of credit</b>	<b>Broadly unchanged</b>
• Credit spreads to be broadly flat.	• Credit spreads to be broadly flat.
<b>Consumer spending</b>	<b>Revised down</b>
• Quarterly growth in real post-tax household income to average 0%.	• Quarterly growth in real post-tax household income to average ¼% in Q2 and Q3, slowing further to 0% by the end of the year.
• Quarterly consumption growth to average around ½% in 2017 H1, slowing to ¼% in Q3.	• Quarterly consumption growth to average ¼%.
<b>Housing market</b>	<b>Revised down slightly</b>
• Mortgage approvals for house purchase to be around 71,000 per month, on average.	• Mortgage approvals for house purchase to be around 71,000 per month, on average.
• The average of the Halifax/Markit and Nationwide price indices to increase by 1¼% per quarter, on average.	• The average of the Halifax/Markit and Nationwide house price indices to increase by ½% per quarter, on average.
• Quarterly housing investment growth to average ¾%.	• Quarterly housing investment growth to average 1%.
<b>Business investment</b>	<b>Revised up</b>
• Business investment to fall by around ¼% per quarter, on average.	• Quarterly business investment growth to average 1%.
<b>Trade</b>	<b>Broadly unchanged</b>
• Net trade to provide a small boost to quarterly GDP growth.	• Net trade to provide a small boost to quarterly GDP growth.

**Table 2.B** Consumption was resilient but business investment fell in 2016Expenditure components of demand<sup>(a)</sup>

Percentage changes on a quarter earlier

	Averages							
	1998–2007	2008–09	2010–12	2013–14	2015	2016 H1	2016 Q3	2016 Q4
Household consumption <sup>(b)</sup>	0.9	-0.6	0.2	0.5	0.7	0.7	0.7	0.7
Private sector investment	0.7	-4.4	1.6	1.1	0.8	0.0	0.1	-0.1
of which, business investment <sup>(c)</sup>	0.6	-3.0	1.9	0.8	0.5	-0.2	0.4	-0.9
of which, private sector housing investment	0.8	-7.4	0.8	2.8	1.7	0.4	-0.4	1.6
Private sector final domestic demand	0.8	-1.3	0.6	0.7	0.7	0.6	0.6	0.6
Government consumption and investment <sup>(c)</sup>	0.8	0.9	-0.1	0.4	0.3	0.3	0.2	0.2
Final domestic demand	0.8	-0.8	0.4	0.6	0.6	0.5	0.5	0.5
Change in inventories <sup>(d)(e)</sup>	0.0	0.2	0.0	0.0	-0.2	0.0	-0.4	0.1
Alignment adjustment <sup>(e)</sup>	0.0	-0.1	0.0	0.1	-0.1	-0.1	0.6	-0.4
Domestic demand <sup>(f)</sup>	0.8	-0.8	0.4	0.8	0.1	0.5	1.8	-1.1
'Economic' exports <sup>(g)</sup>	1.2	-1.1	0.7	0.8	1.9	-0.8	-2.2	4.6
'Economic' imports <sup>(g)</sup>	1.4	-1.2	0.8	1.1	1.1	0.4	2.3	-1.0
Net trade <sup>(e)(g)</sup>	-0.1	0.0	0.0	-0.1	0.2	-0.4	-1.4	1.7
Real GDP at market prices	0.7	-0.7	0.4	0.7	0.4	0.4	0.5	0.7
Memo: nominal GDP at market prices	1.2	-0.2	0.9	1.0	0.5	1.3	0.6	1.5

(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.

Consumption growth is projected to remain weak in coming quarters (**Table 2.A**), driven by weak household income growth. In recent years, despite modest growth in average wages (Section 3), increases in employment pushed up aggregate income. Real income growth was also boosted by falls in food and energy prices (**Chart 2.4**). However, annual real labour income growth slowed over 2016 as that boost faded. It is projected to continue to slow over 2017 as rising import prices feed through to higher retail prices (Section 4).

While current income is an important determinant of spending, consumption is also affected by changes in the amount households save or borrow. The headline saving ratio fell from 5.3% in 2016 Q3 to 3.3% in Q4, its lowest level since the series began in 1963. As explained in the box on pages 16–17, however, much of this fall was driven by weakness in components of income that tend to be less relevant for households' spending decisions.<sup>(1)</sup> Some of these income components also tend to be volatile so the headline saving ratio is expected to have risen slightly in 2017 Q1.

How much income households choose to spend rather than save is likely to be influenced by their confidence in future income growth. The GfK measure of consumer confidence has remained a little above its historical average in recent months (**Chart 2.3**), suggesting some resilience in consumption growth in the near term.

In addition, the extent to which households finance their consumption by borrowing will depend on the cost and availability of consumer credit. Credit conditions have eased in recent years as bank funding costs have fallen (Section 1) and competition between lenders has intensified. Rates on £10,000 personal loans are currently around record lows (**Table 2.C**). And in the credit card market, the average interest-free period on credit card balance transfers has increased, while fees charged on balance transfers have fallen. This easing in credit conditions, together with an increase in demand for credit in 2016 as reported by lenders in the *Credit Conditions Survey (CCS)*, has been associated with a marked increase in consumer credit growth (**Chart 2.5**).<sup>(2)</sup>

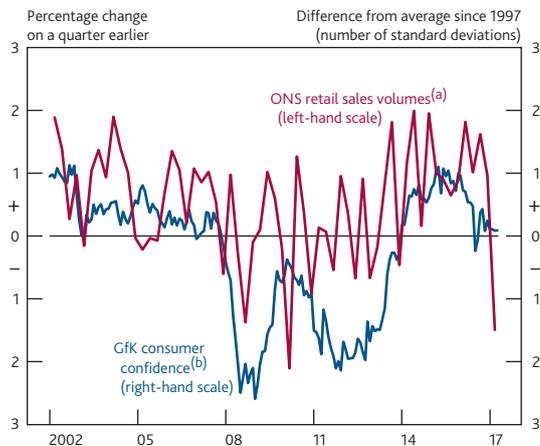
Annual growth in consumer credit slowed slightly in March, to 10.2% (**Chart 2.5**). While strong competition in a number of consumer credit markets appears to have continued, on balance lenders responding to the CCS expected availability to tighten in Q2. The Prudential Regulation Authority (PRA) has launched a review into the credit quality of new consumer lending by a cross-section of PRA-regulated lenders, and the

(1) The box on pages 16–17 also describes forthcoming revisions to the household saving ratio in *Blue Book 2017*.

(2) Structural changes in the consumer credit market — in particular the increased availability of dealership car finance in recent years — have also contributed to increased consumer credit growth. For more details, see Section 2.1 of the February 2017 Report; [www.bankofengland.co.uk/publications/Pages/inflationreport/2017/feb.aspx](http://www.bankofengland.co.uk/publications/Pages/inflationreport/2017/feb.aspx).

### Chart 2.3 Retail sales growth has fallen sharply but consumer confidence has held up

Retail sales volumes and consumer confidence



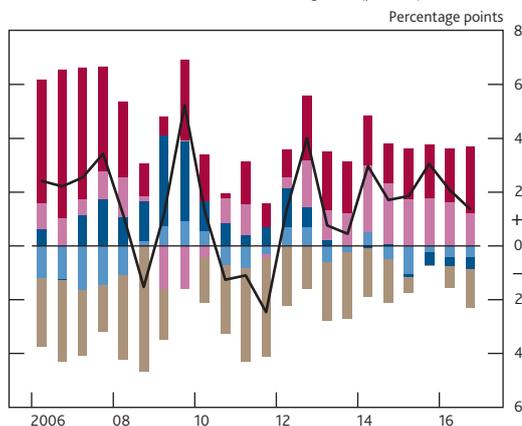
Sources: GfK (research carried out on behalf of the European Commission), ONS and Bank calculations.

- (a) Quarterly average of monthly data.  
 (b) Average of the net balances of respondents reporting that: their financial situation has got better over the past twelve months; their financial situation is expected to get better over the next twelve months; the general economic situation has got better over the past twelve months; the general economic situation is expected to get better over the next twelve months; and now is the right time to make major purchases such as furniture or electrical goods.

### Chart 2.4 The boost to real income growth from past falls in import prices has faded

Contributions to annual real post-tax labour income growth<sup>(a)</sup>

- Nominal labour income per head<sup>(b)</sup>
- Employment
- Benefits and transfers per head<sup>(c)</sup>
- Income tax per head
- Prices<sup>(d)</sup>
- Real post-tax labour income growth (per cent)<sup>(e)</sup>



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

Financial Conduct Authority has launched a review into its rules and guidance on creditworthiness assessments used in the consumer credit market.

One indication that consumption growth may slow further in Q2 is the sharp fall in private new car registrations in April. Some of that fall is likely to reflect the impact of changes to vehicle tax rates that came into effect in April, leading to some purchases being brought forward. But the number of car registrations in the three months to April was 2.8% lower than a year earlier, and the fall in April is likely to weigh on consumption growth in Q2.

Activity in the housing market can also be correlated with consumption growth. As explained in the box on pages 18–19 of the November 2016 *Report*, this is probably because the decisions about whether to buy a house and how much to consume tend to be driven by common factors such as income growth and confidence. Rises in house prices can also affect spending directly by raising the value of homeowners' equity, which they can then use as collateral against which to borrow, although this effect is estimated to be small.

The outlook for the housing market is slightly weaker than expected in February (**Table 2.A**). Annualised house price inflation fell to 0.7% in the three months to April, according to the average of the Halifax/Markit and Nationwide indices (**Chart 2.6**). House price inflation is expected to slow further in the near term, before recovering further ahead. Mortgage approvals were broadly unchanged in Q1, a little lower than expected three months ago. And the number of mortgage completions remained around 2% lower than a year ago in February, primarily due to continued weakness in buy-to-let completions. In contrast, first-time buyer completions increased. Approvals are projected to rise only slightly in the near term.

The outlook for the housing market will also depend on the cost and availability of mortgages. Mortgage interest rates have fallen markedly in recent years to historical lows (**Table 2.C**). That should continue to support housing activity. Secured lending growth, however, slowed slightly in March and remains substantially lower than prior to the crisis (**Chart 2.5**).

Activity in the housing market will also directly affect GDP through housing investment. Around a quarter of housing investment reflects spending on services associated with property transactions, while the remainder comprises new building and improvements to existing properties. Private sector housing investment fell in 2016 Q2 and Q3 but rose by 1.6% in Q4 (**Table 2.B**), driven mostly by a rise in new dwellings investment. Housing starts have increased sharply (**Chart 2.7**), which is likely to feed through to higher housing investment in coming quarters as those homes are built.

**Table 2.C Household borrowing conditions have eased in recent years**

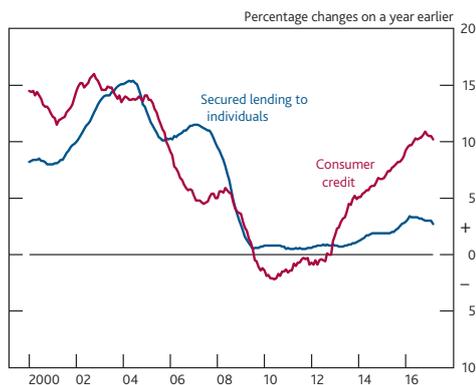
Average interest rates on household lending and other terms on credit card lending

	Monthly averages					2017 April
	2005–08	2009–12	2013–15	2016	2017 Q1	
<b>Interest rates (per cent)<sup>(a)</sup></b>						
Two-year fixed-rate mortgage (75% LTV)	5.4	3.7	2.3	1.7	1.4	1.4
Two-year fixed-rate mortgage (90% LTV)	n.a.	6.0	4.1	2.6	2.5	2.5
£10,000 unsecured loan	7.8	9.0	5.3	4.1	3.7	3.7
£5,000 unsecured loan	10.0	12.7	9.7	9.2	9.3	9.5
<b>Other terms</b>						
Average 0% balance transfer term (months) <sup>(b)</sup>	8.2	12.4	19.6	25.7	29.6	n.a.
Average balance transfer fee (per cent) <sup>(b)</sup>	2.4	3.0	3.1	2.7	2.7	n.a.

Sources: Moneyfacts Group and Bank calculations.

- (a) The Bank's quoted interest rate series are currently compiled using data from up to 19 UK monetary financial institutions (MFIs). Data are non seasonally adjusted. Sterling-only end-month quoted rates.  
 (b) The average 0% balance transfer term is the average of each lender's maximum 0% balance transfer term available. The average balance transfer fee applies to products with these terms. Longer transfer terms and lower fees imply easier credit conditions. Whole market data, excluding values of zero. End-month data.

**Chart 2.5 Household lending growth has slowed slightly**  
Household borrowing<sup>(a)</sup>



- (a) Monthly data. 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.

**Chart 2.6 House price inflation has slowed but housing market activity has been broadly stable**

House prices and mortgage approvals for house purchase



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

- (a) Average of the Halifax/Markit and Nationwide house price series.

## 2.2 Government spending

The MPC's forecasts are conditioned on the Government's tax and spending plans detailed in the Spring 2017 *Budget*. Under these plans, the fiscal consolidation is set to continue, but the pace of consolidation is slightly slower than in the 2016 Autumn Statement. That change provides a small boost to GDP over the forecast period compared with the projections in February. Under the Charter for Budget Responsibility, the Government has a fiscal mandate to reduce cyclically adjusted net borrowing to below 2% of GDP by 2020/21, supplemented by a target for public sector net debt as a percentage of GDP to be falling in 2020/21 and for some welfare spending to be subject to a cap of £126 billion in 2021/22.

## 2.3 Net trade and the current account

Sterling has risen by 2½% since the February *Report*, but it is 16% below its peak in November 2015 (Section 1). That depreciation should support net trade through two key channels. First, the lower value of sterling should prompt new and existing exporters to expand production. Second, higher import prices should encourage UK households and businesses to substitute towards domestically produced goods and services and away from imported goods and services. There is uncertainty as to the timing and size of both of these effects, however, and the extent of the boost to net trade will depend partly on how companies anticipate and respond to Brexit.<sup>(1)</sup>

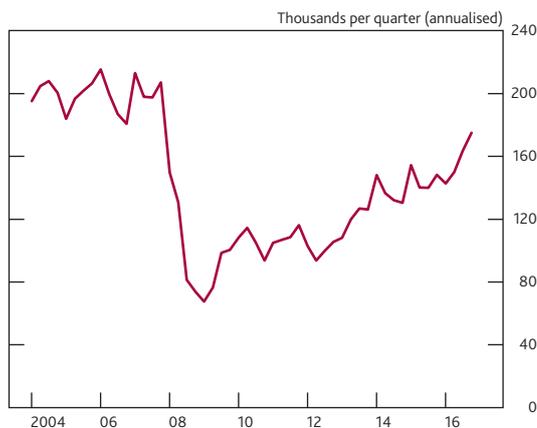
Bank staff estimate that underlying net trade added around 0.6 percentage points to GDP growth in 2016 Q4, more than expected in February. The headline net trade contribution was greater (Table 2.B), but mainly reflected a large export of non-monetary gold. This is a volatile component of UK trade, reflecting activity in the London gold bullion market, and has no impact on aggregate demand; movements in non-monetary gold are offset by movements in private sector investment in valuables.<sup>(2)</sup>

### Exports

Within net trade, UK exports increased by 2.6% in 2016 Q4, excluding the impact of non-monetary gold and other valuables. That was broadly in line with expectations at the time of the February *Report*. UK exports are projected to grow modestly in 2017, but by a little more than projected in February, consistent with the pickup in survey indicators of export orders and deliveries in Q1 (Chart 2.8).

- (1) For more details, see the box on pages 21–22 of the November 2016 *Report*; [www.bankofengland.co.uk/publications/Pages/inflationreport/2016/nov.aspx](http://www.bankofengland.co.uk/publications/Pages/inflationreport/2016/nov.aspx).  
 (2) For more details, see 'A brief explanation of non-monetary gold', ONS National Accounts Articles, March 2017, available at [www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccountsarticles/abriefexplanationofnonmonetarygoldinnationalaccounts](http://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccountsarticles/abriefexplanationofnonmonetarygoldinnationalaccounts).

**Chart 2.7 Housing starts picked up sharply in 2016 H2**  
Housing starts<sup>(a)</sup>

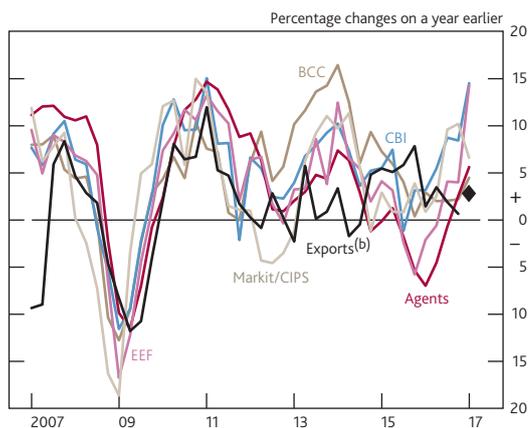


Sources: Department for Communities and Local Government and Bank calculations.

(a) Number of permanent dwellings in the United Kingdom started by private enterprises up to 2016 Q2. Data for Q3 and Q4 have been grown in line with permanent dwelling starts by private enterprises in England. Data are seasonally adjusted.

**Chart 2.8 Surveys point to a pickup in export growth in 2017**  
UK exports and survey indicators of export growth<sup>(a)</sup>

UK exports and survey indicators of export growth<sup>(a)</sup>



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

(a) BCC measure is the net percentage balance of manufacturing and service companies reporting that export orders and deliveries increased on the quarter; data are non seasonally adjusted. CBI measure is the average of the net percentage balance of manufacturing companies reporting that export orders and deliveries increased on the quarter, and that their present export order books are above normal. Markit/CIPS measure is the net percentage balance of manufacturing companies reporting that export orders increased this month compared with the previous month; quarterly average of monthly data. Agents measure is manufacturing companies' reported annual growth in production for sales to overseas customers over the past three months; Q1 data are for February. EEF is the average of the net percentage balances of manufacturing companies reporting that export orders increased over the past three months and that export orders increased for the next three months. Indicators are scaled to match the mean and variance of four-quarter export growth since 2000.

(b) Chained-volume measure, excluding the impact of MTIC fraud. The diamond shows Bank staff's projection for Q1.

Both the past depreciation in sterling and strength in global demand (Section 1) are likely to support UK export growth in coming quarters. The past depreciation of sterling may lead exporters to reduce some of their foreign currency prices, in which case their competitiveness and demand from abroad should increase. Alternatively, to the extent that exporters maintain their prices in foreign currency terms, their profit margins will be supported in sterling terms, which should support expansion in their production capacity. Since the end of 2015, export prices in sterling terms have risen by 12%. The outlook for export growth, however, also depends on the eventual consequences of Brexit for the United Kingdom's trading arrangements and how companies anticipate and respond to these (Section 5).<sup>(1)</sup>

### Imports

Excluding the impact of non-monetary gold and other valuables, staff estimate that UK imports rose by 0.4% in Q4. UK imports are expected to grow modestly in 2017, though by a little more than expected in February. When combined with the expected near-term increase in export growth, net trade is projected to provide a small boost to overall demand in 2017, broadly as anticipated in February (Table 2.A).

### Current account

The current account reflects the balance of nominal trade flows and other payments between the United Kingdom and the rest of the world. The current account deficit narrowed in Q4 to 2.4% of GDP (Chart 2.9), compared with 4.4% expected in February. That narrowing mainly reflected a reduction in the trade deficit, which was driven in part by erratic factors such as the trade in non-monetary gold described above, and so is likely to partly unwind in 2017 Q1. The deficit on primary income — the net value of investment income received by UK residents — also narrowed. This narrowing was partly due to an increase in the sterling value of earnings on UK foreign direct investment, largely reflecting the depreciation in sterling over the past 18 months.

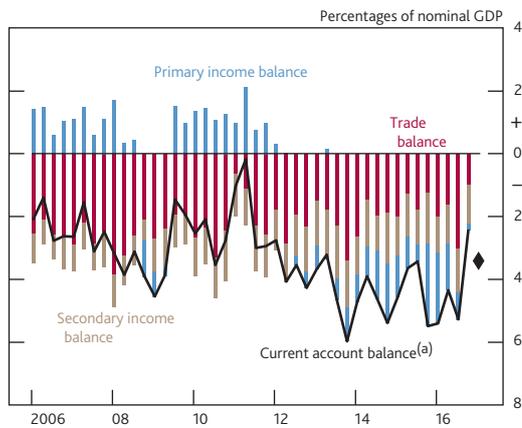
The extent to which the United Kingdom can continue to run a current account deficit will partly reflect the net international investment position (NIIP) — the stock of UK foreign assets less the liabilities owed to other countries. Since UK residents hold more foreign currency assets than liabilities, sterling's depreciation will have contributed to an improvement in the NIIP. According to the ONS, the NIIP rose to 24% of GDP in Q4, the highest since records began in 1977.

The ONS has announced changes to the measurement of the current account deficit ahead of *Pink Book 2017*, which will lead to an increase in the estimated size of the deficit.<sup>(2)</sup> The

(1) For more details, see Broadbent, B (2016), 'Brexit and the pound'; [www.bankofengland.co.uk/publications/Pages/speeches/2017/969.aspx](http://www.bankofengland.co.uk/publications/Pages/speeches/2017/969.aspx).

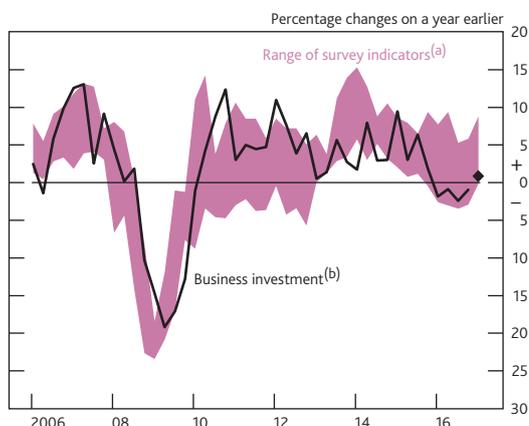
(2) For more details, see [www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccountsarticles/impactofbluebook2017changesonthesectorandfinancialaccounts1997to2012](http://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccountsarticles/impactofbluebook2017changesonthesectorandfinancialaccounts1997to2012).

**Chart 2.9** The current account deficit narrowed in Q4 but is expected to have widened slightly in Q1  
UK current account



(a) The diamond shows Bank staff's projection for Q1.

**Chart 2.10** Indicators of businesses' investment intentions picked up in Q1  
Business investment and survey indicators of investment intentions



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

(a) Range includes BCC, CBI, EEF, Markit/CIPS and Agents measures of business investment intentions, scaled to match the mean and variance of four-quarter business investment growth since 2000. EEF and CBI measures are the net percentage balances of respondents reporting that they have increased planned investment in plant and machinery for the next twelve months. BCC measure is the net percentage balance of respondents reporting that they have increased planned investment in plant and machinery; data are non seasonally adjusted. Markit/CIPS measure is the net percentage balance of respondents reporting that new investment orders in the past month were higher than in the previous month (quarterly average of monthly data). Agents measure shows companies' intended changes in investment over the next twelve months. The sectors within the CBI, BCC and Agents measures are weighted together using shares in real business investment. EEF and Markit/CIPS measures are for the manufacturing sector.

(b) Chained-volume measure. Data are to 2016 Q4 and adjust for the transfer of the nuclear reactors from the public corporation sector to central government in 2005 Q2. The diamond shows Bank staff's projection for Q1.

majority of the increase is due to higher estimates for the amount of interest being paid abroad on UK corporate bonds. Provisional ONS estimates suggest that the current account deficit, as a proportion of GDP, is likely to be revised around 0.5 percentage points wider on average between 1997 and 2012. Figures for more recent years will be published in August.

## 2.4 Business investment

Business investment fell over 2016 as a whole and by 0.9% in Q4 (Table 2.B). The Bank's Agents report that heightened uncertainty was the primary cause, in part as companies postponed larger investment decisions until they became more certain about the outlook following the Brexit vote. But other factors, including falls in extraction sector investment following the decline in oil prices during 2014–15 and weaker global growth prospects in the first half of 2016, also contributed to the fall. As a consequence of the low level of investment in recent years, growth in the total capital stock per worker — the resources and equipment available to produce output — has remained subdued (Section 3).

Most survey measures of investment intentions, however, picked up slightly in 2017 Q1 (Chart 2.10). And according to the latest *Deloitte CFO Survey*, the net balance of respondents who are prioritising expansionary strategies has increased. As such, business investment is expected to have grown by 0.8% in the four quarters to Q1. The pickup in investment intentions may partly reflect the resilience in UK demand in 2016 (Table 2.B). And the combined impact of the strength in world demand and the depreciation in sterling (Section 2.3) will have increased exporters' desire to invest. Furthermore, the rate of return on capital as measured by the ONS remains relatively high.

Corporate credit conditions are also likely to be supporting business investment. The cost of issuing corporate bonds has fallen slightly since February (Section 1), while interest rates on new and outstanding business loans have been broadly unchanged, having fallen following the monetary policy measures announced in August. Lenders responding to the CCS expected the cost and availability of credit for businesses to remain broadly unchanged in 2017 Q2. Despite this stability in credit conditions, however, net external finance raised was slightly lower in Q1 than in 2016 Q4 (Table 2.D).

Set against that support, uncertainty surrounding the United Kingdom's future trading arrangements is likely to weigh on firms' investment intentions in coming years. For example, to the extent that the fall in sterling reflects the likelihood that the costs of exporting for some businesses will go up, firms may choose to hold off investment decisions until they become more certain about the outlook. The Bank's Agents report that a number of exporters and foreign-owned

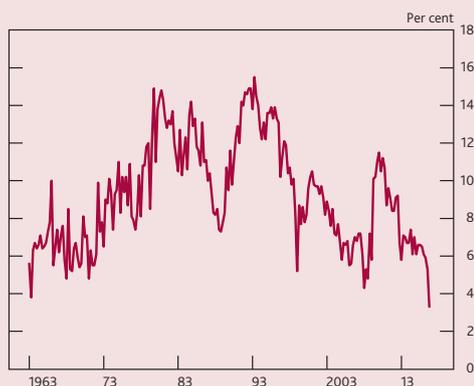
## Understanding the household saving ratio

Household spending is the largest single component of demand. It is determined not only by how much income people receive but also how much of that income they save. For any individual, those choices are likely to vary over their lifetime. For example, those near the start of their working life, when incomes tend to be lower, are more likely to borrow to supplement their income; then, as their income rises, subsequently to save some of it or repay that borrowing. But cyclical factors also tend to affect saving decisions, including the cost of borrowing and people's confidence about the future (Section 2.1).

One summary measure of those decisions is the aggregate saving ratio, which shows saving relative to total household income. Changes in that ratio can indicate whether households are collectively saving more or less than in the past and are one possible indicator of whether current growth in consumption is likely to be sustained. According to the latest published data, the saving ratio fell to 3.3% in 2016 Q4 — its lowest since the series began in 1963 (**Chart A**).

As this box sets out, however, income is made up of many components, not all of which may be important for current spending decisions. In addition, estimates of income can often be subject to revision, including those recently announced by the ONS as part of *Blue Book 2017* described below.

**Chart A The household saving ratio has fallen**  
Household saving ratio<sup>(a)</sup>



(a) Saving as a percentage of household post-tax income.

### Accounting for changes in the saving ratio

The majority of income for many households comes from wages, salaries or self-employment income. Total labour income, after taxes, currently accounts for a little over half of total household income as measured by the ONS.

Other people receive a substantial proportion of their income from government benefits or private pensions, which together

account for a further quarter of total household income. All these types of income tend to be easily accessible and fairly regular, so probably play a major role in spending decisions.

While most households hold financial investments indirectly as part of their pension wealth, some also directly hold financial investments, which earn an income in terms of dividends or interest payments. And many will receive interest payments on deposit accounts and/or pay interest on debt. These categories form part of 'non-labour income'. They may be a significant determinant of spending for some, although for others they may be less important for day-to-day spending — for example investors may automatically reinvest dividends.

The remainder of non-labour income is unlikely to be relevant for current spending decisions, since households cannot generally access it directly. For homeowners, the ONS attempts to capture the implicit 'income' or value they get from living in their house. This is matched by an equal amount of consumption so saving out of this is zero by construction. In addition, non-labour income includes the pension contributions made by employers, as well as the investment income earned on behalf of households by pension funds and insurance companies, net of the income paid out to existing retirees. These types of income may be less relevant for current spending decisions; nonetheless they may affect spending in the long run, for example when people retire.

Over 2016, much of the fall in the aggregate saving ratio was driven by falls in non-labour income. In particular, investment income earned on behalf of households by pension funds and insurance companies fell sharply in Q4. By contrast, the sum of labour and benefit income increased slightly. More generally, over the past two decades, labour and benefit income has risen relative to consumption, while the ratio of total household income to consumption has fallen (**Chart B**). In other words, it is changes in non-labour income that have driven the saving ratio lower over this period. But as explained below, forthcoming revisions as part of *Blue Book 2017* are likely to mean that the saving ratio has fallen by less than the current data suggest.

### Forthcoming changes in *Blue Book 2017*

The ONS has announced changes to the measurement of household income ahead of *Blue Book 2017*. These are likely to have substantial implications for the aggregate household saving ratio.<sup>(1)</sup> Provisional estimates suggest that the saving ratio will be revised up by 0.8 percentage points on average between 1997 and 2012 (**Chart C**). The size of these revisions

(1) For more details, see [www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccounts/articles/impactofbluebook2017changesonthesectorandfinancialaccounts1997to2012](http://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccounts/articles/impactofbluebook2017changesonthesectorandfinancialaccounts1997to2012).

**Chart B Labour and benefit income has increased relative to consumption over the past two decades**

Household income relative to consumption



Sources: ONS and Bank calculations.

(a) Post-tax labour and benefit income is defined as wages and salaries plus mixed income, plus general government benefits and private pension receipts, minus income tax and National Insurance contributions.

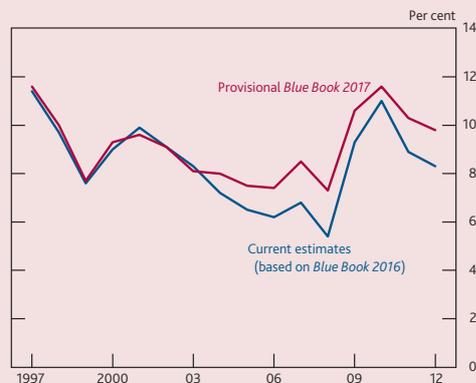
(b) Calculated using household post-tax income.

increases over time, however, such that the saving ratio is estimated to have been 1.5 percentage points higher in 2012.

The majority of the revision to the aggregate saving ratio results from a switch to using HMRC tax data to estimate dividend income, part of 'non-labour income'.<sup>(1)</sup> These data suggest that there has been a marked rise over the past decade in the number of self-employed workers who have chosen to incorporate their businesses, that had not previously been captured in the ONS income data. In addition to paying themselves as employees, many of these individuals also take income in the form of dividends from their companies. Including this dividend income has raised the estimated level of total household income, which — since household consumption is unchanged — pushes up the saving ratio. Accordingly, this increase in household income is estimated to have been offset by a decrease in the corporate sector financial balance.

**Chart C The household saving ratio will be revised up in Blue Book 2017**

Current household saving ratio and provisional Blue Book 2017 estimates<sup>(a)</sup>



(a) Annual estimates. The latest estimates are for the household and NPISH sectors, while the provisional Blue Book 2017 estimates are for the household sector only (see footnote (1) for more details).

Figures for more recent years will be published in August 2017. Since an increasing number of the self-employed have become incorporated after 2012, all else equal it is likely that household income will be revised more significantly in recent years. If so, the new estimates are likely to show that the saving ratio has fallen less sharply. And, because dividend income is likely to be an important source of income for self-employed households, these revisions are likely to mean that this element of non-labour income has become increasingly relevant for household consumption over time.

(1) A number of other small changes have been made to the measurement of income in the household and non-profit institutions serving households (NPISH) sectors (the NPISH sector includes universities, trade unions, political parties, further education colleges and most charities). But these changes are far less significant than the change to dividend income described in this box. Currently, estimates for the household and NPISH sectors are presented jointly in the National Accounts, but these will be separated in Blue Book 2017.

**Table 2.D Net external finance raised by UK companies was slightly lower in Q1**

Net external finance raised by UK private non-financial corporations<sup>(a)</sup>

£ billions

	Quarterly averages						
	2003–08	2009–12	2013–14	2015	2016 H1	2016 H2	2017 Q1
Loans	11.6	-6.2	-1.5	1.4	6.0	2.3	1.4
Bonds <sup>(b)(c)</sup>	2.9	3.3	3.1	3.1	5.2	3.1	3.2
Equities <sup>(b)</sup>	-2.1	1.3	0.2	1.1	0.7	1.2	1.7
Commercial paper <sup>(b)</sup>	0.0	-0.4	-0.3	1.5	-0.6	-1.1	-0.2
<b>Total<sup>(d)</sup></b>	<b>12.9</b>	<b>-1.9</b>	<b>1.6</b>	<b>6.3</b>	<b>10.1</b>	<b>6.1</b>	<b>4.5</b>

(a) Includes sterling and foreign currency funds from UK monetary financial institutions and capital markets.

(b) Non seasonally adjusted.

(c) Includes stand-alone and programme bonds.

(d) As component series are not all seasonally adjusted, the total may not equal the sum of its components.

firms remain cautious about larger investment decisions due to uncertainty around future UK trading arrangements. In addition, the sterling depreciation is likely to have raised the cost of business investment: with the exception of buildings (around one quarter of investment spending), investment is relatively import-intensive.

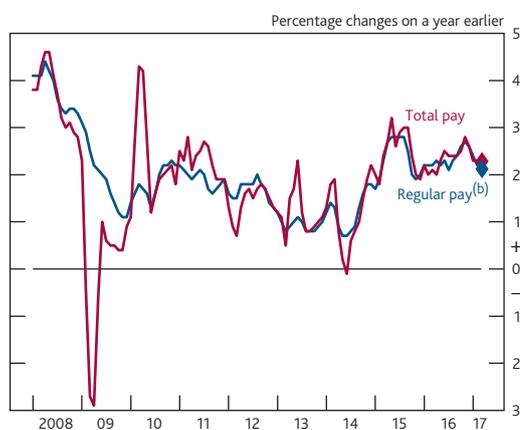
Overall, the near-term outlook for business investment is judged to be somewhat stronger than projected in February (Table 2.A). Nevertheless, growth in the capital stock is projected to remain subdued (Section 5).

# 3 Supply and the labour market

Wage growth has remained modest in recent months, and employment growth has been subdued. While unemployment has continued to fall, a little slack is judged to remain in the economy. And although productivity growth picked up in 2016, it is expected to remain subdued over 2017. Consistent with this, wage growth is projected to remain modest in the near term, before recovering further ahead.

**Chart 3.1 Pay growth has remained subdued**

Average weekly earnings: total and regular pay<sup>(a)</sup>



(a) Diamonds show Bank staff projections for 2017 Q1, based on data to February 2017.  
(b) Whole-economy total pay excluding bonuses and arrears of pay.

**Table 3.A Survey indicators of pay growth are mixed**

Indicators of wage growth

	Averages						
	2002–07	2010–12	2014	2015	2016 H1	2016 H2	2017 Q1
<b>Survey indicators of pay growth</b>							
CBI <sup>(a)</sup>	n.a.	1.6	2.0	2.3	2.2	2.3	2.7
Agents <sup>(b)</sup>	2.4	1.3	1.9	2.0	2.0	1.9	1.9
CIPD <sup>(c)</sup>	n.a.	1.2	2.0	1.8	1.4	1.3	n.a.
BCC <sup>(d)</sup>	29.1	19.9	23.4	25.6	28.8	18.0	23.0
<b>Survey indicators of pay growth for new recruits</b>							
REC <sup>(e)</sup>	56.7	52.4	63.1	61.9	58.5	55.7	58.8

Sources: Bank of England, BCC, CBI, CBI/PwC, Chartered Institute of Personnel and Development (CIPD), KPMG/REC/IHS Markit and Bank calculations.

- (a) Measures of expected wages for the year ahead. Produced by weighting together balances for manufacturing, distributive trades, business/consumer/professional services and financial services using employee job shares. Data only available since 2008.  
(b) Quarterly averages for manufacturing and services weighted together using employee job shares. The scores refer to companies' labour costs over the past three months compared with the same period a year earlier. Scores of -5 to 5 represent rapidly falling and rapidly rising costs respectively, with zero representing no change.  
(c) Pay increase intentions excluding bonuses over the coming year. Data only available since 2012.  
(d) Net percentage balance of companies currently facing pressures to raise prices due to pay settlements. Produced by weighting together survey indices for pay settlements for services and non-services using employee job shares.  
(e) Produced by weighting together survey indices for the pay of permanent and temporary new placements using employee job shares; quarterly averages. A reading above 50 indicates growth on the previous month and those below 50 indicate a decrease. The greater the divergence from 50, the greater the rate of change signalled by the index.

## 3.1 Wages

The outlook for domestic cost pressures, and consequently inflation (Section 4), will depend in part on how wages develop. Over recent years, wage growth has remained below past averages, with whole-economy pay growth likely to have slowed to 2.3% in 2017 Q1 (Chart 3.1). That is weaker than the 2.9% projected in the February Report and reflects slower-than-projected growth in both regular pay and bonuses. Wage growth can be volatile, however, so it is too early to judge with certainty how persistent the recent slowing is likely to be. While some survey indicators point to continued subdued wage growth in the near term, others suggest a pickup (Table 3.A).

Over time, a key determinant of wage growth is the pace of productivity growth (Section 3.3). It can also be affected by cyclical factors such as the degree of slack in the economy (Section 3.2). One key indicator of slack is the unemployment rate. While unemployment has continued to fall in recent months (Chart 3.2), that has been accompanied by a rise in inactivity in the labour market and so overall this may not represent much of a reduction in slack. Employment growth has remained subdued, although companies' reported employment intentions and the high level of vacancies suggest it is likely to recover somewhat over 2017 (Section 3.2).

Wage growth has remained modest despite the steady fall in the unemployment rate in recent years. In the February Report, the MPC set out its judgement that subdued wage growth was likely, in part, to reflect a lower equilibrium rate of unemployment than in the past. This means that unemployment may have to fall further before wage growth and labour cost pressures return to more normal levels. In addition, the relationship between slack and wage growth can vary over time. For example, it is possible that some of the recent weakness is a consequence of companies' uncertainty about the outlook, with some unwilling to raise wages at a faster pace until they have more clarity about their future costs and markets.

**Chart 3.2 Unemployment is expected to remain broadly flat in 2017 Q2**

Unemployment rate and Bank staff's near-term projection<sup>(a)</sup>



(a) The beige diamonds show Bank staff's central projections for the headline unemployment rate for the three months to December 2016, January, February and March 2017, at the time of the February Report. The red diamonds show the current staff projections for the headline unemployment rate for the three months to March, April, May and June 2017. 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.

In the near term, wages may also be affected by the increase in external costs facing companies as a result of the depreciation in sterling since late 2015 (Section 4). Companies may try to offset higher external cost growth by reducing wage growth. In a survey by the Bank's Agents in January, companies, on balance, reported that limits in their ability to pass on external cost increases to prices were expected to dampen pay growth over 2017. Acting in the opposite direction, however, households could become more active in pushing for higher wage growth in response to the reduction in their purchasing power, as companies pass through the rise in external costs to higher consumer prices.

Alongside changes in external costs, increases in other labour costs could push down wage growth slightly, as companies may seek to limit growth in their overall labour costs. Although small in terms of overall costs, the continued phasing in of automatic enrolment in workplace pension schemes is likely to push up non-wage labour costs. The introduction of the Apprenticeship Levy may also lead to higher staff-related costs for some companies.

Four-quarter wage growth is expected to fall a bit further in Q2, as the higher rate of growth at the start of 2016 drops out of the annual comparison. Further ahead, wage growth is projected to rise, although it is likely to remain subdued given modest productivity growth (Section 5).

## 3.2 Labour market developments

### Labour demand

Changes in the demand outlook for goods and services tend to be reflected in companies' labour demand. Companies facing higher output demand, for example, can adjust their labour input either by increasing the size of their workforce or the hours that their existing employees work. Increased demand for labour should, in turn, give workers greater capacity to demand higher wages.

Overall labour demand appears to have increased recently, with total hours worked rising sharply. That largely reflected a rise in the average number of hours worked per person. In the three months to February, average hours worked rose to their highest level since 2002, and are expected to have remained around this level in Q1 as a whole (Chart 3.3). That is markedly higher than anticipated in the February Report. By contrast, growth in the number of people employed remained somewhat subdued and much slower than in 2016 H1 (Table 3.B), although broadly in line with expectations in February.

To some extent, the slowing in employment growth over the past year is likely to reflect a continued normalisation in the labour market as unemployment has fallen and recruitment difficulties have returned to around past average levels

**Chart 3.3 Average hours worked appear to have risen sharply in 2017 Q1**

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



Sources: Labour Force Survey and Bank calculations.

(a) Diamond shows Bank staff projection for 2017 Q1, based on data to February.

**Table 3.B Employment growth has slowed in recent quarters**  
Employment growth, vacancies, redundancies and survey indicators of recruitment difficulties

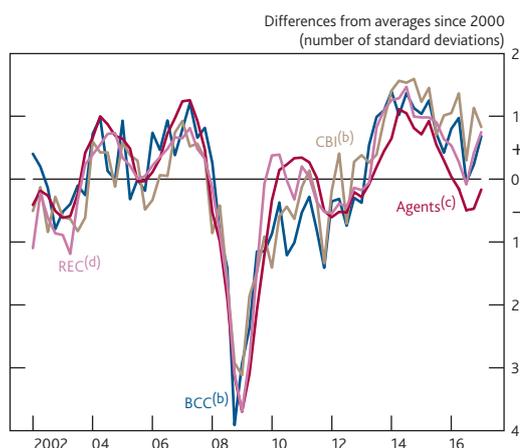
	Quarterly averages							
	2000–07	2008–09	2010–12	2013–14	2015	2016 H1	2016 H2	2017 Q1
<b>Change in employment (thousands)<sup>(a)</sup></b>	70	-59	67	130	149	108	44	39
<i>of which, employees<sup>(a)</sup></i>	55	-67	32	106	112	50	32	30
<i>of which, self-employed and other<sup>(a)(b)</sup></i>	16	7	35	24	37	58	12	9
<b>Vacancies to labour force ratio<sup>(c)</sup></b>	2.09	1.70	1.48	1.85	2.23	2.25	2.25	2.30
<b>Redundancies to employees ratio<sup>(d)</sup></b>	0.54	0.68	0.51	0.39	0.35	0.35	0.37	0.33
<b>Surveys of recruitment difficulties<sup>(e)</sup></b>								
Agents <sup>(f)</sup>	1.5	-2.5	-1.1	0.4	2.0	1.4	1.2	1.4
BCC <sup>(g)</sup>	61	55	51	57	66	67	56	61
CBI, skilled <sup>(h)</sup>	27	15	16	23	34	34	30	32
CBI, other <sup>(h)</sup>	8	2	2	3	8	7	9	6

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

- (a) Changes relative to the previous quarter. Figures for 2017 Q1 are for the three months to February.  
 (b) Other comprises unpaid family workers and those on government-supported training and employment programmes classified as being in employment.  
 (c) Vacancies as a percentage of the workforce, calculated using rolling three-month measures. Excludes vacancies in agriculture, forestry and fishing. Series begins in 2001 Q2. Figure for 2017 Q1 shows vacancies in the three months to March relative to the size of the labour force in the three months to February.  
 (d) Redundancies as a percentage of total LFS employees, calculated using rolling three-month measures. Figure for 2017 Q1 is for the three months to February.  
 (e) Measures for the Bank's Agents (manufacturing and services), the BCC (non-services and services) and CBI (manufacturing, financial services, business/consumer/professional services) are weighted together using employee job shares from Workforce Jobs. The BCC data are non seasonally adjusted. Agents data are last available observation for each quarter.  
 (f) The scores are on a scale of -5 to +5, with positive scores indicating greater recruitment difficulties in the most recent three months compared with the situation a year earlier.  
 (g) Percentage of respondents reporting recruitment difficulties over the past three months.  
 (h) Balances of respondents expecting skilled or other labour to limit output/business over the next three months (in the manufacturing sector) or over the next twelve months (in the financial services and business/consumer/professional services sectors).

**Chart 3.4 Employment intentions have recovered somewhat**

Survey indicators of employment intentions<sup>(a)</sup>



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

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

(Table 3.B). But some of that slowing may also reflect the effects of heightened uncertainty and the anticipation of a more subdued demand outlook following the vote to leave the European Union.

Companies' employment intentions softened following the EU referendum last summer but have since recovered somewhat (Chart 3.4). Moreover, the number of vacancies — a key indicator of hiring — increased in Q1, while the number of redundancies has drifted lower (Table 3.B). Consistent with that, employment growth is projected to recover somewhat in coming quarters, albeit remaining below the very strong rates in 2013–15, when slack in the labour market was being absorbed. Alongside that, average hours worked are expected to fall back gradually (Table 3.C).

### Labour supply and slack in the labour market

One influence on wage growth is the balance between labour demand and labour supply, or the degree of slack in the labour market. An important indicator of slack is the unemployment rate, which fell to 4.7% in the three months to February (Chart 3.2). This was a little lower than expected at the time of the February Report. Within this, the long-term unemployment rate, which has accounted for much of the decline in overall unemployment in recent quarters, has now fallen to around its pre-crisis average rate (Chart 3.5). Shorter-term unemployment rates have remained broadly stable, at a little below pre-crisis levels.

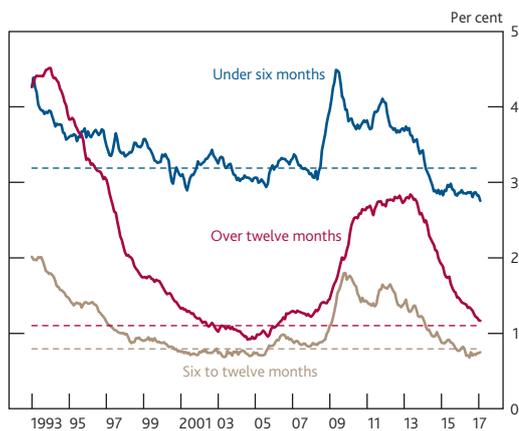
As set out in the box on pages 18–20 of the February Report, the MPC judges that the equilibrium unemployment rate — the rate to which unemployment needs to fall in order for wage growth and labour cost pressures to be sufficient to keep inflation at target — is likely to be around 4½%. However, there remains significant uncertainty around the equilibrium rate and there are a range of views among MPC members. Bank staff estimate that the unemployment rate is likely to be broadly stable in the near term (Chart 3.2), at close to its equilibrium rate.

While unemployment represents those who are actively looking for a job, on average just as many people move into employment who had previously reported they were not actively seeking work, such as students. As a result, changes in inactivity may also affect the degree of slack in the labour market. The fall in the unemployment rate in recent months was accompanied by a rise in inactivity, such that the participation rate — the proportion of people who report they are actively looking for work — fell (Chart 3.6). As such, participation is now judged to be slightly below its equilibrium rate.

The equilibrium participation rate is projected to remain stable in the near term, reflecting two large but broadly offsetting factors. The rising average age of the population is likely to

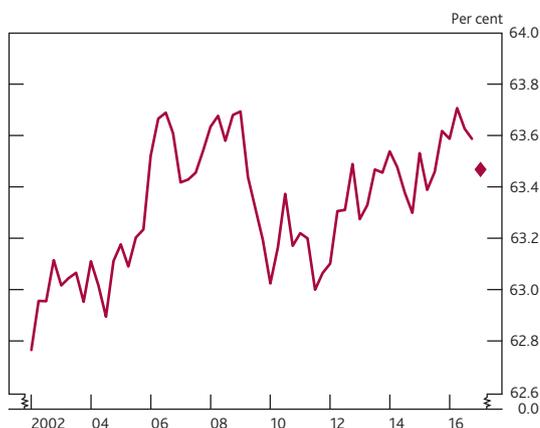
**Table 3.C** Monitoring the MPC's key judgements

Developments anticipated in February during 2017 Q1–Q3	Developments now anticipated during 2017 Q2–Q4
<b>Unemployment</b>	<b>Revised down</b>
• Unemployment rate to rise to 5%.	• Unemployment rate to remain at its current level of 4¾%.
<b>Participation</b>	<b>Revised down slightly</b>
• Participation rate to remain around its current level of just above 63½%.	• Participation rate to remain around its current level of 63½%.
<b>Average hours</b>	<b>Revised up</b>
• Average weekly hours worked to be broadly flat.	• Average weekly hours worked to fall slightly to just below 32¼.
<b>Productivity</b>	<b>Revised up slightly</b>
• Quarterly hourly labour productivity growth slowing to just above ¼%.	• Quarterly hourly labour productivity growth to average slightly below ½%.
<b>Earnings growth</b>	<b>Revised down</b>
• Four-quarter growth in AWE regular pay to reach 3%.	• Four-quarter growth in AWE regular pay to be 2¼% by Q4.

**Chart 3.5** Long-term unemployment has continued to fallUnemployment 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. Rolling three-month measure. Dashed lines are averages from 2002 to 2007.

**Chart 3.6** The participation rate is expected to have fallen in Q1Labour force participation rate<sup>(a)</sup>

Sources: Labour Force Survey and Bank calculations.

(a) Percentage of 16+ population. The diamond shows Bank staff's projection for 2017 Q1, based on data to February.

weigh on aggregate participation in the workforce, as the participation rate of older people is typically lower. Offsetting this broad demographic drag, participation rates among older people have increased steadily in recent years and this trend is expected to continue. The profile for participation is subject to risks in both directions, however, reflecting uncertainty over the precise extent to which these factors offset each other. Moreover, as discussed below, slowing real income growth could also affect the participation rate in coming quarters.

The extent to which those in work contribute to labour supply and the degree of slack in the labour market will also depend on the hours they want to work — or the equilibrium level of average hours. The recent increase in average hours (**Chart 3.3**) has been associated with a fall in the proportion of those employed working part-time (**Chart 3.7**). In addition, the share of part-time employees reporting that they could not find a full-time job fell. That suggests that the shift into full-time work is likely to have come mainly from those part-time workers that had already been looking to increase their hours, rather than representing a further increase in the number of hours people, on average, want to work. As such, that shift is unlikely to be associated with an increase in labour supply.

Beyond some near-term volatility associated with changes in labour demand, the structural effect of an ageing workforce is still expected to lead to a gradual decline in average hours worked. As discussed in past *Reports*, the rising average age of the workforce is likely to push down the equilibrium level in coming years, reflecting the greater desire of older workers to work part time.<sup>(1)</sup>

The weakness in real income growth and the associated slowing in demand growth (Section 2) may influence labour supply in the near term. Households could seek to mitigate the reduction in their purchasing power from higher import prices by supplementing their pay. This could be done either by seeking to increase the hours they work, or by increasing participation in the labour market, for example by another member of the household joining the workforce. Acting in the opposite direction, however, the lower returns to working more, as a result of the fall in purchasing power, may discourage some households from seeking additional work.

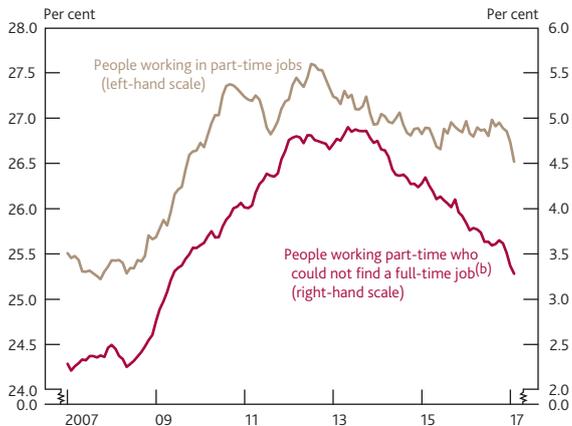
In the long run, growth in the supply of labour will be determined mainly by population growth. Although population growth leads to higher supply, it also contributes to domestic demand. Changes in the path of population growth are therefore unlikely to have much direct impact on slack or, consequently, wage growth.<sup>(2)</sup>

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

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

### Chart 3.7 Fewer part-time workers are seeking a full-time job

People working part-time, as a proportion of total employment<sup>(a)</sup>

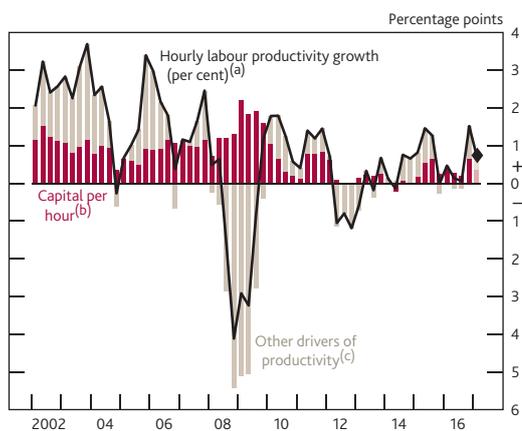


Sources: Labour Force Survey and Bank calculations.

- (a) Percentage of LFS total employment. Rolling three-month measure.  
 (b) As reported to the LFS.

### Chart 3.8 Growth in the capital stock remains limited

Contributions to four-quarter whole-economy hourly labour productivity growth



Sources: ONS and Bank calculations.

- (a) Output per hour worked based on the backcast for the final estimate of GDP. Percentage change on a year earlier. The diamond shows Bank staff's projection for 2017 Q1, based on the backcast for the mature estimate of GDP and labour market data to February.  
 (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*. Final observation shows Bank staff's projection for 2017 Q1.  
 (c) Calculated as a residual.

In the MPC's projections, population growth is assumed to evolve in line with the ONS's latest projection, made in October 2015. Under that projection, population growth slows over the next three years, mainly as a result of lower net immigration. In the four quarters to 2016 Q3, net inward migration was around 273,000, or 0.4% of the population. That flow is the lowest since 2014 Q2, but remains above the ONS's 2015 projection. The prospects for net migration remain particularly uncertain, and will depend on a number of factors, including the United Kingdom's relative economic performance, the sterling exchange rate and government policy.

## 3.3 Productivity

The pace at which wages can grow in the long run without generating excess inflation will depend on how productively people and hours are put to use. Four-quarter hourly productivity growth is expected to have fallen to 0.7% in 2017 Q1, having picked up sharply in the previous quarter (**Chart 3.8**). This volatility partly reflects changes in average hours worked. Productivity growth is expected to pick up in coming quarters, as average hours fall back, but to remain at subdued rates.

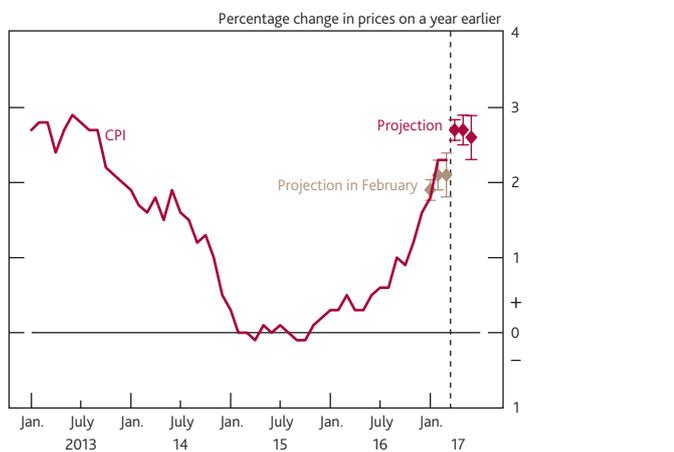
One factor that will influence the pace of productivity growth is changes in the size of the capital stock — the resources and equipment available to workers to produce output. Growth in the size of the capital stock, relative to labour, is estimated to have been subdued since 2011, reflecting weakness in investment (Section 2). That limited growth in the capital stock appears to have accounted for a large part of the weakness in productivity growth over the recent past, relative to its pre-crisis trend. Given this, a recovery in productivity growth is in part likely to be reliant on a pickup in business investment growth.

Investment in the capital stock and the extent to which companies improve the efficiency with which labour and capital are put to use — also known as total factor productivity — are likely to be sensitive to the process of Brexit. The United Kingdom has now formally confirmed its intention to leave the European Union. The box on page 29 of the August 2016 *Report* set out some of the long-term effects of changes in trading arrangements on productivity growth. It remains difficult to know the nature, scale and speed of companies' adjustment, both in anticipation of changes in future trading arrangements and given the uncertainty around those arrangements. Those uncertainties are likely to lead to lower investment in capital equipment, research and skills than would otherwise be the case, and so could weigh on overall productivity growth, for a period at least.

# 4 Costs and prices

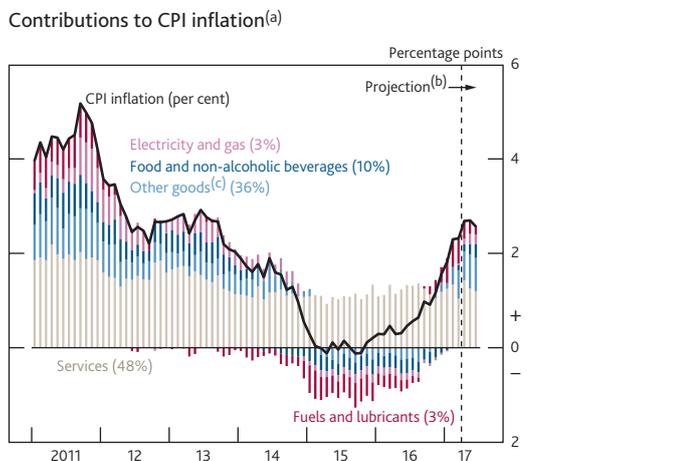
CPI inflation was 2.3% in March, having been below the 2% target over much of the past three years. Inflation is expected to have risen further since then, reflecting the continued pass-through of the past fall in the sterling exchange rate to consumer prices. The outlook for inflation will depend on how firms respond to those rising imported costs given domestic cost pressures, the strength of demand and inflation expectations. Inflation expectations have risen from recent lows and are judged to be broadly consistent with the MPC's 2% target.

**Chart 4.1** CPI inflation is projected to have risen in April  
CPI inflation and Bank staff's near-term projection<sup>(a)</sup>



(a) The beige diamonds show Bank staff's central projection for CPI inflation in January, February and March 2017 at the time of the February *Inflation Report*. The red diamonds show the current staff projection for April, May and June 2017. The bands on each side of the beige and red diamonds show the root mean squared error of the projections for CPI inflation one, two and three months ahead made since 2004.

**Chart 4.2** Faster rises in goods prices have pushed up inflation  
Contributions to CPI inflation<sup>(a)</sup>



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

(a) Contributions to annual CPI inflation. Figures in parentheses are CPI basket weights in 2017.  
(b) Bank staff projection. Electricity and gas price projections incorporate announced price increases. Fuels and lubricants estimates use Department for Business, Energy and Industrial Strategy petrol price data for April 2017 and are then based on the May 2017 sterling oil futures curve, shown in Chart 4.3.  
(c) Difference between CPI inflation and the other contributions identified in the chart.

## 4.1 Consumer price developments and the near-term outlook

CPI inflation picked up to 2.3% in March, from 1.6% in December (Chart 4.1). Inflation has been rising since late 2015, as the drag from the appreciation in sterling and fall in global energy prices during 2014–15 has diminished, as the effect of the 16% depreciation over the past 18 months has started to come through and as commodity prices have risen.

Food and fuel prices are generally the most sensitive components of the CPI to movements in the sterling exchange rate; these goods are more easily traded and have a higher-than-average import share. Consistent with this, the effect of the past depreciation has been evident in the rising contribution from fuel prices to inflation over recent months (Chart 4.2). And, while at the time of the February *Report* food price inflation had yet to pick up, it too is now starting to rise.<sup>(1)</sup> Moreover, the prices of goods other than food and fuel have also risen, as the effects of the depreciation have started to be passed through more broadly. Inflation in March was 0.2 percentage points higher than projected in February due to larger-than-expected contributions from a wide range of goods.

CPI inflation is expected to rise further in Q2 (Chart 4.1), in part driven by further rises in goods prices (Chart 4.2) as the effects of the fall in sterling and rising foreign export prices (Section 4.2) continue to feed through. In addition, announced rises in utility prices are expected to contribute to higher inflation in the near term.

The path for inflation in coming quarters will depend on the speed and extent to which companies pass through rising external costs to consumer prices, together with developments in domestic cost pressures and demand conditions (Section 4.3). Domestic cost pressures largely

(1) For more information on food price inflation, see the box on page 26 of the February *Report*; [www.bankofengland.co.uk/publications/Documents/inflationreport/2017/feb.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2017/feb.pdf).

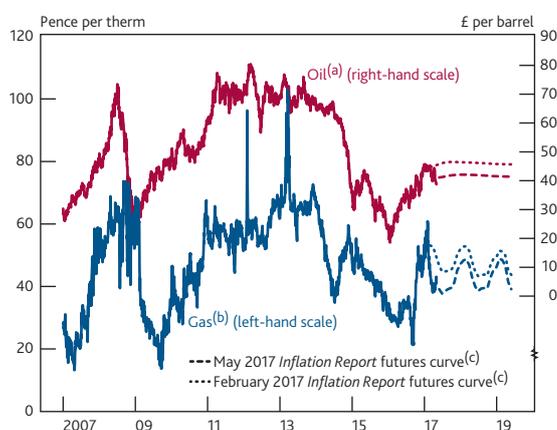
reflect the cost of labour but can also be influenced by companies' and households' inflation expectations, which can affect wage and price-setting behaviour (Section 4.4).

## 4.2 Developments in the prices of traded goods and services

The prices of goods and services that are traded globally — such as food, energy and other imports — and the sterling exchange rate have been the main drivers of the fall and subsequent rise in inflation in recent years. Sterling has risen by 2½% since the February *Report*, but remains 16% lower than its peak in November 2015 (Section 1).

**Chart 4.3 Energy prices have fallen over recent months but remain higher than a year ago**

Sterling oil and wholesale gas prices



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

(a) US dollar Brent forward prices for delivery in 10–25 days' time converted into sterling.

(b) One-day forward price of UK natural gas.

(c) Fifteen working day averages to 3 May and 25 January 2017 respectively.

### Energy prices

The cost of oil makes up around a third of the cost of retail fuel and changes in oil prices tend to be passed through to consumer prices much more quickly than those of other imports. In sterling terms, oil prices have fallen by 8% since the February *Report* (Chart 4.3) and have fallen further since the MPC's May projections were finalised. That mainly reflects the fall in US dollar oil prices (Section 1), coupled with the appreciation in sterling against the US dollar since February. Despite this fall, sterling oil prices remain higher than a year ago and petrol prices are therefore projected to continue to push up annual CPI inflation over the coming months (Chart 4.2), albeit to a slightly lesser extent than anticipated in February.

Wholesale gas is a key input into the production of gas and electricity supplied to households. In contrast to oil prices, the pass-through of wholesale gas prices to retail prices is often more variable and occurs with a lag, as domestic energy companies tend to agree the purchase of future gas supplies well in advance.

While the wholesale gas spot price has fallen sharply since the February *Report*, gas prices remain around 30% higher than a year ago (Chart 4.3). Moreover, UK energy companies have reported that they face rising costs associated with structural changes, such as the increased use of renewable energy sources. Since February, five major retail energy providers have announced increases in their electricity and gas prices. These announcements mean that, on average, electricity prices are expected to rise by 14% and gas prices by around 3% by the end of summer. These price increases are larger and earlier than those anticipated in February. Therefore, by September, electricity and gas prices are expected to push up inflation by 0.2 percentage points more than previously projected.

### Non-energy import prices

The prices of UK goods and services will also be affected by the cost of non-energy imports. These costs will depend both on the foreign currency prices companies charge for their

**Table 4.A The impact of the fall in sterling on import prices has so far been somewhat limited**

Import prices and foreign export prices excluding fuel

Cumulative percentage changes	Sterling appreciation 2013 Q2–2015 Q4	Sterling depreciation 2015 Q4–2016 Q4
(I) Foreign export prices in foreign currency terms <sup>(a)</sup>	-2.1	-0.1
(II) Sterling ERI	14.5	-16.8
(I)÷(II) Foreign export prices in sterling terms <sup>(b)</sup>	-14.4	20.1
60% x (I)÷(II) Import price pass-through assumption <sup>(c)</sup>	-8.7	12.1
Actual import prices <sup>(d)</sup>	-5.0	7.4

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

- (a) Domestic currency non-oil export prices for goods and services of 51 countries weighted according to their shares in UK imports. The sample excludes major oil exporters.  
 (b) Domestic currency non-oil export prices as defined in footnote (a) divided by the sterling effective exchange rate.  
 (c) Calculated as 60% of the change in sterling world export prices. As explained in the box on pages 28–29 of the November 2015 Report, Bank staff estimated that, on average, 60% of changes in sterling world export prices have tended to be reflected in UK import prices.  
 (d) UK goods and services import deflator excluding fuels and the impact of MTIC fraud.

exports and the sterling exchange rate. As explained in the box on pages 28–29 of the November 2015 Report, Bank staff estimated that, on average, 60% of changes in sterling world export prices have tended to be reflected in UK import prices. That pass-through is usually completed within a year. The speed and extent of pass-through varies over time, however.<sup>(1)</sup>

There is some evidence to suggest that the pass-through of the depreciation to import prices since late 2015 has been more limited than on average in the past. World export prices in sterling terms are estimated to have risen by 20% in the year to 2016 Q4 (Table 4.A). While import price data can be volatile and subject to large revisions, they have risen by only around a third of the rise in sterling world export prices, less than the 60% average pass-through over the past.

On the one hand, the limited response of import prices so far could suggest that there is further pass-through from the fall in sterling to come. It is possible that uncertainty about the effect of Brexit on UK demand may have initially caused firms selling to the United Kingdom to limit sterling price increases. Moreover, given the higher-than-usual level of uncertainty around the time of the referendum, some firms may have hedged their near-term foreign currency exposures by more than in the past, delaying the impact of the depreciation on their prices. Companies may have also been unsure as to how persistent the depreciation in sterling would prove to be. Demand growth since the referendum has, however, been stronger than projected by most forecasters. Alongside this, the depreciation in sterling has largely persisted. Import prices could therefore be expected to continue to rise in response.

On the other hand, there may be less pass-through to import prices to come. Large movements in the exchange rate have in the past tended to be passed through to import prices more quickly than average. Moreover, following the 2013–15 appreciation in sterling, import prices fell by only around a third of the change in sterling world export prices (Table 4.A). The continuation of the pass-through from that appreciation may have offset some of the pass-through from the subsequent depreciation, implying there is little further to come. Or the recent experience could simply suggest that the effect of the exchange rate on import prices will be smaller on this occasion than on average in the past.

Since February, sterling has appreciated by 2½%, but remains 16% below its November 2015 peak. That appreciation implies a somewhat smaller overall rise in import prices still to come. Import prices are expected to have risen by 8% between 2015 Q4 and 2017 Q1 and to rise by around ¾% a quarter on average over the rest of 2017, slightly less than projected in February (Table 4.B). There is a risk, however,

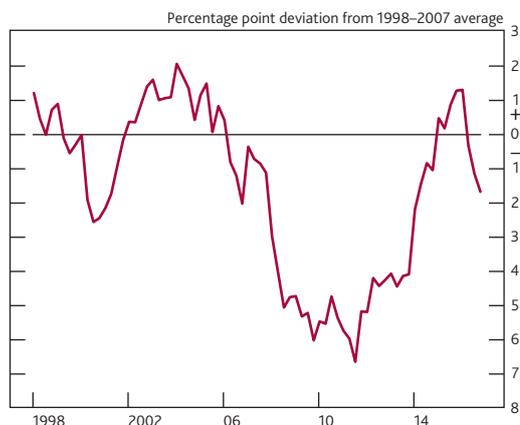
**Table 4.B Monitoring the MPC's key judgements**

Developments anticipated in February during 2017 Q1–Q3	Developments now anticipated during 2017 Q2–Q4
<b>Household energy prices</b>	<b>Revised up</b>
<ul style="list-style-type: none"> <li>Electricity price rises to take place in Q2 and a slight fall in gas prices in Q1.</li> </ul>	<ul style="list-style-type: none"> <li>Electricity and gas price rises to contribute ¼ percentage point to CPI inflation in 2017 H2.</li> </ul>
<b>Import prices</b>	<b>Revised down</b>
<ul style="list-style-type: none"> <li>Non-fuel import prices to rise by 5% in the year to 2017 Q3.</li> <li>Commodity prices to evolve in line with the conditioning assumptions.</li> </ul>	<ul style="list-style-type: none"> <li>Non-fuel import prices to rise by 2¾% in the year to Q4.</li> <li>Commodity prices to evolve in line with the conditioning assumptions.</li> </ul>
<b>Unit labour costs</b>	<b>Revised down</b>
<ul style="list-style-type: none"> <li>Four-quarter growth in whole-economy unit labour costs slows temporarily to just under 1½%.</li> </ul>	<ul style="list-style-type: none"> <li>Four-quarter growth in whole-economy unit labour costs to fall to around ½% in Q3 before starting to recover from Q4.</li> </ul>
<b>Inflation expectations</b>	<b>Broadly unchanged</b>
<ul style="list-style-type: none"> <li>Indicators of medium-term inflation expectations continue to be broadly consistent with the 2% target.</li> </ul>	<ul style="list-style-type: none"> <li>Indicators of medium-term inflation expectations continue to be broadly consistent with the 2% target.</li> </ul>

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

**Chart 4.4 Profit margins for consumer-facing firms narrowed over 2016**

Estimated margins on consumer goods and services<sup>(a)</sup>

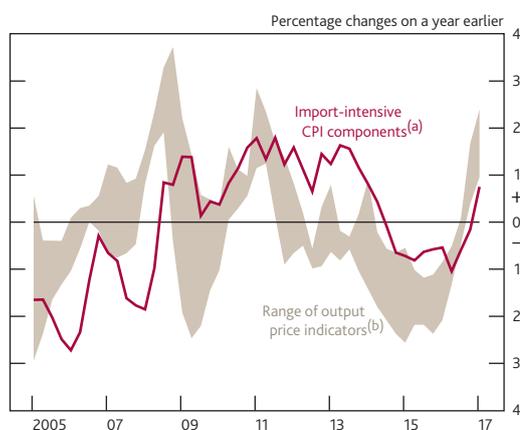


Sources: ONS and Bank calculations.

(a) Calculated as differences in the ratio of the CPI, seasonally adjusted by Bank staff, and estimated costs of production and distribution for consumer goods and services. Costs consist of labour, imports, energy and tax, weighted to reflect their intensity in CPI. The underlying weights attached to each component are based on the *United Kingdom Input-Output Analytical Tables 2010*, adjusted to reflect the composition of CPI. Where applicable, the weights capture each factor's contribution to all stages of the domestic production process.

**Chart 4.5 Higher import prices are feeding through to higher consumer prices**

Import-intensive CPI inflation and survey indicators of output price inflation



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

(a) The import-intensive CPI series weights together the 20 CPI components with the highest import intensities accounting for indirect imported inputs, excluding fuel and administered and regulated prices. CPI data have been adjusted by Bank staff for changes in the rate of VAT, although there is uncertainty around the precise impact of those changes. Quarterly average of monthly data.

(b) Indicators included in swathe are: manufacturing output producer price index excluding food, beverages, tobacco and petroleum; Markit/CIPS output prices for manufacturing; CBI Industrial Trends expected selling prices; and Bank Agents' final imported goods cost scores. Adjusted to match the mean and variance of import-intensive CPI inflation since 2001. Data are up to 2017 Q1.

that given the limited extent of pass-through so far import prices rise by less than that. The MPC will continue to monitor closely the evolution of import prices.

### 4.3 Cost pressures and companies' margins

The rises in import prices so far will have pushed up firms' costs. This will have squeezed profit margins for domestic-facing firms, though exporters' profit margins will have been supported by the depreciation in sterling (Section 2). Margins on consumer goods and services narrowed over 2016 (Chart 4.4). The outlook for CPI inflation will depend on how long companies are able to absorb cost increases in their margins, whether they limit growth in other costs such as wages in response (Section 3), or whether they choose to raise their prices.

Bank staff estimate that, on average over the past, changes in import prices have typically passed through to CPI in line with the import share, which is around a third. Pass-through is estimated to take place gradually, with annual inflation still being affected four years after the change in sterling. This implies that while higher imported input costs may squeeze margins for some quarters, these are restored over time.<sup>(1)</sup>

As discussed in the February Report, the MPC judges that, given the nature of the recent fall in sterling, the speed of pass-through from import prices to consumer prices is likely to be faster than average. Consistent with that judgement, there are signs that companies are passing cost increases through to final prices quite quickly. Inflation among import-intensive components of CPI — those components that are imported or have a high share of imported inputs, such as food — has risen in recent months (Chart 4.5).

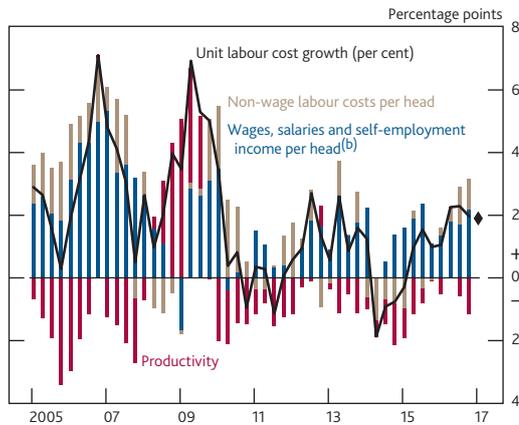
Survey indicators suggest that growth in companies' input costs rose further in Q1 and input cost growth is expected to continue to rise in the near term, placing further downward pressure on many firms' margins. In turn, that is likely to push up inflation in coming quarters as firms rebuild their profit margins. A range of output price indicators suggest that firms expect their output price inflation to pick up further in the near term (Chart 4.5), consistent with those margins being rebuilt fairly rapidly. There is, however, uncertainty around the extent of that upward pressure and businesses' pricing decisions will be affected by developments in domestic costs and demand conditions.

### Domestically generated inflation and unit labour costs

As discussed in the box on page 28, in addition to external costs, domestically generated inflation (DGI) will also contribute to the rate of CPI inflation. The rate of DGI consistent with inflation returning to the 2% target, however,

(1) See the box on pages 28–29 of the November 2015 Report; [www.bankofengland.co.uk/publications/Documents/inflationreport/2015/nov.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2015/nov.pdf).

**Chart 4.6 Unit labour cost growth has been fairly stable**  
Decomposition of four-quarter whole-economy unit labour cost growth<sup>(a)</sup>



Sources: ONS and Bank calculations.

- (a) Whole-economy labour costs divided by GDP, based on the backcast of the final estimate of GDP. The diamond shows Bank staff's projection for 2017 Q1.  
(b) Self-employment income is calculated from mixed income, assuming that the share of employment income in that is the same as the share of employee compensation in nominal GDP less mixed income.

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

	2000 (or start of series) to 2007 averages <sup>(b)</sup>	Averages since 2008	2014	2015	2016		2017	
					H1	H2	Q1	Q2 <sup>(c)</sup>
<b>One year ahead inflation expectations</b>								
<b>Households<sup>(d)</sup></b>								
Bank/GfK/TNS <sup>(e)</sup>	2.4	3.0	2.7	2.0	1.9	2.5	2.9	n.a.
Barclays Basix	2.8	2.8	2.3	1.5	1.7	2.0	2.2	n.a.
YouGov/Citigroup (Nov. 2005)	2.5	2.4	2.0	1.3	1.5	2.1	2.6	2.5
<b>Companies (2008 Q2)<sup>(f)</sup></b>	n.a.	0.6	0.6	0.4	0.4	0.9	2.0	n.a.
<b>Financial markets (Oct. 2004)<sup>(g)</sup></b>	2.6	2.7	2.8	2.5	2.5	3.2	3.6	3.5
<b>Two to three year ahead expectations</b>								
<b>Households<sup>(d)</sup></b>								
Bank/GfK/TNS (2009 Q1) <sup>(e)</sup>	n.a.	2.7	2.7	2.3	2.2	2.4	2.7	n.a.
Barclays Basix	3.2	3.0	2.6	1.9	2.2	2.4	2.8	n.a.
<b>Professional forecasters (2006 Q2)<sup>(h)</sup></b>								
	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2
<b>Financial markets (Oct. 2004)<sup>(i)</sup></b>	2.8	3.0	3.1	3.0	2.8	3.2	3.5	3.4
<b>Five to ten year ahead expectations</b>								
<b>Households<sup>(d)</sup></b>								
Bank/GfK/TNS (2009 Q1) <sup>(e)</sup>	n.a.	3.2	3.1	2.8	3.2	3.1	3.2	n.a.
Barclays Basix (2008 Q3)	n.a.	3.7	3.6	3.1	3.6	3.4	3.9	n.a.
YouGov/Citigroup (Nov. 2005)	3.5	3.2	2.9	2.7	2.7	2.7	3.1	2.9
<b>Financial markets (Oct. 2004)<sup>(j)</sup></b>	3.0	3.4	3.4	3.3	3.1	3.3	3.5	3.4
<b>Memo: CPI inflation</b>	1.6	2.3	1.5	0.0	0.4	1.0	2.1	n.a.

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

- (a) Data are non seasonally adjusted.  
(b) Dates in parentheses indicate start date of the data series.  
(c) Financial markets data are averages from 3 April to 3 May 2017. YouGov/Citigroup data are for April.  
(d) The household surveys ask about expected changes in prices but do not reference a specific price index, and the measures are based on the median estimated price change.  
(e) In 2016 Q1, the survey provider changed from GfK to TNS.  
(f) CBI data for the manufacturing, business/consumer services and distributive trade sectors, weighted together using nominal shares in value added. Companies are asked about the expected percentage price change over the coming twelve months in the markets in which they compete.  
(g) Instantaneous RPI inflation one year ahead implied from swaps.  
(h) Bank's survey of external forecasters, inflation rate three years ahead.  
(i) Instantaneous RPI inflation three years ahead implied from swaps.  
(j) Five-year, five-year forward RPI inflation implied from swaps.

will depend on the long-run trend in those external costs. While the pass-through of sharp changes in the exchange rate is transitory, long-run trends in import price inflation may affect CPI inflation more persistently. If, for example, sterling world export price inflation were to be persistently higher than in the past then the rate of DGI consistent with inflation at target would be commensurately lower.

The cost of labour, such as wages and other non-wage benefits, forms around half of firms' input costs. It is therefore a key determinant of DGI. The degree to which growth in labour costs affects inflation depends on how it evolves relative to growth in output produced per worker — known as unit labour cost growth.

The weakness in wage growth over recent years has occurred alongside relatively modest productivity growth (Section 3), so unit labour cost pressures within companies have not been as weak (Chart 4.6). While unit labour cost growth is expected to have been relatively stable at around 2% in 2017 Q1, it is projected to ease in coming quarters, reflecting modest wage growth coupled with a slight pickup in productivity growth.

## 4.4 Inflation expectations

Inflation expectations can also affect the outlook for inflation, such as through their influence on wage and price-setting behaviour. The MPC monitors a range of indicators to assess whether inflation expectations remain consistent with its 2% target.

Indicators of inflation expectations do not all map directly into CPI inflation. This is because many surveys do not specify exactly which measure of inflation they are asking households about. In addition, market-based measures tend to reference RPI inflation and will reflect changes in the risks around future inflation as well as central expectations. One way to judge the appropriate level of expectations is therefore to compare them to past averages (Table 4.C).

Short-term measures of inflation expectations have picked up in recent quarters (Table 4.C). While some are above their past averages, short-term expectations would be expected to respond to the rising near-term outlook for inflation. Among households responding to the 2017 Q1 Bank/TNS Inflation Attitudes survey, those with rising inflation expectations attributed this to their view of the outlook for economic conditions, the level of sterling and the current strength of the UK economy.

Measures of households' longer-term expectations have also increased slightly, but are close to past average levels, having been subdued in recent years. Financial market measures of long-term inflation expectations have declined since February,

## Measures of domestically generated inflation

Domestic inflationary pressures are an important component of the outlook for headline inflation. These will influence where CPI inflation settles when transitory effects, such as those from the recent fall in sterling, have passed through. It is, therefore, important to monitor domestic costs and profit margins, or 'domestically generated inflation' (DGI). While DGI is not directly observable, there are measures that are closely linked to the concept of DGI. These fall broadly into three groups: the price of services; the price of domestically produced output; and labour costs. This box summarises the strengths and weaknesses of different measures and their recent developments.

As most services are provided domestically, their prices can be used as one indicator of DGI. The two main measures of services prices used are wholesale services prices, as measured by the services producer price index (PPI), and the price of consumer services excluding those components that are more likely to be related to tradable prices, such as airfares and package holidays. However, these types of measures suffer from the shortcoming that they do not capture the prices of domestically produced elements of goods. Moreover, the PPI measure will include not just services provided domestically but also those to exporters and importers.

A second approach to measuring DGI is through measures of the price of domestic production. One such measure is the GDP deflator. However, the GDP deflator includes the government sector, which is less relevant for CPI. An alternative measure is the GVA deflator excluding government output. These deflator-based measures of DGI are helpful guides, but they can still be affected by external cost pressures to the extent that they reflect both labour inputs into and the margins on exported goods and services.

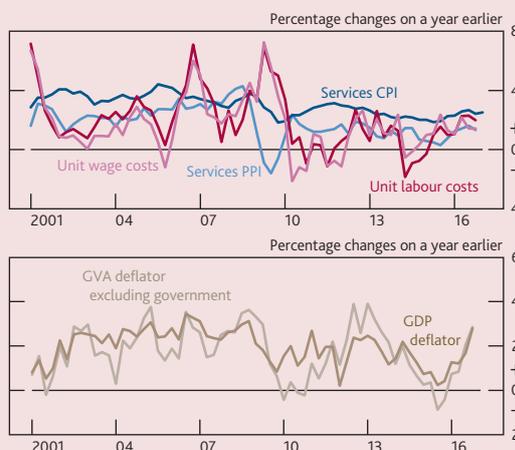
A third group of indicators of DGI focuses on labour costs. Labour is the largest domestic input into consumer goods and services. Therefore, unit labour costs (ULCs) are an important measure of DGI (Section 4.3). The MPC monitors ULCs together with unit wage costs (UWCs), as ULCs can be affected by volatile non-wage labour costs, such as pension contributions. Both measures, however, rely on estimates of productivity growth, which can also be quite volatile.

ULCs and UWCs provide information on all labour costs not just those used to produce domestically consumed goods and services. To the extent that the cost of labour inputs used to produce domestically consumed products grows at a different pace to those for exports, these measures may capture cost pressures beyond DGI. Any difference is, however, likely to be smaller than that between the margins on exported and domestically consumed products reflected in the GDP deflator.

As the various measures of DGI all have strengths and weaknesses, it is helpful to monitor a range of measures to judge the extent of domestic inflationary pressures. Over recent quarters, measures of labour costs (the pink series in Chart A) and prices in the services sector (the blue series) suggest that DGI has been fairly steady. In contrast, measures based on the GDP deflator (the beige series) have picked up. This may partly reflect a pickup in exporters' margins (Section 2) following the depreciation in sterling. There are a range of views among MPC members about the relative importance of various measures of DGI, however, and some members also consider other measures.

### Chart A Some measures of DGI have risen, although most have been stable

Measures of domestically generated inflation<sup>(a)</sup>



Sources: ONS and Bank calculations.

(a) Unit labour costs are whole-economy labour costs and self-employment income divided by GDP, based on the backcast of the final estimate of GDP. Unit wage costs are wages and salaries and self-employment income divided by GDP, based on the backcast of the final estimate of GDP. Services CPI excludes airfares and package holidays; also excludes education and VAT as these have been volatile in recent years; where Bank staff have adjusted for the rate of VAT and there is uncertainty around the precise impact of those changes. All data are quarterly and up to 2016 Q4, except services CPI which are quarterly averages of monthly data and up to 2017 Q1.

and are also close to past average levels (Section 1). And professional forecasters continue to expect inflation to be close to the target in two to three years' time.

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

# 5 Prospects for inflation

Inflation has risen above the 2% target as the falls in the sterling exchange rate since late 2015 have begun to feed through to consumer prices. Quarterly GDP growth has slowed, in part reflecting the impact of lower real income growth on household consumption. Through its effects on costs, the fall in sterling is likely to keep inflation above the 2% target throughout the next three years. Where inflation settles once that upward pressure fades will depend on domestic price pressures. Conditional on current market interest rates, which suggest only one 25 basis point rate rise over the next three years, those domestic cost pressures are judged likely to be building towards the end of the forecast period.

CPI inflation has risen above the MPC's 2% target as the fall in sterling has begun to feed through to consumer prices. Wage growth remains subdued. Household consumption growth appears to be slowing in response to the resultant weakness in real income growth. Reflecting that, UK GDP growth slowed to 0.3% in Q1, according to the preliminary estimate, a slightly sharper slowdown than expected three months ago. Set against that downside news, the latest indicators suggest broad-based momentum in global activity, and a rise in investment intentions among UK companies.

The outlook for UK growth will continue to be influenced by the response of households, companies and financial market participants to the prospect of the United Kingdom's departure from the European Union, including their assumptions about the nature and timing of post-Brexit trading arrangements. The projections in this *Report* continue to be conditioned on the average of a range of possible outcomes for those arrangements and, as before, the assumption that the adjustment to the United Kingdom's new relationship with the European Union is smooth.

Sterling has appreciated by 2½% since the *February Report*, with a sharp move on the day that the UK election was announced, possibly reflecting an increase in the probability that market participants are attaching to a smooth, rather than disorderly, Brexit process. The sterling ERI remains 16% below its November 2015 peak, however. UK market interest rates have fallen. Given those falls, the projections in this *Report*, summarised in **Table 5.A**, are conditioned on a path for Bank Rate that rises to just ½% by mid-2020, around 20 basis points lower than in the *February Report* (**Table 5.B**).<sup>(1)</sup>

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

	Projections			
	2017	2018	2019	2020
GDP <sup>(c)</sup>	1.9 (2.0)	1.7 (1.6)	1.8 (1.7)	
<i>Excluding backcast</i>	1.8 (2.0)	1.7 (1.6)	1.8 (1.7)	
	2017 Q2	2018 Q2	2019 Q2	2020 Q2
CPI inflation <sup>(d)</sup>	2.7 (2.4)	2.6 (2.8)	2.2 (2.5)	2.3
LFS unemployment rate	4.7 (4.9)	4.7 (5.0)	4.6 (4.9)	4.5
Bank Rate <sup>(e)</sup>	0.2 (0.2)	0.3 (0.4)	0.4 (0.5)	0.5

- (a) Modal market rate projections for GDP, CPI inflation and LFS unemployment. Figures in parentheses show the corresponding projections in the February 2017 *Inflation Report*. Projections were only available to 2020 Q1 in February.
- (b) The May projections have been conditioned on the assumptions that the stock of purchased gilts remains at £435 billion and the stock of purchased corporate bonds remains at £10 billion throughout the forecast period, and on the Term Funding Scheme (TFS), all three of which are financed by the issuance of central bank reserves. The February projections were conditioned on the same asset purchase and TFS assumptions.
- (c) Calendar-year growth in real GDP consistent with the modal projection for four-quarter growth in real GDP. The MPC's projections are based on its backcast for GDP.
- (d) Four-quarter inflation rate.
- (e) Per cent. The path for Bank Rate implied by forward market interest rates. The curves are based on overnight index swap rates.

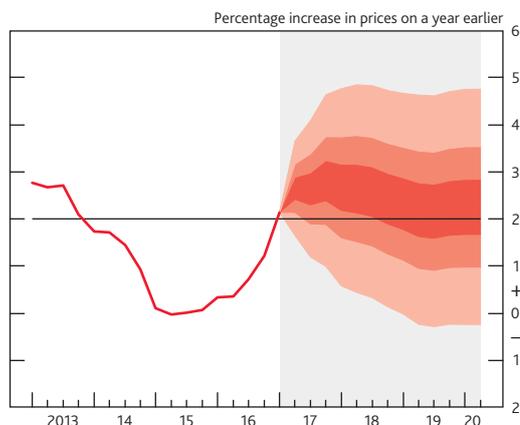
**Table 5.B** Conditioning path for Bank Rate implied by forward market interest rates<sup>(a)</sup>

Per cent	2017		2018				2019				2020		
	Q2 <sup>(b)</sup>	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
May	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5
February	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	

- (a) The data are fifteen working day averages of one-day forward rates to 3 May 2017 and 25 January 2017 respectively. The curve is based on overnight index swap rates.
- (b) May figure for 2017 Q2 is an average of realised overnight rates to 3 May 2017, and forward rates thereafter.

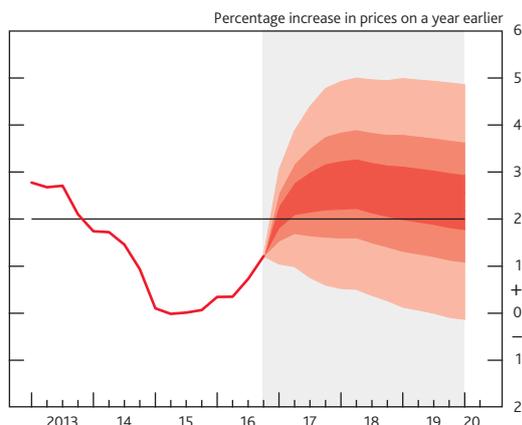
(1) Unless otherwise stated, the projections shown in this section are conditioned on: Bank Rate following a path implied by market yields; the stock of purchased gilts remaining at £435 billion and the stock of purchased corporate bonds remaining at £10 billion throughout the forecast period and the Term Funding Scheme (TFS), all three of which are financed by the issuance of central bank reserves; 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 2017 March *Budget*; commodity prices following market paths; and the sterling exchange rate remaining broadly flat. The main assumptions are set out in a table at [www.bankofengland.co.uk/publications/Documents/inflationreport/2017/mayca.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2017/mayca.pdf).

**Chart 5.1** CPI inflation projection based on market interest rate expectations, other policy measures as announced



Charts 5.1 and 5.2 depict the probability of various outcomes for CPI inflation in the future. They have been conditioned on the assumptions in Table 5.A footnote (b). If economic circumstances identical to today's were to prevail on 100 occasions, the MPC's best collective judgement is that inflation in any particular quarter would lie within the darkest central band on only 30 of those occasions. The fan charts are constructed so that outcomes of inflation are also expected to lie within each pair of the lighter red areas on 90 out of 100 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 5.2** CPI inflation projection in February based on market interest rate expectations, other policy measures as announced



In the MPC's central projection, four-quarter GDP growth slows over 2017, as quarterly growth remains close to the Q1 rate. Within that, a slowing in consumption growth is largely balanced by rising net trade and investment, which provide more support to activity than in the recent past.

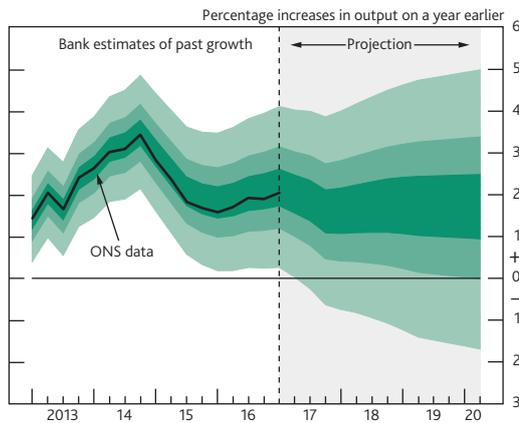
Household consumption growth seems to be slowing in response to the weak real income growth associated with the lower level of sterling. That adjustment continues over the forecast period with growth in both income and consumption remaining below past averages (Key Judgement 1).

The depreciation in the exchange rate, together with a further pickup in global demand growth, is likely to support exports and weigh on imports such that net trade contributes positively to growth for much of the forecast period (Key Judgement 2). Expectations of changes in the United Kingdom's trading arrangements are, however, increasingly likely to influence UK exports and imports over the forecast period.

Companies' investment decisions depend on their view of likely future demand for their products. The latest investment surveys suggest some recovery in investment growth this year, after falls last year. Exporters in particular may raise investment in the near term to help meet demand from abroad. But persistent uncertainty about the outlook for demand is projected to weigh on longer-term investment plans to some degree (Key Judgement 3). That is associated with continued subdued growth in the capital stock, and hence productivity.

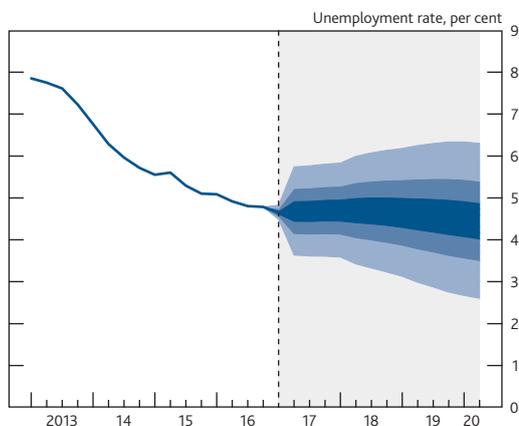
Higher import prices are projected to lead to a further rise in CPI inflation this year, such that it reaches 2.8% in Q4 (Chart 5.1) (Key Judgement 4). The impetus from import

**Chart 5.3** GDP projection based on market interest rate expectations, other policy measures as announced



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

**Chart 5.4** Unemployment projection based on market interest rate expectations, other policy measures as announced



The fan chart depicts the probability of various outcomes for LFS unemployment. It has been conditioned on the assumptions in Table 5.A footnote (b). The coloured bands have the same interpretation as in Chart 5.1, 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 2017 Q1, a quarter earlier than the fan for CPI inflation. That is because Q1 is a staff projection for the unemployment rate, based in part on data for January and February. The unemployment rate was 4.7% in the three months to February, and is projected to be 4.7% in Q1 as a whole. A significant proportion of this distribution lies below Bank staff's current estimate of the long-term equilibrium unemployment rate. There is therefore uncertainty about the precise calibration of this fan chart.

prices is likely to fade only gradually throughout the forecast period. Its projected contribution to inflation at the three-year horizon is just over  $\frac{1}{4}$  percentage point, smaller than in February following the 2½% appreciation of sterling since then.

Where CPI inflation settles once the boost to inflation from higher import prices has receded will depend on domestic cost pressures. Weakness in productivity growth and a continuing drag from slack are two factors that have been weighing on wage growth over recent years. Domestic inflationary pressures are likely to remain subdued in the near term. Nonetheless, with unemployment falling towards its equilibrium rate, wage growth is expected to rise over time and that is associated with a further pickup in domestically generated inflation from the low rates seen in recent years.

Conditional on the path for Bank Rate based on market yields and an unchanged stock of purchased assets, GDP grows at around 1¾% in the second and third years of the forecast period (Chart 5.3). That demand growth is slightly above potential so that unemployment falls (Chart 5.4) and the small output gap at the start of the forecast period narrows through the forecast period and closes by the end. That is associated with building domestic price pressures such that inflation is projected to be rising in the third year of the projection even as the impact of imported price pressures fades. That rise in domestic pressure is greater than assumed three months ago, reflecting the stronger path for world growth, support from the lower yield curve and the modest fiscal loosening in the March *Budget*. Overall, inflation is judged more likely to remain above the 2% target than fall below it throughout the forecast period (Chart 5.5).

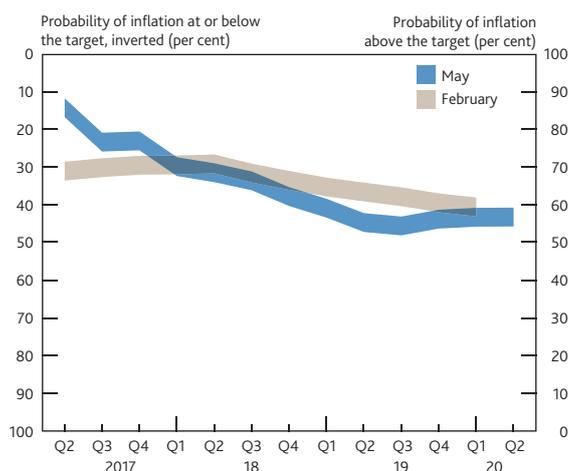
At its meeting ending on 10 May 2017, the MPC voted to maintain Bank Rate at 0.25%, to maintain the stock of sterling non-financial investment-grade corporate bond purchases, financed by the issuance of central bank reserves, at £10 billion and to maintain the stock of UK government bond purchases, financed by the issuance of central bank reserves, at £435 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> The remainder of this section sets out the MPC's projections, and the risks around them, in more detail.

## 5.1 The MPC's key judgements and risks

### Key Judgement 1: higher import prices weigh on real incomes and household consumption growth

The depreciation in sterling since late 2015 has raised import prices. That is beginning to feed through to consumer prices

(1) The Minutes are available at [www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2017/may.pdf](http://www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2017/may.pdf).

**Chart 5.5** Inflation probabilities relative to the target

The May and February swathes in this chart are derived from the same distributions as Charts 5.1 and 5.2 respectively. They indicate the assessed probability of inflation relative to the target in each quarter of the forecast period. The 5 percentage points width of the swathes reflects the fact that there is uncertainty about the precise probability in any given quarter, but they should not be interpreted as confidence intervals.

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

	Average 1998– 2007	Projections		
		2017	2018	2019
Household consumption <sup>(b)</sup>	3½	1¾ (2)	1 (1)	1½ (1¼)
Business investment <sup>(c)</sup>	2½	1¾ (-¼)	3¼ (1¼)	3 (3¼)
Housing investment <sup>(d)</sup>	3¾	2 (3)	3½ (2)	1½ (1)
Exports <sup>(e)</sup>	4½	2¾ (2½)	1¾ (1)	¾ (½)
Imports <sup>(e)</sup>	6	1¾ (1½)	½ (-¼)	¼ (-¼)
Real post-tax household income <sup>(f)</sup>	3	¼ (¾)	½ (¼)	1¼ (¾)
Employment <sup>(g)</sup>	1	½ (½)	¾ (½)	¾ (¾)
Average weekly earnings <sup>(h)</sup>	4¼	2 (3)	3½ (3¼)	3¾ (3¼)

(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 February 2017 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.

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

(g) Four-quarter growth rate in Q4.

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

(Key Judgement 4) and is associated with particularly weak real income growth for households this year. Further ahead, annual real income growth recovers somewhat as real wage growth picks up. But with modest growth in employment and the continuing drag from the fiscal consolidation, it remains well below past average rates (Table 5.C).

The MPC has been expecting household consumption growth to slow in response to the renewed weakening in real income growth, but there was uncertainty about how quickly that would happen. The latest data show signs of consumers beginning to adjust. Retail sales fell sharply in Q1. House price inflation has slowed and housing transactions have grown only sluggishly. It appears likely that consumption growth began to slow at the start of this year, with that adjustment somewhat sharper than had been expected in February (Section 2).

There remains uncertainty over how persistent the weakness in household consumption will be. Some indicators, including consumer confidence, have held up in recent months. It is possible that consumption growth could bounce back a little, especially if households take advantage of relatively low borrowing costs to smooth through the current period of weak income growth. Although there is some early evidence the terms of consumer credit may be tightening, credit conditions are still accommodative by historical standards. It is also possible that consumption growth weakens further, however, for example if households' concerns about the outlook for the economy, and their own job security, rise.

On balance, the MPC judges that four-quarter consumption growth is likely to slow further over 2017 before picking up to just over 1½% towards the end of the forecast period. The slowdown is more marked than in February in the near term but, given that quicker adjustment, the recovery is correspondingly stronger such that the projected level of consumption in mid-2020 is little changed. That outlook is consistent with some slowing in consumer credit growth from current high rates. House price inflation picks up again, reaching annual rates of around 4% later in the forecast period. Housing investment is expected to continue to grow at below past average rates over the forecast period as a whole (Table 5.C).

The projections for income and spending imply a slight fall in the saving ratio over the forecast period. But, as set out in the box on pages 16–17, recent changes in the saving ratio (and hence its level over the forecast period) may offer a less useful signal about household finances than usual. The ONS expects to revise up materially the past rate of saving later this year. Moreover, the sharp fall in 2016 reflected declines in non-labour income, including that in pension funds, which probably have few implications for current spending.

## Table 5.D 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 2017 Q2 to 2017 Q4 if judgements evolve as expected
<b>1: higher import prices weigh on real incomes and household consumption growth</b>	<ul style="list-style-type: none"> <li>• Quarterly growth in real post-tax household income to average ¼% in Q2 and Q3, slowing further to 0% by the end of the year.</li> <li>• Quarterly consumption growth to average ¼%.</li> <li>• Credit spreads to be broadly flat.</li> <li>• Mortgage approvals for house purchase to be around 71,000 per month, on average.</li> <li>• Quarterly housing investment growth to average 1%.</li> <li>• The average of the Halifax/Markit and Nationwide house price indices to increase by ½% per quarter, on average.</li> </ul>
<b>2: UK trade will be supported by the past depreciation of the sterling exchange rate and the expected pickup in global growth</b>	<ul style="list-style-type: none"> <li>• Quarterly euro-area growth to average a little above ½%.</li> <li>• Annual euro-area HICP inflation to fall back and then remain around 1½% during the rest of the year.</li> <li>• Quarterly US GDP growth to average between ½% and ¾%.</li> <li>• Annual US PCE inflation to remain around 2%.</li> <li>• Indicators of activity consistent with four-quarter PPP-weighted emerging market economy growth of around 4½%; within that, GDP growth in China to average around 6½%.</li> <li>• Net trade to provide a small boost to quarterly GDP growth.</li> </ul>
<b>3: investment and productivity growth pick up but remain below longer-term average rates</b>	<ul style="list-style-type: none"> <li>• Quarterly business investment growth to average 1%.</li> <li>• Quarterly hourly labour productivity growth to average slightly below ½%.</li> <li>• Participation rate to remain around its current level of 63½%.</li> <li>• Unemployment rate to remain at its current level of 4¾%.</li> <li>• Average weekly hours worked to fall slightly to just below 32¼%.</li> </ul>
<b>4: in the second half of the forecast period, upward pressures on inflation from import prices diminish and pressures from domestic costs build</b>	<ul style="list-style-type: none"> <li>• Four-quarter growth in AWE regular pay to be 2¼% in Q4.</li> <li>• Four-quarter growth in whole-economy unit labour costs to fall to around ½% in Q3 before starting to recover from Q4.</li> <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/2017/mayca.pdf">www.bankofengland.co.uk/publications/Documents/inflationreport/2017/mayca.pdf</a>.</li> <li>• Electricity and gas price rises to contribute ¼ percentage point to CPI inflation in H2.</li> <li>• Non-fuel import prices to rise by 2¾% in the year to Q4.</li> <li>• Indicators of medium-term inflation expectations to continue to be broadly consistent with the 2% target.</li> </ul>

### Key Judgement 2: UK trade will be supported by the past depreciation of the sterling exchange rate and the expected pickup in global growth

Global momentum is likely to support aggregate demand growth while UK consumption growth remains subdued. The latest indicators, including trade growth and capital goods orders, suggest broad-based strength in global activity, although that strength has yet to be fully reflected in official estimates of GDP growth. Nonetheless, signs of more robust global demand have been reflected in global asset prices, with equity prices rising further.

**Table 5.E MPC key judgements<sup>(a)(b)</sup>****Key Judgement 1: higher import prices weigh on real incomes and household consumption growth**

	Average 1998– 2007	Projections		
		2017	2018	2019
Credit spreads <sup>(c)</sup>	¾ <sup>(d)</sup>	1¾ (2)	1¾ (2)	1¾ (2)
Household saving ratio <sup>(e)</sup>	8	3¾ (4½)	3½ (3¾)	3¼ (3¼)

**Key Judgement 2: UK trade will be supported by the past depreciation of the sterling exchange rate and the expected pickup in global growth**

	Average 1998– 2007	Projections		
		2017	2018	2019
World GDP (UK-weighted) <sup>(f)</sup>	3	2½ (2½)	2½ (2½)	2½ (2¼)
World GDP (PPP-weighted) <sup>(g)</sup>	4¼	3½ (3½)	3¾ (3½)	3½ (3½)
Euro-area GDP <sup>(h)</sup>	2¼	2 (2)	2 (1¾)	1¾ (1½)
US GDP <sup>(i)</sup>	3	2¼ (2¼)	2½ (2¼)	2 (2)

**Key Judgement 3: investment and productivity growth pick up but remain below longer-term average rates**

	Average 1998– 2007	Projections		
		2017	2018	2019
Business investment to GDP ratio <sup>(j)</sup>	9½	9¼ (9¼)	9½ (9)	9½ (9¼)
Productivity <sup>(k)</sup>	2¼	¾ (1¾)	1¾ (1¾)	1½ (1¼)
Participation rate <sup>(l)</sup>	63	63½ (63½)	63½ (63¾)	63½ (63¾)
Average hours <sup>(m)</sup>	32¼	32¼ (32)	32 (32)	32 (31¾)

**Key Judgement 4: in the second half of the forecast period, upward pressures on inflation from import prices diminish and pressures from domestic costs build**

	Average 1998– 2007	Projections		
		2017	2018	2019
Dollar oil prices <sup>(n)</sup>	39	54 (57)	53 (57)	53 (57)
UK import prices <sup>(o)</sup>	¼	3 (4¾)	1½ (1¾)	¼ (¾)
Unit labour costs <sup>(p)</sup>	3	1¼ (2)	2½ (2¼)	3 (2¾)

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

- (a) The MPC's projections for GDP growth, CPI inflation and unemployment (as presented in the fan charts) are underpinned by four key judgements. The mapping from the key judgements to individual variables is not precise, but the profiles in the table should be viewed as broadly consistent with the MPC's key judgements.
- (b) Figures show calendar-year growth rates unless otherwise stated. Figures in parentheses show the corresponding projections in the February 2017 *Inflation Report*.
- (c) 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. The level of this summary measure of credit spreads has been revised down over both the recent past and the forecast period, on account of a methodological improvement. This methodological change has had no impact on the MPC's macroeconomic projections.
- (d) 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.
- (e) Calendar-year average. Percentage of total available household resources.
- (f) Chained-volume measure. Constructed using real GDP growth rates of 180 countries weighted according to their shares in UK exports.
- (g) Chained-volume measure. Constructed using real GDP growth rates of 181 countries weighted according to their shares in world GDP using the IMF's purchasing power parity (PPP) weights.
- (h) Chained-volume measure.
- (i) Chained-volume measure.
- (j) Calendar-year average. Chained-volume business investment as a percentage of GDP.
- (k) GDP per hour worked. GDP at market prices is based on the mode of the MPC's backcast.
- (l) Level in Q4. Percentage of the 16+ population.
- (m) Level in Q4. Average weekly hours worked, in main job and second job.
- (n) Average level in Q4. Dollars per barrel. Projection based on monthly Brent futures prices.
- (o) Four-quarter inflation rate in Q4.
- (p) Four-quarter growth in unit labour costs in Q4. Whole-economy total labour costs divided by GDP at market prices, based on the mode of the MPC's GDP backcast. Total labour costs comprise compensation of employees and the labour share multiplied by mixed income.

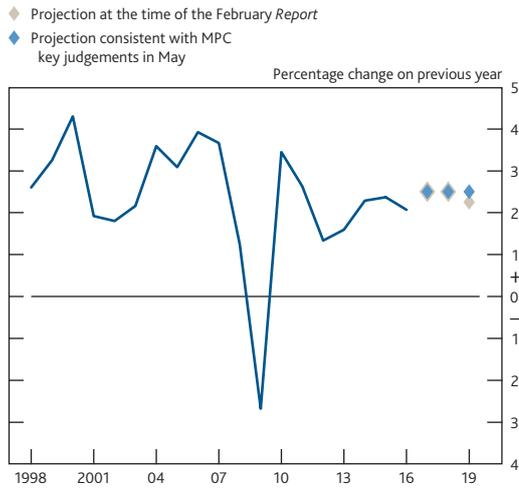
Euro-area GDP growth was 0.5% in 2017 Q1, a little above its average of 0.4% per quarter in recent years. Survey indicators point to a further pickup in growth in Q2. That higher growth in the first half of this year reflects support from monetary policy and the impacts of improving credit conditions and waning uncertainty. With the recovery now appearing more entrenched, the Committee has assumed a little more persistence in euro-area growth than in the February projections (Table 5.E). The recovery to date has been associated with some erosion of slack, which continues over the forecast period. Core inflation therefore picks up gradually.

In the United States, survey indicators continue to point to robust growth rates. The Q1 GDP growth data were weaker than those indicators at 0.2%. But that reflects a drag from inventories and a dip in consumption growth. Both of these effects are likely to unwind in Q2 (Section 1). Investment growth, by contrast, was strong. Unlike the euro area, the United States has had a period of sufficiently robust growth to use up much of its spare capacity, with unemployment back to its pre-crisis level. US GDP growth is nonetheless projected to pick up a little into 2018 (Table 5.E) in part reflecting the support from fiscal policy — although uncertainty remains about its precise composition, timing and scale. Conditioned on market yields, which imply a rise in the federal funds rate to 1¾% by early 2020, GDP growth is then expected to fall back towards a modest rate of supply growth, consistent with subdued productivity growth and less support from demographic trends than in the past.

In China, growth is continuing at a robust pace, with an accompanying strong expansion in credit. Rises in interest rates and macroprudential measures have been associated with a slowing in house price inflation, but a significant downside risk remains of a sharper adjustment in the property market or credit markets more broadly. In the central projection, a sharp adjustment is avoided and growth slows gradually over the forecast period.

Weighted by UK export shares, world GDP growth is projected to average around 2½% over the forecast period (Chart 5.6), up from 2% in 2016, with PPP-weighted growth at or a little above 3½%. That is associated with average consumer price inflation around the world at just over 2%, higher than rates seen in recent years. The projection for world growth is a little stronger than in February but the risks around the projection remain skewed to the downside.

That rise in global growth is one factor supporting UK net trade. Exporters will also benefit from the 16% fall in sterling from its November 2015 peak, which is likely to weigh on import growth. Surveys and the Bank's Agents' contacts suggest that export growth has indeed strengthened and is likely to pick up further in the near term. Over time, it is likely

**Chart 5.6** World GDP (UK-weighted)<sup>(a)</sup>

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

(a) Calendar-year growth rates. Chained-volume measure. Constructed using real GDP growth rates of 180 countries weighted according to their shares in UK exports.

that companies will make some changes to their operations in light of Brexit, which are projected to weigh on both exports and imports at least temporarily. Overall, net trade is projected to support growth over the forecast period, as in February. Although the recent rise in sterling reduces that support a little, that effect is offset by the slightly stronger global backdrop. The current account deficit is assumed to end the forecast at around 3% of GDP. That compares with its average of 4½% in recent years in the current vintage of data (Section 2).

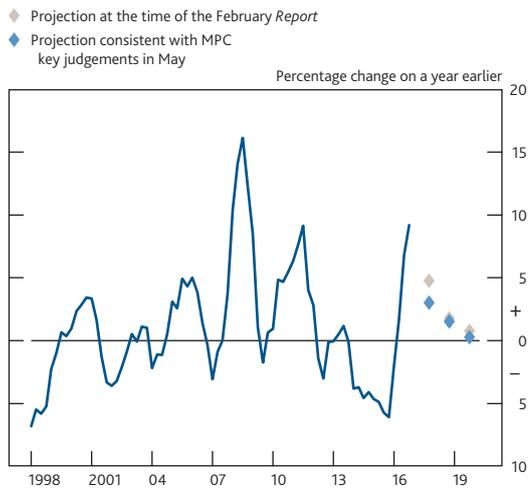
### Key Judgement 3: investment and productivity growth pick up but remain below longer-term average rates

Uncertainty around both global growth and the EU referendum help explain why UK investment softened in 2016 despite favourable financing conditions. Recent investment surveys, however, point to a rise in investment intentions in 2017. In part that may reflect a desire to renew and increase capacity by exporters benefiting from lower sterling and stronger world demand. Uncertainty about the outlook in light of Brexit is likely to weigh on longer-term investment plans, however, and investment growth is projected to fall back a little towards the end of the forecast period (Table 5.C).

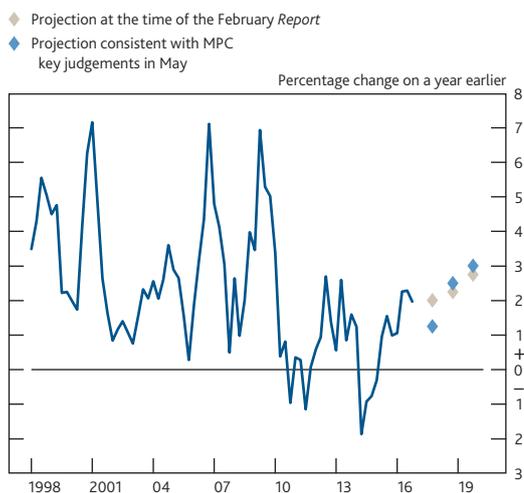
Given the sustained period of low investment growth since the financial crisis, its level over the forecast period remains too low to boost capital stock growth from its current subdued rate. Capital stock growth has slowed to around 2½%, compared with rates of around 3¾% prior to the crisis. This is one factor that has weighed on productivity growth over the recent past and will continue to do so.

Productivity is also influenced by companies' expectations about Brexit. For example, if trading arrangements are less open, for a period at least, that is likely to require a gradual reorientation of business models, which will weigh a little on productivity growth. Overall, productivity grows at a subdued pace throughout the forecast period, although growth picks up relative to rates seen in recent years. The prospective growth in underlying productivity, abstracting from cyclical effects, is broadly similar to that in February. Actual hourly productivity growth is weaker this year, however, reflecting recent rapid growth in hours worked, but stronger further out as average hours worked are projected to fall back gradually (Table 5.E).

At the start of the forecast period, the lower level of demand is assumed to be matched by a lower level of supply such that slack is the same as assumed in February. From the middle of the forecast period, GDP is projected to grow slightly faster than supply such that the unemployment rate falls to its assumed equilibrium of 4.5% and slack closes. That is a greater narrowing in slack than in February, reflecting slightly stronger growth in the second half of the forecast period.

**Chart 5.7 Import price inflation<sup>(a)</sup>**

(a) Projections are four-quarter inflation rate in Q4. Excludes the impact of MTIC fraud.

**Chart 5.8 Unit labour costs<sup>(a)</sup>**

(a) Projections are four-quarter growth 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.

#### Key Judgement 4: in the second half of the forecast period, upward pressures on inflation from import prices diminish and pressures from domestic costs build

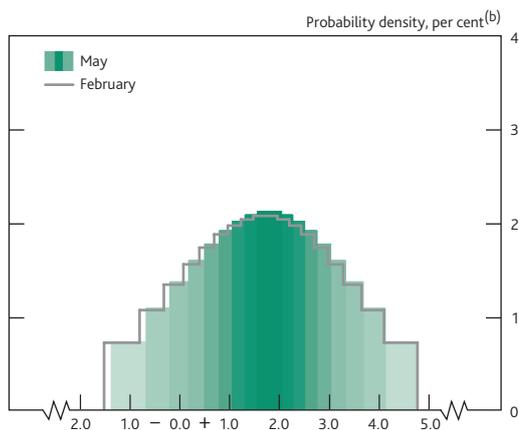
Weak productivity growth and the level of slack have been bearing down on UK wage growth in recent years. A gradual recovery in wage growth has been expected for some time as unemployment has fallen back towards pre-crisis lows and productivity growth has risen, albeit slowly. But annual wage growth fell back again around the turn of the year. The impact of weak wage pressures on inflation have, however, been more than offset by rising external pressures following the sharp decline in sterling. CPI inflation rose to 2.3% in March, with February's outturn the first above the 2% target since 2013.

External cost pressures are a key influence on the shape of the CPI inflation projection. By itself, the decline in sterling since late 2015 would suggest an increase in UK import prices of around 12% by the end of 2016, according to their past average relationship (Section 4). Although import prices have picked up, they have not yet risen to that extent, so further increases are expected over the forecast period (Chart 5.7). There is a risk that that does not come through, for example if foreign exporters believe that it will be difficult to raise prices in UK markets or if the preceding rise in sterling in 2013–15 had left their margins unusually high. In that event the external impetus to inflation would be smaller.

There is further uncertainty about the eventual impact of higher import prices on retail prices. In the central projection, a given rise in non-energy import prices is assumed to lead to a rise in average consumer prices of around a third of that size over a number of years. As in recent Reports, given the size of the decline in sterling, the MPC has continued to assume that pass-through to CPI inflation will be a little quicker than on average in the past. The latest data seem to support that assumption (Section 4). The peak impact of import prices on inflation is therefore projected to occur around mid-2018 at just over  $\frac{3}{4}$  percentage point, with that contribution then tailing off but still positive at just over  $\frac{1}{4}$  percentage point in mid-2020. That contribution is lower than three months ago, reflecting sterling's appreciation since then.

Where CPI inflation settles once external cost pressures have passed through will depend on domestic cost pressures. A variety of indicators of domestically generated inflation have picked up from their lows in recent years (see the box on page 28). The recent fall in wage growth could simply reflect volatility in the data. It is, however, possible that it is a consequence of companies' uncertainty about the outlook, with some unwilling to raise wages at a faster pace until they have more clarity about their future costs and markets. It is also possible that rises in firms' other labour costs — for example, pension costs or the Apprenticeship Levy — are, to some degree, bearing down on wages. These influences are judged unlikely to persist throughout the forecast period.

**Chart 5.9** Projected probabilities of GDP growth in 2019 Q2 (central 90% of the distribution)<sup>(a)</sup>



- (a) Chart 5.9 represents the cross-section of the GDP growth fan chart in 2019 Q2 for the market interest rate projection. The grey outline represents the corresponding cross-section of the February 2017 *Inflation Report* fan chart for the market interest rate projection. The projections have been conditioned on the assumptions in Table 5.A footnote (b). The coloured bands in Chart 5.9 have a similar interpretation to those on the fan charts. Like the fan charts, they portray the central 90% of the probability distribution.
- (b) Average probability within each band; the figures on the y-axis indicate the probability of growth being within  $\pm 0.05$  percentage points of any given growth rate, specified to one decimal place.

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

	Mode	Median	Mean
2017 <sup>(b)</sup>	1.9 (2.0)	1.9 (2.0)	1.9 (2.0)
2018	1.7 (1.6)	1.7 (1.6)	1.7 (1.6)
2019	1.8 (1.7)	1.7 (1.6)	1.7 (1.6)

- (a) The table shows the projections for calendar-year growth of real GDP consistent with the modal, median and mean projections for four-quarter growth of real GDP implied by the fan chart. Where growth rates depend in part on the MPC's backcast, revisions to quarterly growth are assumed to be independent of the revisions to previous quarters. The figures in parentheses show the corresponding projections in the February 2017 *Inflation Report*. The projections have been conditioned on the assumptions in Table 5.A footnote (b).
- (b) The anticipated revisions to recent estimates of quarterly GDP growth have implications for calendar-year growth in 2017. Without the anticipated revisions to past GDP growth, the modal path of the Committee's May projections would imply calendar-year growth of 1.8% in 2017 rather than 1.9%.

**Table 5.G** Q4 CPI inflation

	Mode	Median	Mean
2017 Q4	2.8 (2.7)	2.8 (2.7)	2.8 (2.7)
2018 Q4	2.4 (2.6)	2.4 (2.6)	2.4 (2.6)
2019 Q4	2.2 (2.4)	2.2 (2.4)	2.2 (2.4)

The table shows projections for Q4 four-quarter CPI inflation. The figures in parentheses show the corresponding projections in the February 2017 *Inflation Report*. The projections have been conditioned on the assumptions in Table 5.A footnote (b).

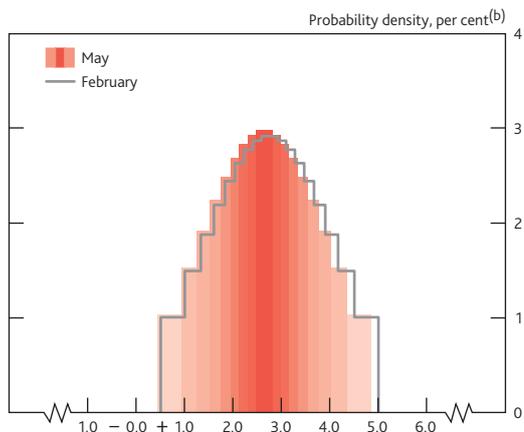
With unemployment very close to its equilibrium rate, four-quarter wage growth is expected to rise over time. But given the subdued outlook for productivity growth, wage growth is likely to remain below pre-crisis average rates. Conditional on a path for Bank Rate that has only one 25 basis point rate rise towards the end of the forecast period, unit labour cost growth is projected to build to around 3% (Chart 5.8). Were rates to follow that path, the output gap is projected to close, and the drag on inflation from slack to dissipate, by the end of the forecast period. That would increase the risk that inflation remains somewhat above the 2% target beyond the forecast horizon, even once the impact of higher import prices has fully passed through. That risk would be greater if inflation expectations were to respond to the rise in headline inflation. On the downside, however, it is possible that whatever has held wage growth down recently persists for longer and inflation falls below the 2% target once those external pressures have receded.

## 5.2 The projections for demand, unemployment and inflation

Based on these judgements and the risks around them, and under the path for Bank Rate based on market yields and an unchanged stock of purchased assets, the MPC judges that four-quarter growth will slow over 2017, settling around 1¾% (Chart 5.3). That slowdown is led by weakening consumer spending growth. Export growth is supported by a continued expansion in overseas demand and the past falls in the exchange rate. And investment growth recovers somewhat after a weak 2016. GDP growth is a little weaker in the near term than the projection three months ago, reflecting downside news on output and consumption at the start of 2017. Further out, growth is a touch higher (Chart 5.9), reflecting a stronger path for world growth, support from the lower yield curve and the modest fiscal loosening in the March *Budget*. The risks to the growth outlook remain skewed to the downside further out (Table 5.F), stemming from downside risks to the global outlook.

CPI inflation is projected to rise to only a little below 3% this year, as higher import prices continue to be passed through to consumer prices. The contribution of import prices falls back over the forecast period but they are expected still to be pushing inflation above the 2% target at the end, albeit by less than three months ago given the appreciation of sterling (Table 5.G). Conditional on the market path for Bank Rate, demand grows slightly faster than supply in the second half of the forecast period, unemployment falls and the output gap closes by the end of the forecast period. That is associated with building domestic price pressures such that inflation is projected to be rising in the third year of the projection even as external price pressures fade. Those domestic pressures are projected to build a little more than three months ago,

**Chart 5.10** Projected probabilities of CPI inflation in 2018 Q2 (central 90% of the distribution)<sup>(a)</sup>

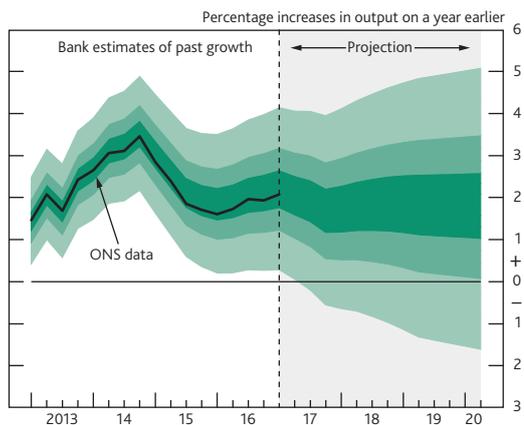


(a) Chart 5.10 represents the cross-section of the CPI inflation fan chart in 2018 Q2 for the market interest rate projection. The grey outline represents the corresponding cross-section of the February 2017 *Inflation Report* fan chart for the market interest rate projection. The projections have been conditioned on the assumptions in Table 5.A footnote (b). The coloured bands in Chart 5.10 have a similar interpretation to those on the fan charts. Like the fan charts, they portray the central 90% of the probability distribution.  
 (b) Average probability within each band; the figures on the y-axis indicate the probability of inflation being within  $\pm 0.05$  percentage points of any given inflation rate, specified to one decimal place.

reflecting the slightly higher path for growth in the medium term. The risks to the inflation projection remain balanced as in February (Chart 5.10).

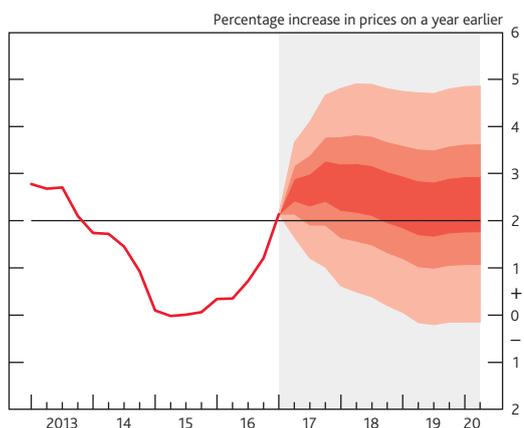
Charts 5.11 and 5.12 show the MPC’s projections under the alternative constant rate assumption, and an unchanged stock of purchased assets. That assumption is that Bank Rate remains at 0.25% throughout the three years of the forecast period, before rising towards the market path over the subsequent three years. Under that path, the growth and inflation projections are broadly similar to those under the market path.

**Chart 5.11** GDP projection based on constant nominal interest rates at 0.25%, other policy measures as announced



See footnote to Chart 5.3.

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



See footnote to Chart 5.1.

## How has the economy evolved relative to the August 2016 Report?

The MPC regularly assesses how the economy has evolved relative to its forecasts. This box looks at how recent developments in GDP growth, the labour market and inflation compare to the projections in the August 2016 Report, and what the MPC has learnt from the evolution of the economy over that period. The final section also assesses outturns relative to the MPC's fan charts over a longer period of time.

### The August 2016 Report forecast

In the August Report, conditioned on the MPC's policy package,<sup>(1)</sup> GDP growth was projected to slow markedly over the second half of 2016, and to remain subdued during 2017 (Chart A). While the Report noted that the implications of the vote to leave the European Union would take time to unfold, uncertainty around the United Kingdom's future trading arrangements was expected to weigh on spending growth in the near term. Survey indicators of output, alongside other indicators associated with property markets and uncertainty, pointed to an immediate sharp slowing in growth and in some cases a contraction in output. The MPC's projection aimed off that mechanical steer, judging that GDP growth would slow but to a somewhat lesser extent. Other forecasters on average expected growth to be slightly below the MPC's central projection at the time.<sup>(2)</sup>

The sharp fall in sterling, to 10% below the assumption underpinning the May 2016 forecasts, was projected to feed through to higher import prices and to take CPI inflation temporarily above the 2% target over the second half of the forecast period. Households' purchasing power was expected to be squeezed as a result, weighing on consumer spending growth, although the fall in sterling was expected to support exports. The projected slowing in GDP growth was expected to be associated with a modest rise in unemployment, as employers delayed hiring plans, and subdued wage growth.

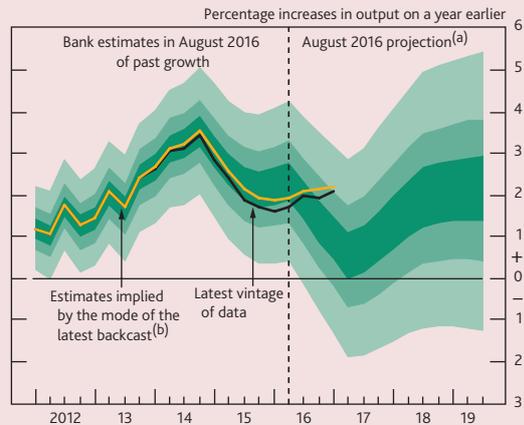
### GDP growth has risen and has therefore been stronger than expected in August

Taking into account an expected 0.1 percentage point upward revision to the ONS data, captured in the MPC's backcast, four-quarter GDP growth is estimated to have picked up to 2.2% in 2017 Q1 (Chart A). That is 1.2 percentage points stronger than the August central projection.

Surveys and other indicators of output, uncertainty and property markets, which had all pointed to an immediate sharp slowing in growth, began to recover following the August Report. And while the MPC's forecast had aimed above the output surveys, that recovery was particularly steep. That was perhaps in part due to an improvement in business

## Chart A GDP growth has been stronger than projected in August

GDP outturn and projection in the August 2016 Report



(a) The projection was conditioned on: market interest rate expectations; the assumption that the stocks of purchased gilts and corporate bonds financed by the issuance of central bank reserves reached £435 billion and £10 billion respectively and remained there throughout the forecast period; and the announced Term Funding Scheme (TFS) financed by the issuance of central bank reserves. See footnote to Chart 5.1 in the August 2016 Report for information on how to interpret the fan chart.

(b) The latest backcast is a judgement about the path for GDP in the mature estimate of the data.

sentiment, with the MPC's August policy package one factor potentially supporting that.

### Private sector demand growth has been robust

The stronger-than-expected GDP outturn can be more than explained by stronger private domestic demand growth. In August, a slowing in real income growth had been expected to lead to a gradual slowing in household consumption growth, with the saving ratio falling only slightly in the near term. Real income growth has actually been below the August forecast, but consumption growth has been above expectations, supported by a sharper fall in the saving ratio (Table 1) — despite the slowing in consumption growth in 2017 Q1 (Section 2). Business and housing investment growth have also surprised on the upside, although they have remained weak in absolute terms.

One underlying factor explaining stronger-than-expected demand growth may be that uncertainty has been less of a drag on activity than anticipated, particularly for consumer spending. Greater uncertainty can deter households from making some major purchases and reduce companies' appetite for investment. Some of the weakness in investment does appear to reflect a drag from uncertainty (Section 2), but a smaller one than had been anticipated in August.

In addition, global and domestic financial conditions have improved. While global growth has been only a touch stronger than expected, improved sentiment around the prospects for future activity growth appear to have led to rises

(1) For further detail see the box on pages iii–viii of the August 2016 Report; [www.bankofengland.co.uk/publications/Documents/inflationreport/2016/aug.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2016/aug.pdf).

(2) For example, as measured by Bloomberg consensus survey data.

**Table 1** Assessing the anticipated developments underpinning the key judgements in the August 2016 Report

Conditioning assumptions and key judgements	Percentage change between 2016 Q1 and 2017 Q1, unless otherwise stated	
	August 2016 projection	Current estimate
<b>Conditioning assumptions<sup>(a)</sup></b>		
Bank Rate (per cent)	0.1	0.3
Sterling ERI (index) <sup>(b)</sup>	79	77
Oil prices (\$ per barrel)	49	54
<b>1: a period of heightened uncertainty and weakness in property markets weighs on private domestic demand</b>		
Household saving ratio <sup>(a)</sup>	5	3¾
Business investment <sup>(c)</sup>	-5¾	¾
Housing investment <sup>(c)(d)</sup>	-7	0
<b>2: potential supply growth remains well below past average rates</b>		
Productivity <sup>(e)</sup>	1¼	¾
Average hours <sup>(a)(f)</sup>	32	32¼
<b>3: the fall in sterling leads to a narrowing in the current account deficit against a backdrop of modest global demand growth</b>		
UK-weighted world GDP <sup>(c)(g)</sup>	2¼	2¼
Current account balance <sup>(a)(h)</sup>	-5	-3½
<b>4: domestic cost pressures remain soft but higher import prices take inflation back to the 2% target then somewhat above it</b>		
Non-fuel import prices <sup>(i)</sup>	6	6
Average weekly earnings <sup>(j)</sup>	3	2¼

Sources: Bank of England, Bloomberg, IMF *World Economic Outlook*, ONS, Thomson Reuters Datastream and Bank calculations.

- (a) Level in 2017 Q1.  
 (b) Index: January 2005 = 100.  
 (c) Chained-volume measure.  
 (d) Whole-economy measure. Includes new dwellings, improvements, and spending on services associated with the sale and purchase of property.  
 (e) GDP per hour worked. GDP at market prices is based on the mode of the MPC's backcast.  
 (f) Average weekly hours worked in main job and second job.  
 (g) Constructed using real GDP growth rates of 180 countries weighted according to their shares in UK exports.  
 (h) Percentage of nominal GDP.  
 (i) Excludes the impact of missing trader intra-community fraud.  
 (j) Whole-economy total pay.

in many financial asset prices, in particular risky asset prices (Section 1). That will have supported spending, both through the effect of higher wealth and a lower cost of market-based finance. Credit conditions facing households have also eased, in part reflecting falls in bank funding costs. Lower uncertainty and the improvement in credit conditions will have also supported housing and commercial property prices, which have been firmer than anticipated in August.

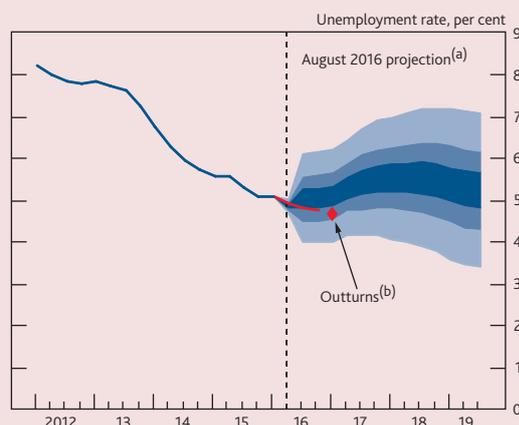
Despite an improvement in global conditions, net trade has continued to drag on four-quarter GDP growth, rather than providing a boost as expected. Unanticipated strength in imports has more than outweighed stronger-than-expected export growth. Although the contribution of net trade volumes to GDP growth has been weaker, the trade deficit — the nominal value of imports minus exports — has been smaller than expected. That difference largely reflects an improvement in the terms of trade relative to expectations, with export prices having risen by more than import prices. And coupled with higher-than-projected net investment income — in part reflecting revisions to the past — the current account deficit is currently estimated to be narrower than projected in August (Table 1).

## There appears to have been greater supply capacity

In August, the unemployment rate had been expected to edge higher as employment growth stalled, but has instead continued to drift down to 4.7% in early 2017 (Chart B).

Despite that, wage growth has remained subdued. At 2.3% in the three months to February, annual wage growth was below the August forecast for 2017 Q1 of around 3%. Following the MPC's regular assessment of aggregate supply-side conditions, set out in the February Report, the MPC now judges that the equilibrium unemployment rate, consistent with inflation at target, is likely to have fallen to around 4½% from a pre-crisis equilibrium rate that was probably around 5%. In part, that judgement reflects the signal from continued weakness in wage growth. It means that despite the further decline in unemployment, a little slack is judged to remain within the labour market.

**Chart B** The unemployment rate has continued to fall  
Unemployment outturn and projection in the August 2016 Report



- (a) Conditioned on the assumptions in Chart A footnote (a). See footnote to Chart 5.4 in the August 2016 Report for information on how to interpret the fan chart.  
 (b) The diamond shows Bank staff's projection for 2017 Q1, based on data to February.

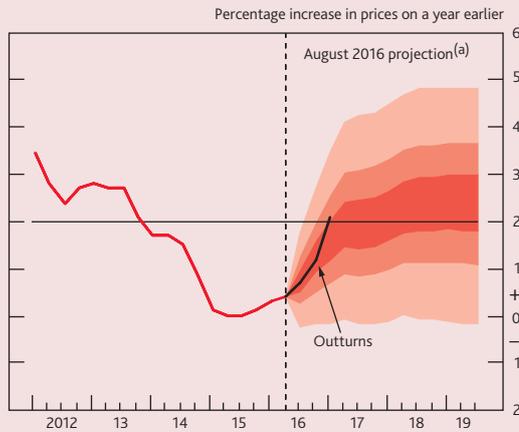
The upside news in employment has, however, been smaller than the news in GDP. Accordingly, growth in output per worker has been stronger than expected in recent quarters. That strength was initially reflected in stronger hourly productivity growth, which appears to have since unwound (Table 1). More recently, average hours worked have picked up sharply (Section 3), rather than falling slightly as had been anticipated in August.

## Higher energy and utility prices pushed inflation up, while sterling depreciated further

CPI inflation was broadly in line with the August forecast over 2016 H2, but was 0.5 percentage points higher than expected in 2017 Q1 at 2.1% (Chart C). Higher-than-assumed fuels and household energy prices can account for 0.3 percentage points of the recent upside surprise in inflation. In particular, in 2017 Q1 US dollar oil prices were 9% higher than implied by the market futures curve in August, on which the MPC's forecasts were conditioned (Table 1). Utilities prices had been

**Chart C CPI inflation has picked up slightly more than had been expected in August**

CPI outturn and projection in the August 2016 Report



(a) Conditioned on the assumptions in Chart A footnote (a). See footnote to Charts 5.2 and 5.3 in the August 2016 Report for information on how to interpret the fan chart.

assumed to be broadly flat, but they have risen slightly and are expected to rise further in coming months (Section 4).

Consumer prices will have also been affected by the substantial fall in the exchange rate since late 2015. Between the August Report and 2017 Q1, sterling depreciated further (Table 1). Given the nature of the overall fall in sterling, in November the MPC judged that sterling pass-through to inflation would be a little faster than during past episodes and hence the August forecast assumption. Given the time it takes for exchange rate moves to be fully reflected in consumer prices, it is too early to judge the overall degree and speed of the pass-through from this episode. But pass-through from import prices to consumer prices so far does indeed appear to have been roughly in line with the judgement made in November (Section 4).

With wage growth weaker than expected (Table 1) and growth in output per worker stronger than expected, labour cost pressures were somewhat more subdued than in the August projection.

**Implications for the MPC’s projections**

Overall, while demand growth has been firmer than expected, the faster pickup in inflation to date appears to have reflected greater external cost pressures, including the effects of the further fall in sterling, rather than additional domestic cost pressures.

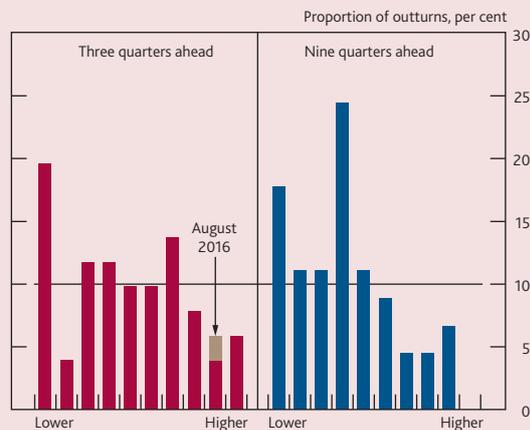
Looking ahead, the outlook for activity remains sensitive to the eventual trading arrangements between the United Kingdom and its economic partners. It remains too early, however, to be able to assess the longer-term supply implications of the United Kingdom’s departure from the European Union.

**Outturns relative to the MPC’s fan charts**

One way of assessing the significance of economic news is by comparing outturns against the MPC’s fan charts over time. The 2017 Q1 GDP growth outturn was towards the higher end of the August fan chart (Charts A and D), and inflation slightly above its central band (Charts C and E). Given the inherent uncertainty in forecasting, such outcomes are to be expected on occasion. Indeed, if the fan charts accurately describe the uncertainty faced by the MPC, then over time outturns would be expected to lie evenly across the fan chart distribution, with 10% of outcomes in each decile. In absolute terms, therefore, a growth forecast error as large as or larger than in August 2016 would be expected to occur almost 40% of the time.

**Chart D GDP growth has been towards the higher end of the August fan chart**

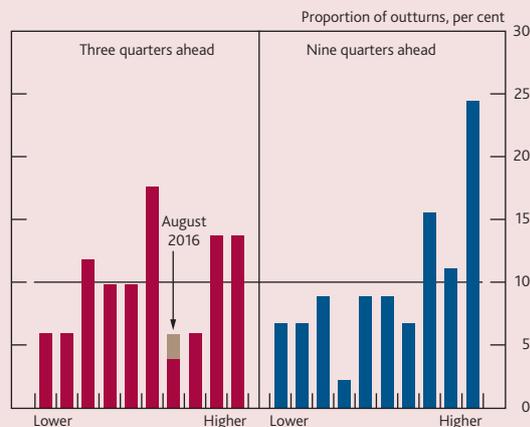
Dispersion of GDP growth outturns across deciles of the fan chart probability distributions<sup>(a)</sup>



(a) Four-quarter GDP growth. Calculated for the market rate fan charts published since February 2004.

**Chart E Inflation is a little above the central band of the August fan chart**

Dispersion of CPI inflation outturns across deciles of the fan chart probability distributions<sup>(a)</sup>



(a) Calculated for the market rate fan charts published since February 2004.

## Other forecasters' expectations

This box reports the results of the Bank's most recent survey of external forecasters, carried out in April.<sup>(1)</sup> On average, respondents expected four-quarter GDP growth to slow over the coming year, before picking up towards 2% three years ahead (Table 1). While growth projections have, on average, been revised up since February, they remain below forecasts produced a year ago, prior to the referendum (Chart A).

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

	2018 Q2	2019 Q2	2020 Q2
CPI inflation <sup>(b)</sup>	2.8	2.4	2.2
GDP growth <sup>(c)</sup>	1.3	1.7	1.9
LFS unemployment rate	5.1	5.3	5.3
Bank Rate (per cent)	0.4	0.5	0.9
Stock of purchased gilts (£ billions) <sup>(d)</sup>	438	439	439
Stock of purchased corporate bonds (£ billions) <sup>(d)</sup>	10	11	11
Sterling ERI	77.6	77.4	77.6

Source: Projections of outside forecasters as of 28 April 2017.

(a) For 2018 Q2, there were 27 forecasts for CPI inflation, 26 for GDP growth, 24 for Bank Rate, 22 for the unemployment rate, 19 for the stock of gilt purchases, 15 for the stock of corporate bond purchases and 13 for the sterling ERI. For 2019 Q2, there were 18 forecasts for CPI inflation, 17 for GDP growth and Bank Rate, 15 for the unemployment rate, 16 for the stock of gilt purchases, 10 for the stock of corporate bond purchases and 12 for the sterling ERI. For 2020 Q2, there were 18 forecasts for CPI inflation, 16 for GDP growth, 17 for Bank Rate, 14 for the unemployment rate, 16 for the stock of gilt purchases, 10 for the stock of corporate bond purchases and 11 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 External forecasters' GDP growth projections have been revised up since February, but remain weaker than a year ago

Forecasters' central projections of four-quarter GDP growth

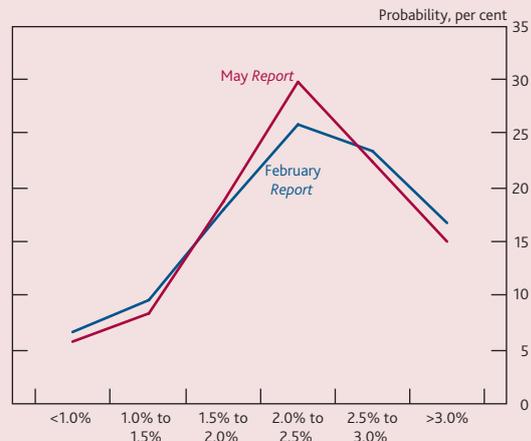


Sources: Projections of outside forecasters provided for *Inflation Reports* between February 2008 and May 2017.

External forecasters' central expectations for CPI inflation were, on average, broadly unchanged from three months ago. On average, external forecasters thought there was a two-thirds probability of inflation being at or above the 2% target in two years' time (Chart B). That is similar to those projections in February, although within that the weight placed on inflation being at or above 2.5% at that horizon had fallen slightly.

### Chart B Forecasters are placing slightly less weight on the risk of high inflation two years ahead than in February

Probability distributions for CPI inflation in two years' time<sup>(a)</sup>



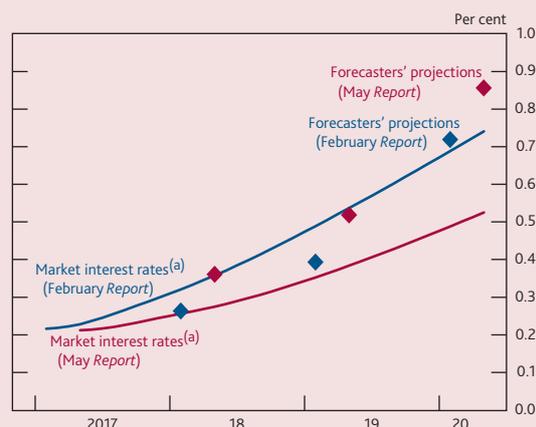
Sources: Projections of outside forecasters provided for *Inflation Reports* in February and May 2017.

(a) Projections on the boundary of these ranges are included in the upper range, for example a projection of inflation being 2.0% is in the 2.0% to 2.5% range.

Although the market-implied path for Bank Rate has flattened since February (Section 1), external forecasters' expectations have risen slightly (Chart C). Respondents, on average, projected Bank Rate to rise to 0.9% by 2020 Q2. Almost all forecasters expected the current stocks of gilt and corporate bond purchases, at £435 billion and £10 billion respectively, to be maintained over the next three years.

### Chart C External forecasters' expectations of Bank Rate have risen since February

Market interest rates and forecasters' central projections of Bank Rate



Sources: Projections of outside forecasters provided for *Inflation Reports* in February and May 2017, Bloomberg and Bank calculations.

(a) Estimated using instantaneous forward overnight index swap rates in the fifteen working days to 3 May and 25 January 2017 respectively.

(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/2017/mayofe.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2017/mayofe.pdf).

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# Glossary and other information

## Glossary of selected data and instruments

**AWE** – average weekly earnings.  
**CDS** – credit default swap.  
**CPI** – consumer prices index.  
**CPI inflation** – inflation measured by the consumer prices index.  
**DGI** – domestically generated inflation.  
**ERI** – exchange rate index.  
**GDP** – gross domestic product.  
**HICP** – harmonised index of consumer prices.  
**LFS** – Labour Force Survey.  
**PCE** – personal consumption expenditure.  
**PMI** – purchasing managers' index.  
**PPI** – producer price index.  
**RPI** – retail prices index.  
**RPI inflation** – inflation measured by the retail prices index.  
**ULC** – unit labour cost.  
**UWC** – unit wage cost.

## Abbreviations

**BCC** – British Chambers of Commerce.  
**CBI** – Confederation of British Industry.  
**CEIC** – CEIC Data Company Ltd.  
**CEO** – chief executive officer.  
**CFO** – chief financial officer.  
**CIPD** – Chartered Institute of Personnel and Development.  
**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.  
**GVA** – gross value added.  
**HMRC** – Her Majesty's Revenue and Customs.  
**IMF** – International Monetary Fund.

**ISM** – Institute for Supply Management.  
**LTV** – loan to value.  
**MFIs** – monetary financial institutions.  
**MPC** – Monetary Policy Committee.  
**MSCI** – Morgan Stanley Capital International Inc.  
**MTIC** – missing trader intra-community.  
**NIIP** – net international investment position.  
**NPISH** – non-profit institutions serving households.  
**OECD** – Organisation for Economic Co-operation and Development.  
**ONS** – Office for National Statistics.  
**OPEC** – Organization of the Petroleum Exporting Countries.  
**PPP** – purchasing power parity.  
**PRA** – Prudential Regulation Authority.  
**PwC** – PricewaterhouseCoopers.  
**R&D** – research and development.  
**REC** – Recruitment and Employment Confederation.  
**S&P** – Standard & Poor's.  
**SMEs** – small and medium-sized enterprises.  
**TFS** – Term Funding Scheme.  
**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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