BANK OF ENGLAND

Monetary Policy Committee

Monetary Policy Report

November 2019

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Monetary policy at the Bank of England

The objectives of monetary policy

The Bank's Monetary Policy Committee (MPC) sets monetary policy to keep inflation low and stable, which supports growth and jobs. Subject to maintaining price stability, the MPC is also required to support the Government's economic policy.

The Government has set the MPC a target for the 12-month increase in the Consumer Prices Index of 2%.

The 2% inflation target is symmetric and applies at all times.

The MPC's remit recognises, however, that the actual inflation rate will depart from its target as a result of shocks and disturbances, and that attempts to keep inflation at target in these circumstances may cause undesirable volatility in output. In exceptional circumstances, the appropriate horizon for returning inflation to target can vary. The MPC will communicate how and when it intends to return inflation to the target.

The instruments of monetary policy

The MPC currently uses two main monetary policy tools. First, we set the interest rate that banks and building societies earn on deposits, or 'reserves', placed with the Bank of England — this is Bank Rate. Second, we can buy government and corporate bonds, financed by the issuance of central bank reserves — this is asset purchases or quantitative easing.

The *Monetary Policy Report*

The MPC is committed to clear, transparent communication. The *Monetary Policy Report* (*MPR*), previously the *Inflation Report*, is a key part of that. It allows the MPC to share its thinking and explain the reasons for its decisions.

We have made some changes to the structure and content of the *MPR*. The main purpose of the document is still to set out the analysis behind the MPC's decision.

The *Report* is produced quarterly by Bank staff under the guidance of the members of the MPC. Although not every member will agree with every assumption on which our projections are based, the central projections represent the MPC's best collective judgement about the most likely paths for inflation, output and unemployment.

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

The Monetary Policy Committee

Mark Carney, Chair
Ben Broadbent
Jon Cunliffe
Andrew Haldane
Jonathan Haskel
Dave Ramsden
Michael Saunders
Silvana Tenreyro
Gertjan Vlieghe

PowerPoint™ versions of the *Monetary Policy Report* charts and Excel spreadsheets of the data underlying most of them are available at www.bankofengland.co.uk/monetary-policy-report/2019/november-2019

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Monetary Policy Summary

The Bank of England's Monetary Policy Committee (MPC) sets monetary policy to meet the 2% inflation target, and in a way that helps to sustain growth and employment. At its meeting ending on 6 November 2019, the MPC voted by a majority of 7–2 to maintain Bank Rate at 0.75%. 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.

The Committee's new projections for activity and inflation are set out in the accompanying November *Monetary Policy Report*. They are now based on the assumption of an orderly transition to a deep free trade agreement between the United Kingdom and the European Union.

Looking through Brexit-related volatility, underlying UK GDP growth has slowed materially this year and a small margin of excess supply has opened up. That slowdown reflects weaker global growth, driven by trade protectionism, and the domestic impact of Brexit-related uncertainties.

In October, the UK and EU agreed a Withdrawal Agreement and Political Declaration as well as a flexible extension of Article 50. As a consequence, the perceived likelihood of a no-deal Brexit has fallen markedly and the sterling exchange rate has appreciated. These agreements are expected to remove some of the uncertainty facing businesses and households, and the MPC projects that UK GDP growth will pick up during 2020. This will be further supported by easier UK fiscal policy and a modest recovery in global growth. Over the remainder of the forecast period, demand growth is expected to outstrip the subdued pace of supply growth, which is restrained to some extent by the adjustment to new trading arrangements with the EU.

Inflationary pressures are projected to lessen in the near term. CPI inflation remained at 1.7% in September and is expected to decline to around 1¼% by the spring, owing to the temporary effect of falls in regulated energy and water prices. While unit labour costs have been growing at rates above those consistent with meeting the inflation target and core services CPI inflation has begun to increase somewhat, employment growth has slowed and pay growth is likely to fall back in the near term. In the second half of the MPC's forecast period, however, as a significant margin of excess demand emerges, domestic inflationary pressures are expected to build. Conditioned on current market yields, CPI inflation is projected to rise to slightly above 2% towards the end of the forecast period.

Monetary policy could respond in either direction to changes in the economic outlook in order to ensure a sustainable return of inflation to the 2% target. The Committee will, among other factors, monitor closely the responses of companies and households to Brexit developments as well as the prospects for a recovery in global growth. If global growth fails to stabilise or if Brexit uncertainties remain entrenched, monetary policy may need to reinforce the expected recovery in UK GDP growth and inflation. Further ahead, provided these risks do not materialise and the economy recovers broadly in line with the MPC's latest projections, some modest tightening of policy, at a gradual pace and to a limited extent, may be needed to maintain inflation sustainably at the target.

The MPC judges at this meeting that the existing stance of monetary policy is appropriate.

1 The economic outlook

Underlying UK GDP growth slowed materially in 2019 as weaker global growth and Brexit-related uncertainties weighed on spending. Weaker world growth has been partly driven by trade protectionism and an associated rise in global uncertainty. The MPC judges that UK growth has slowed to below-potential rates. As a result, the economy now has a modest amount of slack, which persists in the first part of the forecast.

In October, the UK and EU agreed a Withdrawal Agreement and Political Declaration, the UK House of Commons approved the second reading of the Bill that translates the agreement into law, and the UK and EU agreed a flexible extension of Article 50. Sterling has appreciated markedly as the perceived probability of a no-deal Brexit has reduced. These developments are also likely to remove some of the uncertainty that has been facing businesses and households.

Reflecting government policy, the MPC's projections are now conditioned on the assumption that the UK moves to a deep free trade agreement with the EU. They are also conditioned on the current market path for interest rates, which projects that Bank Rate will be below its current level over the forecast period. Under those assumptions, UK demand is projected to recover and to grow faster than the subdued pace of supply growth. This recovery reflects the assumed reduction in the uncertainty facing businesses and households, more supportive fiscal policy and a gradual pickup in global growth. As a result, excess demand and domestic price pressures build gradually. CPI inflation declines further below 2% in the near term because of falls in energy prices and water bills, but rises to the target in the second year, and slightly above it towards the end of the forecast period.

1.1 Recent developments

Underlying UK GDP growth has slowed materially over the past year.
While UK GDP growth has been volatile this year because of Brexit-related factors, underlying activity has weakened (Section 2). Quarterly growth over 2019 as a whole is expected to have averaged only 0.2%, roughly half the average in the previous three years and below the MPC's assessment of the economy's potential rate of growth.

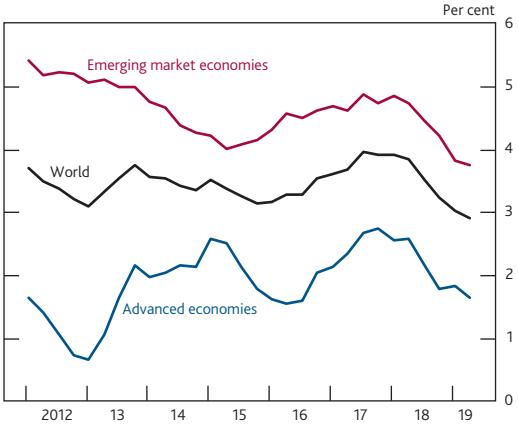
That slowing has been driven partly by weakening global growth…
Subdued underlying UK GDP growth partly reflects the impact of weaker global growth. The world economy has experienced a marked, broad-based slowdown (**Chart 1.1**), and is now expanding at its slowest pace since 2009. The principal drivers of the slowdown are the rise in trade protectionism (Section 3), the impact of the past tightening in global financial conditions and domestic weakness in some large emerging market economies. Weak world activity has reduced demand for UK exports. Greater protectionism has increased global uncertainty, which is dampening investment spending in many countries, including the UK.

…and importantly by increasingly entrenched Brexit-related uncertainties.

UK spending has been materially dampened by increased uncertainties related to the Brexit process. In particular, the proportion of companies that report high uncertainty about Brexit has been elevated (**Chart 1.2**), and businesses on average expect Brexit to have a negative effect on their sales (Section 4). Those factors are likely to have weighed on business investment, which — unusually during an expansion — has fallen in five out of the past six quarters. Consumer spending has been more resilient to the uncertainties around Brexit, although these appear to have weighed on some discretionary spending and housing. While household spending has been underpinned by strong real income growth, consumption growth has weakened somewhat and the household saving rate has drifted up over the past couple of years, despite the strong labour market.

Chart 1.1 Global growth has slowed sharply

Four-quarter PPP-weighted GDP growth[a]

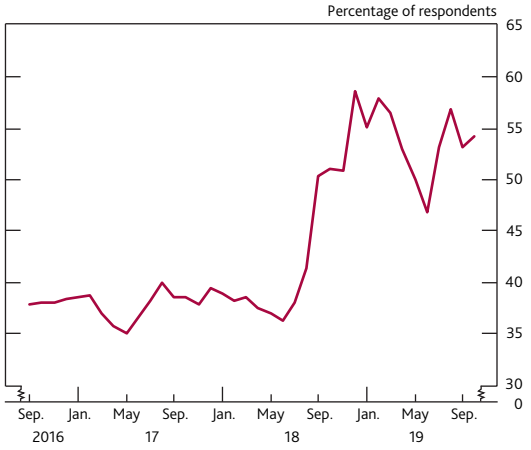


Sources: Eikon from Refinitiv, IMF *World Economic Outlook* (*WEO*) and Bank calculations.

(a) Constructed using real GDP growth rates of 189 countries weighted according to their shares in world GDP using the IMF's purchasing power parity (PPP) weights.

Chart 1.2 Uncertainty about Brexit has been elevated

Brexit in top three current sources of uncertainty[a]



Sources: Decision Maker Panel (DMP) Survey and Bank calculations.

(a) Question: 'How much has the result of the EU referendum affected the level of uncertainty affecting your business?'. Respondents can select: 'Not important'; 'One of many sources'; 'Two or three top sources'; or 'Top source of uncertainty'. Before August 2018, data are interpolated between waves and shown as three-month rolling averages.

A small margin of excess supply is judged to have emerged since the turn of the year.

The slowing in underlying GDP growth to below the MPC's estimate of potential growth has led to a margin of slack opening up in the UK economy. The degree of spare capacity in the economy is judged to be modest, however.

CPI inflation has been close to the 2% target.

Inflation has been close to 2% in recent months, averaging 1.8% during 2019 Q3. Over the past year or so, inflation has fallen, accounted for by weaker goods price inflation, which in turn has been driven partly by the fading impact from sterling's past depreciation. In contrast, core services price inflation has increased. That is consistent with a rise in domestic price pressures, and is likely to reflect the gradual pass-through of the strong pickup in pay growth over the past few years.

1.2 The MPC's projections

The House of Commons has for the first time approved the second reading of a Bill to implement the Withdrawal Agreement agreed between the UK and EU.

On 17 October, a Withdrawal Agreement and Political Declaration on the framework for the future relationship between the UK and the EU was agreed, setting out a broad partnership with a free trade agreement at its core. On 22 October, the UK House of Commons approved the second reading of the Bill which is intended to implement the agreement in UK law. Reflecting those developments, the MPC's projections are now conditioned on a transition to a deep free trade agreement (FTA) (Box 1). On 28 October, the UK's EU membership was extended by up to a further three months to 31 January 2020.

The Withdrawal Agreement is likely to reduce near-term uncertainties…

The Brexit uncertainties that have been facing households, businesses and financial markets are assumed to decline gradually over the forecast period, leading to a pickup in household and especially business spending. The progress of the Withdrawal Agreement and the extension of the UK's EU membership are likely to remove some uncertainty and support confidence in the near term, partly driven by a reduction in the risk of a no-deal Brexit. Some uncertainty is likely to persist, however, as the details of the UK and EU's eventual relationship are assumed to emerge only gradually over time and the smoothness of the transition to it remains to be determined.

…and sterling has appreciated.

The fall in the perceived likelihood of a no-deal Brexit has also been associated with an appreciation of the sterling exchange rate, which has risen by around 4% over the past three months. As a result, the level of sterling is now more consistent with the MPC's Brexit conditioning assumption. As the MPC set out in more detail in the August *Report*, UK asset prices reflect the probability market participants attach to the full range of possible Brexit outcomes, including a no-deal Brexit. That can lead to inconsistencies in the MPC's forecasts, which do not include elsewhere the possibility that the UK leaves the EU without a deal. As a result, the possibility of a no-deal Brexit had weighed on sterling, pushing up the MPC's earlier projections for GDP and inflation.

The projections are conditioned on the Government's recent fiscal measures, which provide stimulus to demand.

The MPC's projections are conditioned on the Government's tax and spending plans, which include a large increase in planned spending, as announced in September as part of *Spending Round 2019*. All else equal, the increase in spending is expected to raise GDP by around 0.4% over the MPC's forecast period. The projections are also conditioned on the market path for interest rates, which declines a little in the near term and ends the forecast period at around 0.5%. That accommodative path for monetary policy also supports the recovery in GDP growth.

Global GDP growth

Global GDP growth is expected to remain slow, as protectionism weighs on trade flows, business sentiment and investment, but picks up a little over the forecast period.

The MPC judges that some of the factors that have weighed on global activity over the recent past continue, such that global GDP growth is projected to remain at below-potential rates over coming quarters. Weakness in the euro area and some emerging market economies (EMEs) is expected to continue to restrain growth in the near term, with trade protectionism also acting as a drag. Protectionism weighs on trade flows directly and also indirectly through global uncertainty, business confidence and investment. Nonetheless, global growth is projected to pick up gradually over the forecast period, partly accounted for by a recovery in growth in some emerging economies. Growth is also supported by the loosening of monetary policy. In the central forecast, PPP-weighted world GDP growth gradually picks up from 3% in 2019 to 3½% in 2021 and 2022 (**Chart 1.3**). Weighted by UK export shares, world GDP growth is expected to pick up from 1¾% in 2019 to 2¼% in 2021 and 2022.

Weak global growth continues to weigh on UK export growth and investment.

Slow global growth is assumed to affect UK growth through trade channels, as well as via an effect on business spending. The higher uncertainty and lower sentiment associated with trade tensions weighs on UK business investment as well as that in other countries.

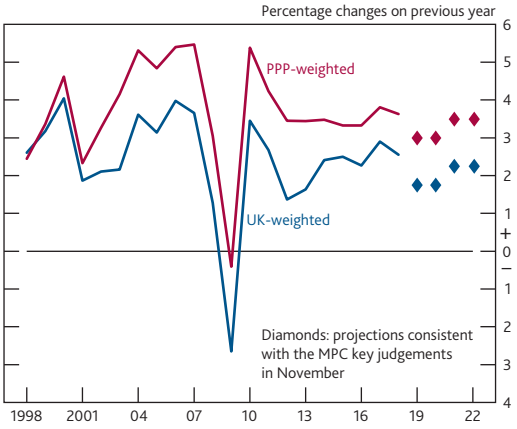
UK GDP growth

Growth of the UK's supply capacity is subdued.

Potential productivity is projected to grow at around ¾% on average over the forecast period, although it picks up a little in the final year of the forecast period to around 1%. Productivity growth is very low relative to pre-crisis rates of around 2¼%, reflecting a continuation of the post-crisis trend, weak business investment and reduced openness as the UK transitions to its new trading relationship with the EU. Labour supply is assumed to grow by around ½% per year. As a result, total potential supply growth is subdued relative to historical rates, averaging around 1¼% over the forecast period, reaching 1½% by the end. Lower supply growth reduces the pace of GDP growth that is consistent with the MPC meeting its 2% inflation target.

Chart 1.3 Global growth is expected to recover somewhat over the forecast period

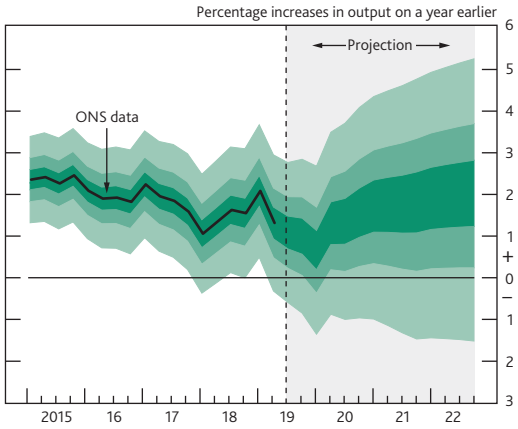
World GDP[a]



Sources: Eikon from Refinitiv, IMF *WEO* and Bank calculations.

(a) Annual average growth rates. Chained-volume measures. PPP-weighted world GDP constructed using real GDP growth rates of 189 countries weighted according to their shares in world GDP using the IMF's PPP weights. UK-weighted world GDP constructed using real GDP growth rates of 188 countries weighted according to their shares in UK exports.

Chart 1.4 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 1.A** footnote (b). To the left of the vertical dashed line, the distribution reflects uncertainty around revisions to the data over the past. To aid comparability with the official data, it does not include the backcast for expected revisions, which is available from the 'Download the chart slides and data' link at www.bankofengland.co.uk/monetary-policy-report/2019/november-2019. To the right of the vertical line, the distribution 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 outturns 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.

UK demand growth is projected to recover over 2020.

Underlying UK demand growth remains a little below potential in the near term, but picks up during 2020 as the dampening effects from Brexit-related uncertainties begin to dissipate (**Chart 1.4**). That boosts business investment growth in particular. The pickup in GDP growth is also supported by easier fiscal policy and the gradual recovery in global growth. In the central forecast, UK GDP growth picks up from 1.0% in 2019 Q4 to 1.6% in 2020 Q4, 1.8% in 2021 Q4 and 2.1% in 2022 Q4 (**Table 1.A**).

Table 1.A Forecast summary[a][b]

	Projections			
	2019 Q4	2020 Q4	2021 Q4	2022 Q4
GDP[c]	1.0	1.6	1.8	2.1
CPI inflation[d]	1.4	1.5	2.0	2.2
LFS unemployment rate	3.9	4.0	3.8	3.5
Excess supply/Excess demand[e]	-¼	0	+¾	+1¼
Bank Rate[f]	0.7	0.5	0.5	0.5

(a) Modal projections for GDP, CPI inflation, LFS unemployment and excess supply/excess demand.
(b) Unless otherwise stated, the projections shown in this section are conditioned on: Bank Rate following a path implied by market yields; the Term Funding Scheme; 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 Spring Statement 2019, updated for the announcements made in *Spending Round 2019*; commodity prices following market paths for two quarters, then held flat; the sterling exchange rate remaining broadly flat; and the prevailing prices of a broad range of assets, which embody market expectations of the future stocks of purchased gilts and corporate bonds. The main assumptions are set out in the 'Download the chart slides and data' link at www.bankofengland.co.uk/monetary-policy-report/2019/november-2019.
(c) Four-quarter growth in real GDP. The growth rates reported in the table exclude the backcast for GDP. Including the backcast 2019 Q4 growth is 1.0%, 2020 Q4 growth is 1.6%, 2021 Q4 growth is 1.8% and 2022 Q4 growth is 2.1%.
(d) Four-quarter inflation rate.
(e) Per cent of potential GDP. A negative figure implies output is below potential and a positive figure that it is above.
(f) Per cent. The path for Bank Rate implied by forward market interest rates. The curves are based on overnight index swap rates.

Four-quarter business investment growth picks up materially, from negative rates to around 4½% by 2022 (**Chart 1.5**). It is supported by the reduction in uncertainty, although slower global growth dampens investment spending. Household consumption rises broadly in line with real income growth over the forecast period as a whole. Consumption growth picks up from about 1% currently to 1½% in 2020, and 2% by 2022. On average over the forecast period, consumption grows somewhat more slowly than its historical pace, as real income growth is dampened by weak productivity growth. Both exports and imports growth fall as companies transition to the UK and EU's new trading arrangements. On average over the forecast period, net trade weighs a little on growth.

Direct comparisons between the August and November projections are misleading because of inconsistencies in the August projections.

As explained in the August *Report*, the economic projections for growth and inflation at that time were mechanically boosted by the inconsistencies between asset prices and the Brexit conditioning assumption. Given that, comparisons between them and the MPC's latest projections could be difficult to interpret. Specifically, asset prices had at that time factored in a significant probability of a no-deal no-transition Brexit, whereas the MPC's economic projections did not include that possibility but rather were conditioned on the assumption of a smooth transition to the average of a range of possible outcomes for the UK's eventual trading relationship with the EU.

The sharp fall in the perceived likelihood of a no-deal no-transition Brexit over the past three months, and the response of asset prices to that, means the inconsistencies within the August projections have been substantially reduced in the latest projections described in this *Report*. Consequently, direct comparisons of the two sets of projections could provide a misleading representation of how recent developments have affected the economic outlook over the past three months.

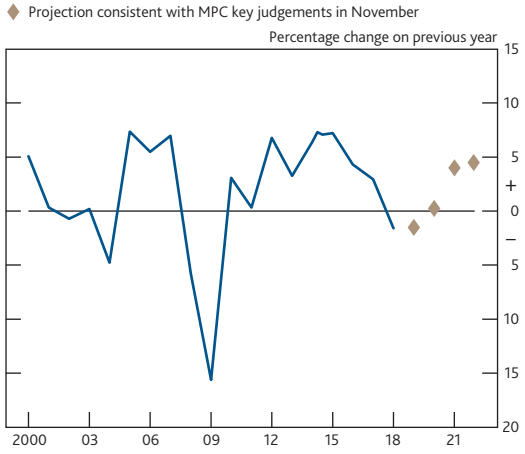
The outlook for global demand has weakened since the time of the August *Report*, for the reasons described above. Those developments will also have affected both UK and global asset prices over the past three months.

Since the August 2016 *Report*, the MPC's projections have been conditioned on the assumption of a smooth transition to an average of possible end-states, with the adjustment taking place gradually over many years. Consistent with the provisions of the Withdrawal Agreement, the MPC's latest projections are now conditioned on the assumption that a greater proportion of the adjustment to the UK's new trading arrangements with the EU takes place within the three-year forecast period.

In the MPC's latest projection, the level of GDP ends the forecast period around 1% lower than in August. Three quarters of that difference is accounted for by the moves in asset prices and the weaker global environment. The remaining quarter can be accounted for by the net impact of the changes to the MPC's Brexit conditioning assumption described in Box 1 and the fiscal measures announced in *Spending Round 2019*. **Table 1.B** shows August projections adjusted for the impact of changes in asset prices and the world outlook since then.

Chart 1.5 Business investment growth is projected to pick up materially

Business investment[a]



Sources: ONS and Bank calculations.

(a) Annual average growth rates. Chained-volume measure. Business investment data based on GAN8.

Table 1.B Adjusted August 2019 projections[a]

	Projections			
	2019 Q4	2020 Q4	2021 Q4	2022 Q4
GDP[b]	0.7	1.5	2.2	2.3
CPI inflation[c]	1.5	1.8	1.9	2.1

(a) Projections have been adjusted to reflect the changes in asset prices and the world outlook since the August *Report*.
(b) Four-quarter growth in real GDP.
(c) Four-quarter inflation rate.

Excess supply/demand

Slack is projected to remain in the first part of the forecast period, but, as GDP growth recovers, spare capacity is eroded and excess demand builds.

Some slack persists over coming quarters, but it is eroded as GDP growth picks up to above the subdued rate of potential supply growth around the middle of 2020. Excess demand emerges in 2021 and builds over the remainder of the forecast period, reaching 1¼% of potential GDP by the end (**Table 1.A**). The unemployment rate falls to around 3½% by the end of the forecast period (**Chart 1.6**).

CPI inflation

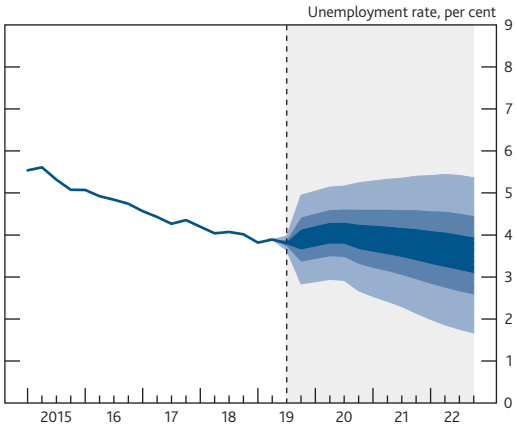
CPI inflation is projected to decline notably in the near term reflecting the impact of lower regulated energy and utilities prices…

Over the coming quarters, inflation will be affected by developments in a number of regulated prices. The price cap affecting household gas and electricity bills has fallen, which will reduce the contribution of energy prices to inflation, as will the fall in sterling oil prices over the past year. In addition, water bills are projected to fall in April 2020 in line with the draft determination of the regulator, Ofwat (Section 2). CPI inflation is expected to fall to an average of 1.2% in 2020 Q2 as a result.

…but further out inflation rises, supported by building excess demand.

Inflation picks up as those temporary effects begin to fade towards the end of 2020. It is supported by rising excess demand, which leads to stronger domestic inflationary pressures. Wage growth is projected to be around 3¾% over the second half of the forecast period, supported by low unemployment. Taken together with weak productivity growth, that means unit labour cost growth is robust. CPI inflation is projected to rise to 2.0% in the second year of the MPC's forecast, and 2.2% in the third year (**Chart 1.7**).

Chart 1.6 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 1.A** footnote (b). The coloured bands have the same interpretation as in **Chart 1.4**, 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 2019 Q3, a quarter earlier than the fan for CPI inflation. That is because Q3 is a staff projection for the unemployment rate, based in part on data for July and August. The unemployment rate was 3.9% in the three months to August, and is projected to be 3.8% in Q3 as a whole. A significant proportion of this distribution lies below Bank staff's current estimate of the long-term equilibrium unemployment rate. There is therefore uncertainty about the precise calibration of this fan chart.

Chart 1.7 CPI inflation projection based on market interest rate expectations, other policy measures as announced

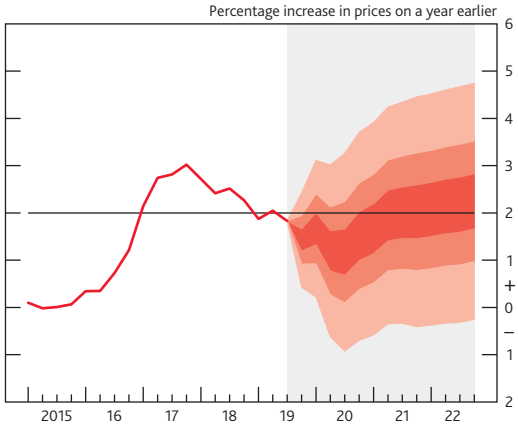


Chart 1.7 depicts the probability of various outcomes for CPI inflation in the future. It has been conditioned on the assumptions in **Table 1.A** footnote (b). If economic circumstances identical to today's were to prevail on 100 occasions, the MPC's best collective judgement is that inflation in any particular quarter would lie within the darkest central band on only 30 of those occasions. The fan chart is constructed so that outturns of inflation are also expected to lie within each pair of the lighter red areas on 30 occasions. In any particular quarter of the forecast period, inflation is therefore expected to lie somewhere within the fans on 90 out of 100 occasions. And on the remaining 10 out of 100 occasions inflation can fall anywhere outside the red area of the fan chart. Over the forecast period, this has been depicted by the light grey background. See the box on pages 48–49 of the May 2002 *Inflation Report* for a fuller description of the fan chart and what it represents.

Policy decision

At its meeting ending on 6 November 2019, the MPC judged that the existing stance of monetary policy was appropriate. The MPC voted to maintain Bank Rate at 0.75%, 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 page i of this *Report* and in more detail in the Minutes of the meeting.

Monetary policy could respond in either direction to changes in the economic outlook in order to ensure a sustainable return of inflation to the 2% target. The Committee would, among other factors, monitor closely the responses of companies and households to Brexit developments as well as the prospects for a recovery in global growth. If global growth failed to stabilise or if Brexit uncertainties remained entrenched, monetary policy might need to reinforce the expected recovery in UK GDP growth and inflation. Further ahead, provided these risks did not materialise and the economy recovered broadly in line with the MPC's latest projections, some modest tightening of policy, at a gradual pace and to a limited extent, might be needed to maintain inflation sustainably at the target.

1.3 Key judgements and risks

Key Judgement 1: global GDP growth is projected to remain slow in the first part of the forecast period, partly reflecting the impact of trade protectionism, before rising gradually towards potential rates.

GDP growth is projected to continue to be slow in the near term, particularly in the euro area and some EMEs, in part reflecting the impact of trade tensions.

The MPC judges that protectionism is likely to continue to weigh on GDP growth both directly through its effects on trade flows, and through its indirect effects on uncertainty, business sentiment and investment (Section 3). The risks around the MPC's judgement about the impact of protectionism are two-sided. Some of those risks relate to the extent of trade barriers — for example, the projections assume that no further trade barriers are announced, but they also assume that no existing tariff increases are rolled back. In addition, the estimates of their effects on economic activity are uncertain. There is a chance that the indirect effects could be bigger, consistent with some investors' views that a trade war is the top risk to the global outlook (Section 3). Nonetheless, the projections include relatively sizable indirect effects, including in the euro area, where growth is judged likely to be dampened by concerns that further tariffs could be introduced, as well as through spillover effects from the impact of tariffs on Chinese demand.

The MPC projects that global growth will recover a little, with the risks around the outlook broadly balanced.

While trade protectionism continues to weigh on activity, global growth begins to pick up a little during 2020. That pickup is partly accounted for by a recovery in growth in some emerging economies, which have been hit by idiosyncratic shocks, for example in Turkey and Argentina. It is also supported by the loosening of monetary policy. There is a risk that the interest rate required to boost demand and return inflation sustainably to target rates has declined somewhat, however, due to higher levels of uncertainty.

The MPC judges that the risks around the global growth projection are broadly balanced.

Key Judgement 2: supply growth is subdued.

Supply growth has been further restrained by the impact of uncertainty.

The MPC judges that potential supply growth is likely to have been restrained somewhat recently by Brexit weighing on potential productivity growth. That might have occurred through lower business investment reducing capital deepening. In addition, preparations for Brexit are likely to have diverted resources away from productive output or making improvements. The resources devoted to Brexit preparations have increased in 2019.

As a result, the degree of slack that has opened up over the past year might be a little less than would have been implied by the weakening in demand growth alone. That is consistent with the fact that unemployment has remained low, and below the MPC's estimate of its equilibrium rate. Slack is assumed to lie within companies, consistent with some survey measures of capacity utilisation.

Productivity growth remains very low.

The MPC judges that productivity growth will pick up a little over the forecast period, but will remain well below its pre-crisis pace. That limits the rate at which the economy can grow without putting upward pressure on inflation. The MPC's projection of subdued productivity growth reflects a continuation of the post-crisis trend, recent weakness in business investment and the reduction in openness that occurs as the UK economy adjusts to its new trading arrangements with the EU.

These judgements are subject to risks in both directions. While the empirical relationships between openness, trade and productivity are well founded (Box 1), the size of the effects are naturally uncertain. In addition, until the details of the FTA are finalised, there will be uncertainty about the barriers to trade that will arise and when exactly they will take effect.

Moreover, there are very few recent historical examples of trading relationships becoming less aligned. As such, the estimated impact on trade flows of joining trading arrangements is assumed to be a proxy for the size of the impact of leaving them. It is possible that the size of these effects could be different, however. On the one hand, the impact of trade barriers going up might be smaller than when they go down as the trading relationships are already well

established. On the other hand, estimates of the average impact across a wide number of countries might understate the impact of a large, advanced and heavily integrated country leaving an existing trading arrangement.

There are also substantial uncertainties around the timing of the effects. The pace at which increased barriers impact trade flows is likely to depend on the types of barriers that take effect. While some barriers are likely to affect trade quite quickly — for example, customs declarations that take additional time and cost to complete — the effect of others is likely to occur more slowly — for example regulations and product standards between the EU and UK are expected to diverge only gradually over time.

The MPC judges that the risks around its projections for potential supply growth — and therefore GDP growth — are skewed to the downside in the second and third years of the forecast, reflecting the uncertainty around the exact nature of the FTA with the EU and the transition to it.

Key Judgement 3: uncertainty is reduced by the Withdrawal Agreement — providing some support to UK demand growth.

The strength of the pickup in growth will depend importantly on how households and businesses respond to the Withdrawal Agreement.

The Withdrawal Agreement and extension of the UK's membership of the EU appears to have reduced Brexit-related uncertainty. In part that reflects some decline in the likelihood of a no-deal Brexit. There is substantial evidence that perceptions of the risk of a no-deal Brexit have declined. Sterling has appreciated, betting odds on a no-deal Brexit in 2019 have fallen and responses to the DMP Survey suggest that the average likelihood that firms attach to that outcome fell after the second reading of the Withdrawal Agreement Bill was passed. The expected fall in uncertainty is projected to boost investment and, to a lesser extent, consumption. Four-quarter business investment growth is projected to pick up from -1½% in 2019 Q2 to 4% in 2021, which drives a recovery in GDP growth over that period. Nonetheless, it is restrained by weak productivity growth and slow global growth.

There are two-sided risks to the outlook for business investment. A greater drag from Brexit uncertainty could persist in the near term if businesses judge that they continue to need greater clarity about the specific details of the UK's future trading relationship and the speed of the adjustment to it. Alternatively, there could be a bigger rebound in investment if companies bring back a larger number of previously paused projects.

Spending growth will also be sensitive to how households respond to uncertainty. The saving ratio and household financial balance have drifted up a little over the past couple of years, which might suggest that households have undertaken some precautionary savings in response to higher uncertainty. Historically, households' savings have increased mainly in response to higher concerns about their job prospects.

Over the forecast period as a whole, household consumption is projected to grow broadly in line with real income growth. Households' confidence and spending should be supported by unemployment remaining low. Nonetheless, there are risks around those judgements.

The risks around the UK growth forecast are judged to be skewed to the downside, reflecting the downside risks to supply growth.

The outlook for GDP growth will also be sensitive to developments in the UK's supply capacity. Productivity growth in the economy impacts demand by affecting the income that households have to spend and the incentive for companies to invest. Reflecting the risks around the forecast for potential supply growth, the MPC judges that the risks to UK GDP growth are skewed to the downside in the second and third years of the forecast, reflecting the uncertainty around the exact nature of the FTA with the EU and the transition to it.

Key Judgement 4: CPI inflation declines further below 2% in the near term given lower utilities prices, before rising slightly above the target by the end of the forecast owing to building domestic price pressures.

The projected decline in CPI inflation in the near term is expected to be temporary.

While CPI inflation is projected to decline in the near term, that fall is expected to be temporary, given it reflects the impact of changes in some regulated prices (Section 2). Inflation is projected to fall to 1.2% on average in 2020 Q2 — and the chance that it falls below 1% is judged to be a little less than a half at that point. However, as the effects of past changes in utilities prices drop out of the annual calculation, inflation is projected to return towards the 2% target.

As excess demand builds, domestic price pressures rise.

The pickup in inflation is supported by the move from excess supply into excess demand. Throughout the forecast period, unemployment is projected to be low and wage growth is projected to be relatively strong. With weak productivity growth, domestic cost growth remains solid and those higher costs are assumed to be passed through to CPI inflation. It is possible that consumer-facing companies continue to absorb some of the higher cost pressures in their profit margins so domestic price pressures remain subdued. Alternatively, margins could be maintained or rebuilt as excess demand rises, leading to domestic price pressures increasing more rapidly.

CPI inflation ends the forecast period a little above the target.

Domestically generated inflation is projected to exert upward pressure on CPI inflation over the second half of the forecast period, such that CPI inflation is at 2% in 2021 Q4 and ends the forecast a little above the MPC's target.

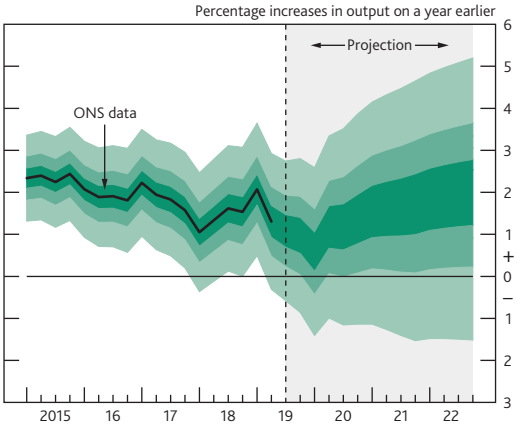
The risks around the MPC's projection for inflation are judged to be broadly balanced.

The risks to the MPC's inflation forecast are judged to be broadly balanced. In addition to the risks arising from demand, supply, and pricing conditions, the outlook for CPI inflation will also be affected by movements in sterling, which is likely to remain sensitive to Brexit developments.

1.4 Constant rate projections

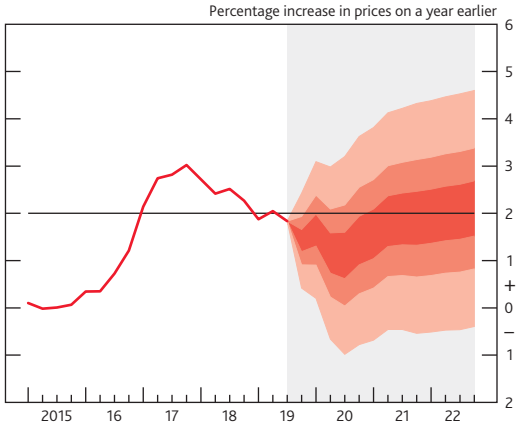
In the MPC's projections conditioned on the alternative assumption of constant interest rates at 0.75%,[1] GDP growth is slightly weaker, but still recovers to outstrip the subdued rate of supply growth (**Chart 1.8**). As a result, excess demand builds over 2021 and 2022. CPI inflation ends the forecast period slightly above the target at 2.1% (**Chart 1.9**).

Chart 1.8 GDP projection based on constant nominal interest rates at 0.75%, other policy measures as announced



See footnote to **Chart 1.4**.

Chart 1.9 CPI inflation projection based on constant nominal interest rates at 0.75%, other policy measures as announced



See footnote to **Chart 1.7**.

(1) The assumption is that Bank Rate remains at 0.75% throughout the three years of the forecast period, before moving towards the market path over the subsequent three years.

Table 1.C Indicative projections consistent with the MPC's forecast[a][b]

	Averages		Projections			
	1998–2007	2010–18	2019	2020	2021	2022
World GDP (UK-weighted)[c]	**3**	**2½**	**1¾**	**1¾**	**2¼**	**2¼**
World GDP (PPP-weighted)[d]	4	3¾	3	3	3½	3½
Euro-area GDP[e]	2¼	1½	1¼	¾	1½	1¾
US GDP[f]	3	2¼	2¼	2	2	1¾
Emerging market GDP (PPP-weighted)[g]	5¾	5¼	3¾	4¼	4½	4½
of which, China GDP[h]	*10*	*7¾*	*6*	*5¾*	*5¾*	*5½*
UK GDP[i]	**3**	**2**	**1¼**	**1¼**	**1¾**	**2**
Household consumption[j]	3¼	2	1¼	1½	1¾	2
Business investment[k]	3	3¾	-1½	¼	4	4½
Housing investment[l]	3¼	2¾	1	1¾	3¼	3¼
Exports[m]	4¼	3	0	1	-1	-1
Imports[n]	5¾	3¾	3¼	-½	½	-½
Contribution of net trade to GDP[o]	-¼	-¼	-1	½	-½	-¼
Real post-tax labour income[p]	3¼	1½	1¾	1¼	2¼	2¼
Household saving ratio[q]	8¼	8¾	6½	6	6½	6½
Credit spreads[r]	¾	2½	1½	1¾	1¾	1¾
Excess demand/Excess supply[s]	**0**	**-1¾**	**-¼**	**-¼**	**+½**	**+1**
Hourly labour productivity[t]	2¼	½	0	¾	¾	1
Employment[u]	1	1¼	½	¾	¾	¾
Average weekly hours worked[v]	32¼	32	32	32¼	32¼	32¼
Unemployment rate[w]	5¼	6¼	4	4	3¾	3½
Participation rate[x]	63	63½	63¾	64	64	64
CPI inflation[y]	**1½**	**2¼**	**1½**	**1½**	**2**	**2¼**
UK import prices[z]	0	1½	-¼	½	¼	¼
Energy prices — direct contribution to CPI inflation[aa]	¼	¼	-¼	0	0	0
Average weekly earnings[ab]	4¼	2	3½	3¼	3¾	3¾
Unit labour costs[ac]	3	1½	3	2½	2¾	2¾
Private sector regular pay based unit wage costs[ad]	1¾	1½	3½	2¾	2¾	2¾

Sources: Bank of England, Bloomberg Finance L.P., Department for Business, Energy and Industrial Strategy, Eurostat, IMF *World Economic Outlook* (*WEO*), National Bureau of Statistics of China, ONS, US Bureau of Economic Analysis and Bank calculations.

(a) The profiles in this table should be viewed as broadly consistent with the MPC's projections for GDP growth, CPI inflation and unemployment (as presented in the fan charts).
(b) Figures show annual average growth rates unless otherwise stated. Calculations for back data based on ONS data are shown using ONS series identifiers.
(c) Chained-volume measure. Constructed using real GDP growth rates of 188 countries weighted according to their shares in UK exports.
(d) Chained-volume measure. Constructed using real GDP growth rates of 189 countries weighted according to their shares in world GDP using the IMF's purchasing power parity (PPP) weights.
(e) Chained-volume measure.
(f) Chained-volume measure.
(g) Chained-volume measure. Constructed using real GDP growth rates of 155 EME countries, as defined by the IMF *WEO*, weighted according to their relative shares in world GDP using the IMF's PPP weights.
(h) Chained-volume measure.
(i) Annual average. Excludes the backcast for GDP.
(j) Chained-volume measure. Includes non-profit institutions serving households. Based on ABJR+HAYO.
(k) Chained-volume measure. Based on GAN8.
(l) Chained-volume measure. Whole-economy measure. Includes new dwellings, improvements and spending on services associated with the sale and purchase of property. Based on DFEG+L635+L637.
(m) Chained-volume measure. The historical data exclude the impact of missing trader intra-community (MTIC) fraud. Since 1998 based on IKBK-OFNN/(BOKH/BQKO). Prior to 1998 based on IKBK.
(n) Chained-volume measure. The historical data exclude the impact of MTIC fraud. Since 1998 based on IKBL-OFNN/(BOKH/BQKO). Prior to 1998 based on IKBL.
(o) Chained-volume measure. Exports less imports. GDP data based on the mode of the MPC's GDP backcast.
(p) Wages and salaries plus mixed income and general government benefits less income taxes and employees' National Insurance contributions, deflated by the consumer expenditure deflator. Based on [(ROYJ+ROYH-(RPHS+AIIV-CUCT)+GZVX]/[(ABJQ+HAYE)/(ABJR+HAYO)].
(q) Percentage of total available household resources. Based on NRJS.
(r) 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.
(s) Annual average. Per cent of potential GDP. A negative figure implies output is below potential and a positive figure that it is above.
(t) GDP per hour worked. GDP data based on the mode of the MPC's GDP backcast. Hours worked based on YBUS.
(u) Based on MGRZ.
(v) Level in Q4. Average weekly hours worked, in main job and second job. Based on YBUS/MGRZ.
(w) Level in Q4. LFS unemployment rate in Q4.
(x) Level in Q4. Percentage of the 16+ population. Based on MGWG.
(y) Four-quarter inflation rate in Q4.
(z) Four-quarter inflation rate in Q4 excluding fuel and the impact of MTIC fraud.
(aa) Contribution of fuels and lubricants and gas and electricity prices to four-quarter CPI inflation in Q4.
(ab) Four-quarter growth in Q4. Whole-economy total pay. Growth rate since 2001 based on KAB9. Prior to 2001, growth rates are based on historical estimates of AWE, with ONS series identifier M09M.
(ac) Four-quarter growth in unit labour costs in Q4. Whole-economy total labour costs divided by GDP at constant 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.
(ad) Four-quarter growth in private sector regular pay based unit wage costs in Q4. Private sector wage costs divided by private sector output at constant prices, based on the mode of the MPC's GDP backcast. Private sector wage costs are average weekly earnings (excluding bonuses) multiplied by private sector employment.

Box 1
The MPC's conditioning assumption about the UK's eventual trading relationship with the EU

The MPC's projections are now conditioned on a transition to a new trading relationship between the UK and EU.

On 17 October, a Withdrawal Agreement and Political Declaration on the framework for the future relationship between the UK and the EU was agreed. On 22 October, the UK House of Commons approved the second reading of the European Union (Withdrawal Agreement) Bill. Consistent with those documents, the MPC's projections are now conditioned on a deep free trade agreement (FTA) with the EU. On 28 October, the UK's EU membership was extended by up to a further three months to 31 January 2020.

FTAs can take a wide range of forms depending on the details of the agreement, for example relating to the extent of barriers to trade across different sectors. Reflecting the aim of the Political Declaration to establish 'an ambitious, broad, deep and flexible partnership across trade and economic cooperation with a comprehensive and balanced Free Trade Agreement at its core', the MPC's projections are conditioned on an FTA which is of similar scale and depth to the Comprehensive Economic and Trade Agreement (CETA) in place between Canada and the EU.

This box sets out the MPC's assumptions about the nature of the future trading relationship between the UK and EU and how the impact of those assumptions on the economy has been modelled using empirical relationships that have held in the past.

Assumptions underpinning the central projection

Trade

Goods trade is tariff free, but customs checks are introduced.

Consistent with the Political Declaration, the forecast assumes that no tariffs, fees, charges or quantitative restrictions are introduced. However, the move to a CETA-like FTA would mean that customs, rules of origin and some regulatory checks between the UK and EU are introduced. Those would raise administrative costs for firms engaging in cross-border trade with the EU and would particularly affect those industries whose business model relies on the free flow of goods. As a result, trade flows are likely to fall and some companies might exit the market.

Some services trade would be subject to greater barriers.

Some cross-border provision of services is likely to be prevented by regulations once the FTA comes into effect. These are expected to affect UK financial services in particular: UK financial firms currently have the ability to 'passport' financial services into EU Member States and those cross-border access rights are set to be lost. However, it is assumed that the UK's regulatory and supervisory regimes are deemed to be equivalent under the EU's frameworks, which would mitigate some of the impact. Trade barriers also have a direct effect on some other sectors such as legal services. For example, UK-based lawyers would lose the right to bring cases before the European Court of Justice.

Regulatory trade barriers with the EU are likely to increase gradually.

At the moment, regulations — such as product standards — are the same in the UK and EU. Over time, some of those regulations may diverge. That would gradually raise barriers to trade between the UK and EU. For example, companies producing goods for both UK domestic and EU export markets might have to meet two sets of standards in future, increasing the complexity of their business and their costs. Some companies might choose instead to focus on one market.

The UK replicates a substantial proportion of EU trade arrangements with non-EU countries.

The UK Government has either negotiated to roll over, or is aiming to roll over, agreements with non-EU countries that cover 11% of UK trade. In the MPC's projections it is assumed that these agreements are implemented. It is also assumed that no further trade deals with non-EU countries are implemented before the end of the forecast period, reflecting the fact that it typically takes several years for new trade deals to be negotiated and implemented.

Preparedness

Authorities and businesses are assumed to be ready for the change in trading arrangements.

Authorities and businesses are assumed to use the time ahead of the FTA coming into effect to put in place the necessary physical and regulatory arrangements for a smooth transition to the new trading arrangements. Consequently, the projections assume that there is no additional reduction in trade from disruption owing to a lack of preparedness. As such, the projections assume that the physical infrastructure and capabilities required for new checks on both sides of the UK-EU border are in place ahead of the FTA taking effect, and that firms complete the process of obtaining EU certification for their products.

Table 1 Summary of assumptions

Trading arrangements	
Tariffs	No tariffs on UK-EU trade.
Customs barriers	Customs checks on UK-EU trade introduced.
Services barriers	Some regulatory barriers to trade emerge. Financial services lose passporting rights, but the granting of equivalence mitigates some of the impact. Some other sectors, such as legal services, lose some access to the EU market.
Other barriers	Product standards diverge gradually.
Trade deals	UK retains access to trade arrangements between the EU and non-EU countries worth 11% of total UK trade. No further trade deals with non-EU countries implemented before the end of the forecast period.
Preparedness for new trading arrangements	Authorities and businesses use the time ahead of the FTA coming into effect to put in place the necessary measures to avoid the additional reduction in trade that would arise from a lack of preparedness for new border and regulatory arrangements.

Modelling the effects of these assumptions on the economy

The effects of these assumptions on the economy are modelled using empirical relationships based on past data. The relationships summarised here are outlined in detail in Chapter 2 of *EU withdrawal scenarios and monetary and financial stability*.

A range of evidence suggests that greater openness to trade increases productivity.

A range of theoretical work and empirical evidence suggests that greater openness supports productivity, raising economic output and improving living standards. This occurs through both increases in trade and foreign direct investment (FDI) flows.

Greater openness to trade is thought to increase productivity through a number of channels including: increased innovation and the adoption of new ideas and practices (see, eg Grossman and Helpman (1991)[1] and Eaton and Kortum (2002)); greater specialisation, exploiting cross-country returns to scale and scope (see, eg Krugman (1979) and Mayer, Melitz and Ottaviano (2016)); and better matching of capital and labour within an economy, improving the allocation of resources.

Increased flows of FDI also increase productivity. FDI has been associated with productivity spillovers to domestically owned firms through knowledge and technology transfers, for example (see, eg Haskel, Pereira and Slaughter (2007)). Those firms engaged in FDI are estimated to be more productive than those that are not (see ONS (2017)).

The economic effects of the free trade agreement are estimated using gravity models.

The scale of the longer-term falls in trade and FDI flows that underlie the MPC's central projection are estimated using gravity models (see eg Anderson and van Wincoop (2003) and Brenton, Di Mauro and Lücke (1999)). Gravity models have been used extensively in the international trade literature for analysing the determinants of bilateral trade. The gravity models developed by Bank staff are based on a substantial data set: the model for goods trade is estimated on more than 600,000 observations, while the one for services trade uses 51,000 observations. The models can be used to isolate the effect of different trading arrangements between economies, separating them from other key determinants such as size and distance. This allows for the development of well-founded estimates on the eventual volume of UK trade with the EU and other countries. Nevertheless, as trade openness has generally risen over time, there is a large degree of uncertainty around the estimated effects of the UK becoming less open to trade with the EU.

(1) *Innovation and growth in the global economy*, MIT Press Books, The MIT Press, Edition 1, Vol. 1, number 0262570971, January.

The MPC's estimates assume that the estimated impact on trade flows of joining trading arrangements is a proxy for the size of the impact of leaving them.

The reduction in trade flows embodied within the MPC's central projection is estimated separately for goods and services. These models allow for trade diversion. While Brexit will decrease trade between the UK and the EU, the UK's trade with other countries is likely to increase slightly.

Estimates of the elasticities between openness and productivity are used to convert the estimated falls in trade flows and FDI into effects on GDP. The MPC assumes that a 1% fall in trade flows leads to a 0.25% fall in productivity. This lies within the range of estimates from the economic literature (see, eg Feyrer (2009)). The MPC assumes that a 1% fall in FDI leads to a 0.04% fall in productivity, again in line with estimates from economic research (see, eg de Mello (1999)).

Trade barriers rise over the forecast period, but the adjustment is assumed to be orderly.

The Withdrawal Agreement includes a transition period to bridge the time between the date of the UK's exit from the EU and the entry into force of the new UK-EU partnership arrangements. At present, the transition period is set to end on 31 December 2020. Some barriers to trade — such as customs checks — would take effect immediately when the transition period ends. As a result, much of the impact of those trade barriers is likely to be felt over the forecast period. The MPC's forecasts assume that the impact of these barriers on the economy is orderly, though. Companies could take action in anticipation of these barriers coming into force, for example by reorienting their supply chains away from the EU. Consequently, some of their effect could start to come through before the transition period ends. In addition, the Withdrawal Agreement allows for the transition period to be extended for up to two years, so some barriers might come into effect after 1 January 2021. Moreover, some regulatory barriers to trade are likely to emerge only gradually, for example as goods standards diverge over time.

As a result, the MPC's projections are conditioned on the assumption that the economic impact of the transition to the FTA emerges gradually and relatively smoothly from late 2020.

Box 2
Monetary policy since the August *Report*

At its meeting ending on 18 September 2019, the MPC judged that the existing stance of monetary policy remained appropriate.

Since the MPC's August meeting, the trade war between the United States and China had intensified, and the outlook for global growth had weakened. Monetary policy had been loosened in many major economies. Shifting expectations about the potential timing and nature of Brexit had continued to generate heightened volatility in UK asset prices, in particular the sterling exchange rate had risen by over 3½%.

Brexit-related developments had made UK economic data more volatile. Having fallen by 0.2% in 2019 Q2, GDP growth was expected to rise by 0.2% in Q3. The Committee judged that underlying growth had slowed, but remained slightly positive, and that a degree of excess supply had appeared to have opened up within companies. Brexit uncertainties had continued to weigh on business investment, although consumption growth had remained resilient, supported by continued growth in real household income. The weaker global backdrop was weighing on exports. The Government had announced a significant increase in departmental spending for 2020–21, which could raise GDP by around 0.4% over the MPC's forecast period, all else equal.

CPI inflation fell to 1.7% in August, from 2.1% in July, and was expected to remain slightly below the 2% target in the near term. The labour market appeared to remain tight, with the unemployment rate having been just under 4% since the beginning of the year. Annual pay growth had strengthened further to the highest rate in over a decade. Unit wage cost growth had also risen, to a level above that consistent with meeting the inflation target in the medium term. The labour market did not appear to be tightening further, however, with official and survey measures of employment growth having softened.

For most of the period following the EU referendum, the degree of slack in the UK economy has been falling and global growth has been relatively strong. Recently, however, entrenched Brexit uncertainties and slower global growth had led to the re-emergence of a margin of excess supply. Increased uncertainty about the nature of EU withdrawal meant that the economy could follow a range of paths over the coming years. The MPC judged that the appropriate response of monetary policy would depend on the balance of the effects of Brexit on demand, supply and the sterling exchange rate.

It was possible that political events could lead to a further period of entrenched uncertainty about the nature of, and the transition to, the United Kingdom's eventual trading relationship with the European Union. The longer those uncertainties persisted, particularly in an environment of weaker global growth, the more likely it would be that demand growth would remain below potential, increasing excess supply. In such an eventuality, it was expected that domestically generated inflationary pressures would be reduced.

In the event of a no-deal Brexit, the exchange rate would probably fall, CPI inflation rise and GDP growth slow. The Committee's interest rate decisions would need to balance the upward pressure on inflation, from the likely fall in sterling and any reduction in supply capacity, with the downward pressure from any reduction in demand. In this eventuality, the monetary policy response would not be automatic and could be in either direction.

In the event of greater clarity that the economy is on a path to a smooth Brexit, and assuming some recovery in global growth, a significant margin of excess demand was likely to build in the medium term. Were that to occur, the Committee judged that increases in interest rates, at a gradual pace and to a limited extent would be appropriate to return inflation sustainably to the 2% target.

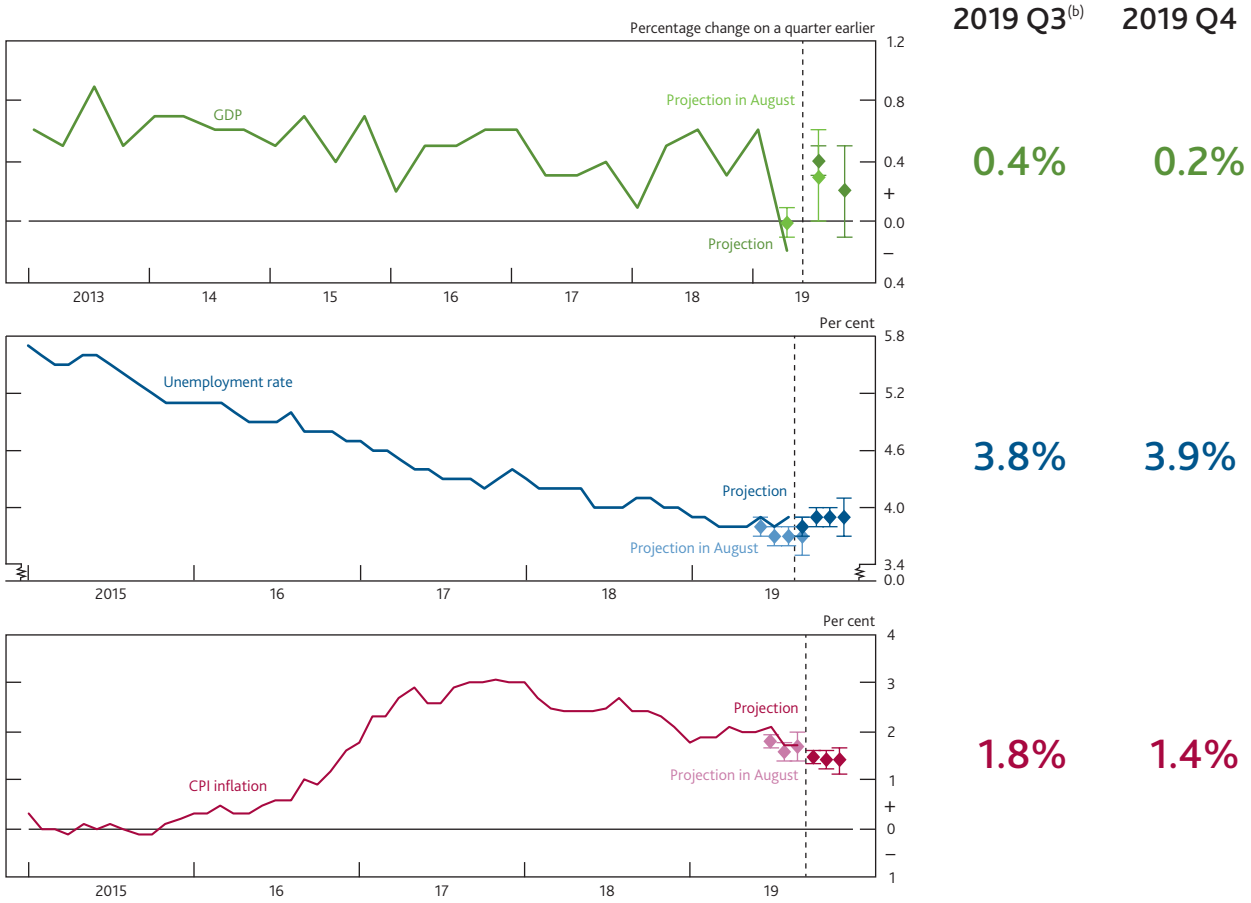
2 Current economic conditions

Global GDP growth has slowed markedly, partly because of escalating trade protectionism. Several central banks have lowered policy rates, and global financial conditions have loosened a little. Sterling has appreciated by around 4% since August as the risk of a no-deal Brexit has fallen.

UK GDP growth has been volatile so far this year. Abstracting from temporary factors, underlying growth has slowed. This reflects the impact of Brexit-related uncertainties and weaker global growth. Business surveys suggest that the near-term outlook remains subdued.

The labour market remains tight, and this has caused pay and domestic cost pressures to increase. However, employment growth has weakened recently and the slowing in demand growth has caused a margin of spare capacity to open up. CPI inflation has been close to target in recent months, although lower energy prices and water bills are likely to cause it to fall over the next few quarters.

Chart 2.1 UK GDP growth is expected to remain subdued; inflation is expected to fall slightly
Near-term projections[a]



Sources: ONS and Bank calculations.

(a) The lighter diamonds show Bank staff's projections at the time of the August 2019 *Inflation Report*. The darker diamonds show current staff projections. The bands on either side of the diamonds show the uncertainty around those projections based on one root mean squared error of projections since 2004.
(b) GDP and unemployment projections are based on official data to August. CPI inflation figure is an outturn.

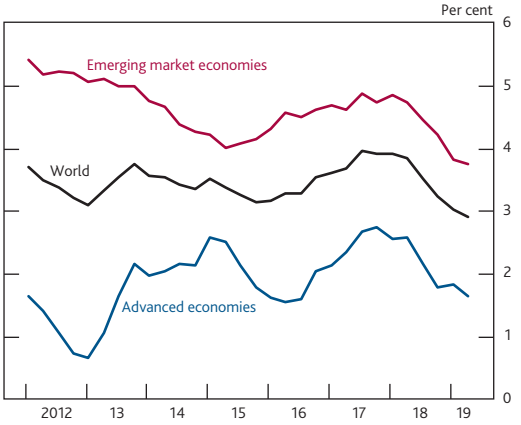
2.1 Global developments and financial conditions

Global GDP growth has been weakening…

Global output growth has slowed since mid-2018. Four-quarter PPP-weighted global growth was close to 4% in 2018 Q2, but has fallen to under 3% in 2019 Q2. That slowing has been broadly based across advanced economies and emerging markets (**Chart 2.2**). Forward-looking indicators remain weak. The manufacturing export orders PMI fell to its lowest level since 2012 in August. It has recovered slightly since, but remains well below the 50 no-change mark (**Chart 2.3**). That suggests that output growth will remain subdued in the near term.

Chart 2.2 Output growth has slowed across advanced economies and emerging markets

Four-quarter PPP-weighted GDP growth[(a)]

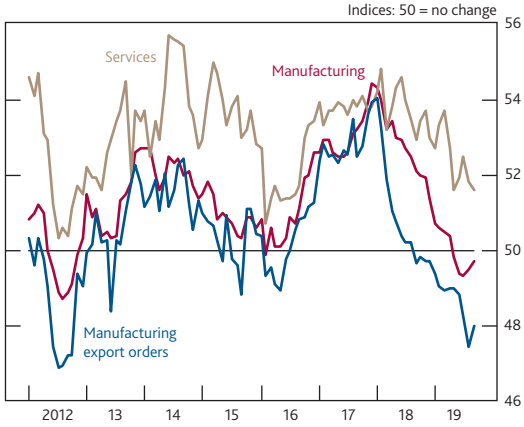


Sources: Eikon from Refinitiv, IMF *World Economic Outlook* (*WEO*) and Bank calculations.

(a) Constructed using real GDP growth rates of 189 countries weighted according to their shares in world GDP using the IMF's purchasing power parity (PPP) weights.

Chart 2.3 Survey indicators of global output growth have fallen, particularly in the manufacturing sector

Global purchasing managers' indices[(a)]



Sources: Eikon from Refinitiv, IHS Markit and JPMorgan.

(a) Measures of current monthly services output, manufacturing output and manufacturing export orders growth based on the results of surveys in 44 countries. Together these countries account for an estimated 89% of global GDP.

…and there has been some further downside news since August.

PPP-weighted global output is estimated to have grown by 0.7% in 2019 Q3, slightly lower than expected in August. Downside news has been concentrated in the euro area, where quarterly GDP growth was 0.2%. Growth in emerging markets has also been a little weaker than the MPC's August projection, mainly due to weaker-than-expected growth in India.

The composition of global GDP growth is less balanced than in 2018.

The recent weakening of global output growth largely reflects slower investment growth. In major advanced economies, four-quarter investment growth peaked at 4.4% in late 2017, but has since fallen to 1.5% in 2019 Q2. Global growth has become increasingly reliant on consumer spending, which has remained relatively robust (**Chart 2.4**).

The slowdown partly reflects increasing trade protectionism.

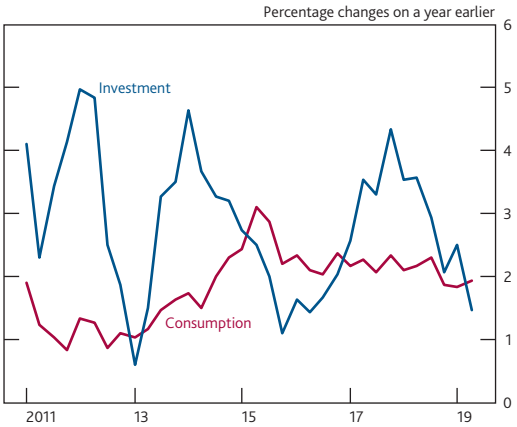
As discussed in Section 3, trade protectionism has increased since mid-2018. This is estimated to be weighing on global growth, alongside other factors. Trade protectionism has particularly affected the manufacturing sector: the global manufacturing PMI has risen very slightly in recent months, but remains below 50 (**Chart 2.3**). The services sector has been more resilient so far: the global services PMI has fallen somewhat, but remains above 50.

Monetary policy in major economies has loosened in 2019…

A number of central banks have lowered policy rates during 2019 (**Chart 2.5**) and market-implied paths for policy rates have fallen in some countries (**Chart 2.6**). In September the European Central Bank (ECB) Governing Council announced a package of measures which included a cut to the deposit rate to -0.5% and asset purchases of €20 billion a month. The ECB announced that asset purchases would run for as long as necessary to reinforce the accommodative impact of its policy rates. In October the Federal Open Market Committee reduced the target range for the federal funds rate to 1.5%–1.75%, the second cut since the August *Report*. The market-implied path for US policy rates has also fallen since August and is consistent with two further cuts to the federal funds rate over the next two years.

Chart 2.4 Investment growth has weakened across advanced economies, but consumption growth has been resilient

Investment and consumption in the G7 economies[a]

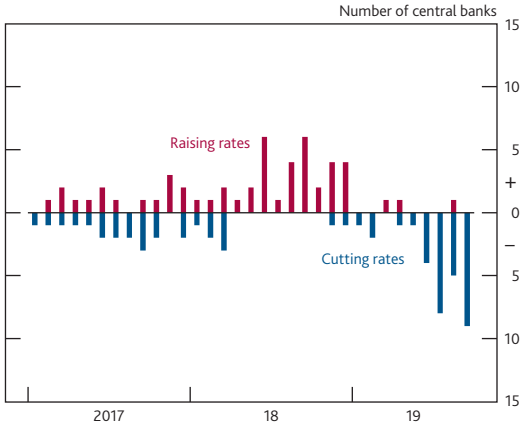


Sources: Eikon from Refinitiv, IMF *WEO*, OECD and Bank calculations.

(a) Weighted by PPP.

Chart 2.5 The number of G20 central banks cutting policy rates has increased during 2019

G20 central banks changing policy rates each month



Sources: Bank for International Settlements, Bloomberg Finance L.P. and Bank calculations.

Forward interest rates for the UK and euro area have changed by less than in the US. Generally global bond yields are low: around US$13 trillion of global investment-grade debt is now trading with a negative yield.

…and fiscal policy has been eased.

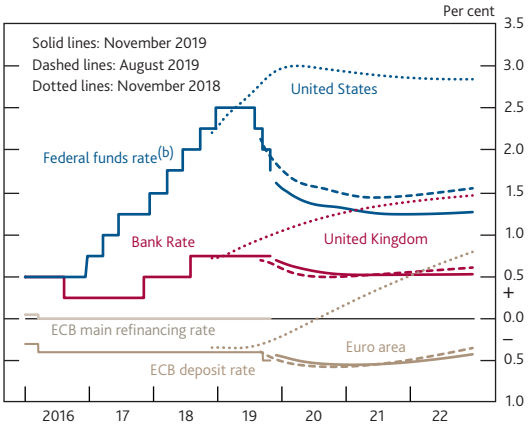
Government consumption growth across the G7 economies was 0.8% in 2019 Q2, the highest in a decade. The OECD estimates that the structural government deficit across advanced economies widened to more than 3% of GDP in 2019 (**Chart 2.7**). Widening structural deficits in the US and some euro-area countries have contributed to that change.

Global financial conditions are a little looser than in August.

The fall in US forward interest rates means that global financial conditions are a little looser than in August. Prices of risky assets — such as equities and corporate bonds — are little changed on average. Accommodative financial conditions is one reason why the MPC expects global growth to stabilise in the near term. PPP-weighted global GDP is expected to grow by 0.7% in 2019 Q4, similar to the previous quarter but slightly below the MPC's August projection.

Chart 2.6 The market-implied paths for US interest rates has fallen further since the August *Report*

International forward interest rates[a]



Sources: Bloomberg Finance L.P. and Bank calculations.

(a) All data as of 30 October 2019. The November 2019, August 2019 and November 2018 curves are estimated using instantaneous forward overnight index swap rates in the 15 working days to 30 October 2019, 24 July 2019 and 24 October 2018 respectively.
(b) Upper bound of the target range.

Chart 2.7 Fiscal policy has been eased in OECD countries

OECD structural budget balance[a]

Source: OECD *Economic Outlook*.

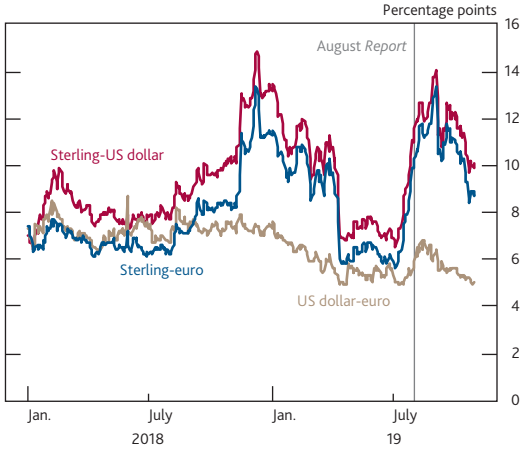
(a) Cyclically adjusted general government net lending, based on data from 31 countries.

Sterling has strengthened as the perceived chance of a no-deal Brexit has fallen.

Sterling has risen by around 4% since the August *Report* (**Chart 2.8**) as the perceived risk of a no-deal Brexit has receded. Sterling implied volatility remains elevated compared with other major currency pairs (**Chart 2.9**), however, suggesting that the outlook for sterling remains particularly uncertain. With forward interest rates little changed since August (**Table 2.A**), the sterling appreciation has led to a tightening of UK financial conditions (**Chart 2.10**).

Chart 2.8 Sterling has risen by around 4% since August
Sterling ERI

Chart 2.9 Sterling implied volatility is elevated relative to both the US dollar and the euro
Three-month implied volatilities(a)



Sources: Bloomberg Finance L.P. and Bank calculations.

(a) Measures of volatility based on option contracts.

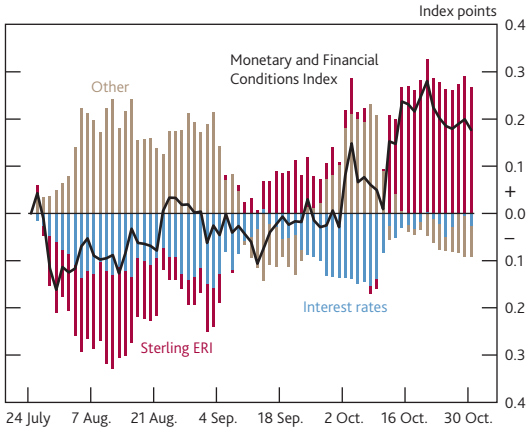
Table 2.A Interest rates are at similar levels to August
Financial market indicators(a)

	Level	Change since August *Report*
Three-year forward interest rate(b)(c)	0.5	0.0
UK ten-year gilt yield(c)	0.7	-0.1
Sterling investment-grade corporate bond spreads(d)	141	5
Sterling high-yield corporate bond spreads(d)	482	18
FTSE All-Share(e)	3992	-2.8
UK-focused companies' equity prices(f)	93.9	2.2
Sterling ERI(g)	79.0	3.7

Sources: Bloomberg Finance L.P., Eikon from Refinitiv, ICE/BoAML Global Research and Bank calculations.

(a) Fifteen working day averages to 24 July 2019 for the August *Report* and to 30 October 2019 for the November *Report*.
(b) Instantaneous forward overnight index swap rate.
(c) Per cent. Change expressed in percentage point terms.
(d) Basis points. Based on option-adjusted spreads between government bond yields and non-financial corporate bonds.
(e) Index level. Changes expressed in percentage terms.
(f) Index: 4 January 2016 = 100. Change expressed in percentage terms. UK domestically focused companies are defined as those generating at least 70% of their revenues in the United Kingdom.
(g) Index: January 2005 = 100. Change expressed in percentage terms.

Chart 2.10 The sterling appreciation since August has led to a tightening in UK financial conditions
Contributions to changes in the UK Monetary and Financial Conditions Index since the August 2019 *Report*(a)



Sources: Bloomberg Finance L.P., Eikon from Refinitiv, ICE/BoAML Global Research and Bank calculations.

(a) The UK Monetary and Financial Conditions Index (MFCI) summarises information from the following series: short-term and long-term interest rates, the sterling ERI, corporate bond spreads, equity prices, and household and corporate bank lending spreads. The series weights are based on the marginal impact of each variable on the UK GDP forecast. The chart shows changes in the MFCI from the average level over the 15 working days to 24 July 2019. An increase in the MFCI signals tighter financial conditions and a decrease signals looser conditions. For more information, see the Bank Overground post 'How can we measure UK financial conditions?'.

There have been some signs of tighter corporate credit conditions.

Corporate credit conditions have been accommodative in recent years, particularly for large firms. But there are some tentative signs that conditions have tightened slightly. An increasing proportion of contacts reported to the Bank's Agents that finance has become slightly more expensive or less available over the past year, and the range of sectors affected had broadened (Box 3). The availability of bank lending was expected to fall in Q4, according to the *Credit Conditions Survey*. Actual lending volumes have held up so far, however. Corporate bond issuance and bank lending were relatively strong in September.

2.2 Demand and output

UK GDP growth has been volatile this year.

UK growth has been volatile this year, largely because of Brexit-related factors. GDP increased by 0.6% in Q1, with activity boosted by stockbuilding in the UK and elsewhere in the EU ahead of the original March Brexit deadline (**Chart 2.11**). GDP then fell by 0.2% in Q2 as firms partially ran down those stocks. The fall also reflected a sharp decline in car production, as some factories were shut down in April as part of Brexit-related contingency plans. This was the first quarterly fall in GDP since 2012.

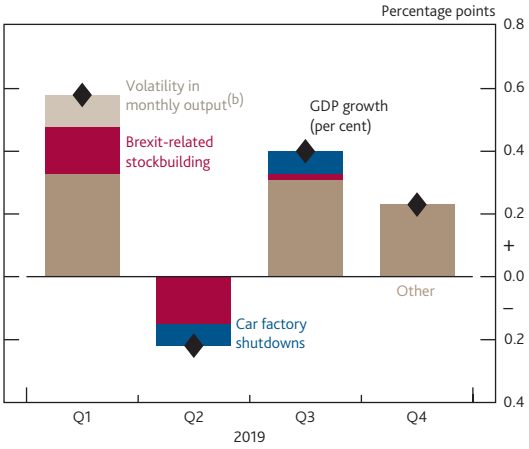
GDP growth appears to have returned to positive territory in Q3. Based on official data to August, growth is expected to have been 0.4% (**Chart 2.11**). Bank staff expect growth to have been boosted by a rebound in car production and by a small amount of stockbuilding ahead of the October Brexit deadline.

Abstracting from temporary factors, underlying growth has slowed.

The volatility in headline growth masks a slowdown in underlying growth. Quarterly growth over 2019 as a whole is expected to average around 0.2%. That is lower than in the previous three years, when growth averaged around 0.4% a quarter (**Chart 2.12**). The slowdown in underlying growth is visible in the services sector, where quarterly growth was only 0.1% in Q2, the lowest rate in three years.

Chart 2.11 GDP growth has been volatile as a result of Brexit-related factors

Estimated contributions of various factors to quarterly GDP growth[a]

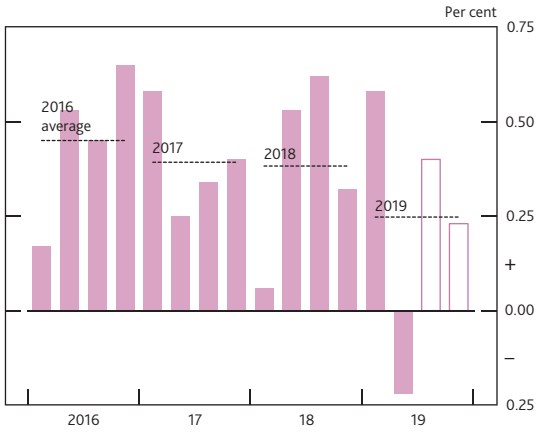


Sources: ONS and Bank calculations.

(a) Chained-volume measures. 2019 Q3 and Q4 are Bank staff projections. The contributions of idiosyncratic factors are estimated by Bank staff.
(b) GDP fell by 0.3% in December 2018 before rising by 0.5% in January 2019.

Chart 2.12 Abstracting from temporary factors, underlying growth has slowed

Quarterly GDP growth[a]



Sources: ONS and Bank calculations.

(a) Chained-volume measure. The hollow bars in 2019 Q3 and Q4 are Bank staff projections.

Surveys suggest that growth will remain weak in Q4.

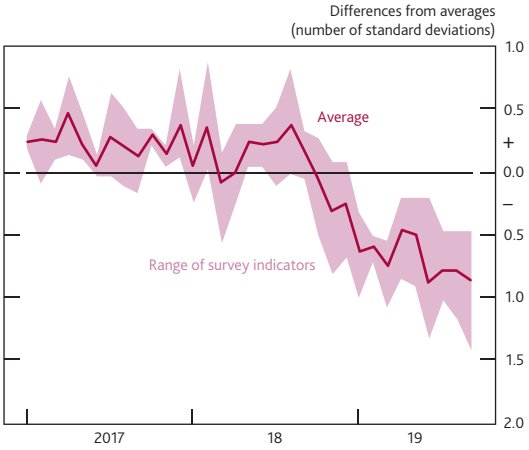
Bank staff expect growth to fall back to 0.2% in Q4 (**Chart 2.11**). A wide range of survey indicators of output have weakened over the past year, consistent with a decline in underlying growth (**Chart 2.13**). Forward-looking surveys of expected output growth are even further below average (**Chart 2.14**). In isolation, these are consistent with negative GDP growth in Q4. However, the surveys have underestimated growth in recent quarters. This could be because the relationship between survey responses and growth may be weaker at times of high uncertainty, as discussed in Box 3 in the February *Report*. In particular, the elevated risk of a no-deal Brexit could have influenced some firms when they responded to the most recent surveys.

The slowdown in UK growth can be partly explained by Brexit…

Brexit-related uncertainties have weighed on UK GDP growth, as discussed in detail in Section 4. Much of this effect is via weaker demand, although it may also have affected the supply side of the economy (Section 2.3).

Chart 2.13 Survey indicators of output are weak

Survey indicators of current output growth[a]

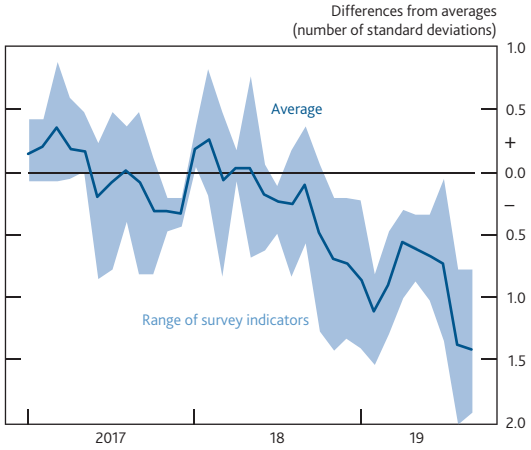


Sources: BCC, CBI, IHS Markit/CIPS and Bank calculations.

(a) Differences from averages since January 2000 or earliest observation. The BCC series is a weighted average of home and export deliveries across the services and non-services sectors. Data are not seasonally adjusted. The CBI series is a weighted average of output volumes across the manufacturing, distribution, consumer, business and professional services sectors. The IHS/Markit CIPS series is a weighted average of business activity across the services, manufacturing and construction sectors.

Chart 2.14 Surveys of expected output are even weaker

Survey indicators of expected output growth[a]



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

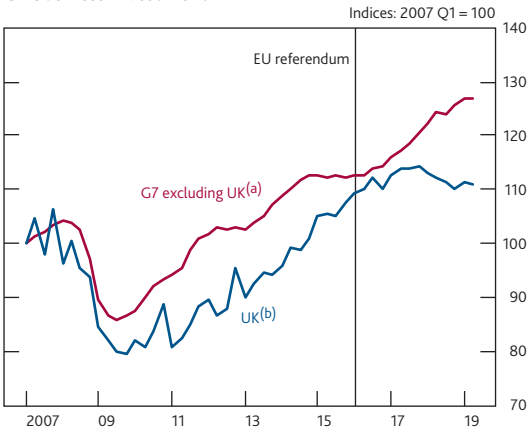
(a) Differences from averages since January 2000 or earliest observation. The BCC series is a weighted average of turnover expectations across the services and non-services sectors. Data are not seasonally adjusted. The CBI series is a weighted average of output expectations across the manufacturing, distribution, consumer, business and professional services sectors. The IHS/Markit CIPS series is a weighted average of business activity expectations across the services and construction sectors and new orders from the manufacturing sector.

Investment by businesses has been particularly affected, falling in five of the past six quarters. The Bank's Decision Maker Panel (DMP) Survey shows that firms that are more uncertain about Brexit have made larger cuts to investment since the EU referendum (**Chart 4.7**). Research using the survey suggests total business investment is around 11% lower as a result of Brexit (see Bloom *et al* (2019)). Consistent with that, business investment growth has been lower in the UK than in other G7 countries since the referendum, growing by only 0.4% compared to an average of 13% elsewhere (**Chart 2.15**).

UK exports may also have been reduced as a result of the Brexit process. Trade data have been volatile, in part because of cross-border stockbuilding before the original March deadline. But a range of surveys suggest that the demand for UK exports has weakened considerably over the past couple of years (**Chart 2.16**). Some Agency contacts have reported that foreign firms are reorienting supply chains away from the UK because of uncertainty about future trading arrangements (Box 3).

Chart 2.15 UK business investment growth has been weaker than in other advanced economies

G7 business investment



Sources: Eikon from Refinitiv, Japanese Cabinet Office, OECD, ONS, Oxford Economics, Statistics Canada, US Bureau of Economic Analysis and Bank calculations.

(a) Business investment is not an internationally recognised concept. This line is based on similar series derived from other countries' National Accounts, weighted by GDP at PPP. Private sector business investment for Italy. Business investment minus residential structures for Canada. Non-residential private investment for Japan and the US. Non-government investment minus dwellings investment for France and Germany.
(b) Chained-volume measure.

Chart 2.16 Survey indicators of export growth show a clear weakening in external demand

UK exports and survey indicators of export growth

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

(a) Survey indicators are scaled to match the mean and variance of four-quarter export growth since 2000 or earliest data point. Indicators include surveys from: the Bank's Agents (manufacturing companies' growth in production for overseas customers over the past three months); the BCC (export orders and deliveries); the CBI (average of manufacturing export orders, deliveries and order books relative to normal volumes); Make UK (average of manufacturing reported and expected export orders); and the IHS Markit/CIPS (manufacturing export orders). The BCC data are not seasonally adjusted.
(b) Chained-volume measure, excluding the impact of missing trader intra-community (MTIC) fraud.

…and partly by the weakening world economy.

The slowdown in global growth has also dampened UK growth by weighing on demand for UK exports. It is also likely to have reduced investment in the UK, in common with other countries over the past year (**Chart 2.4**). Section 3 discusses developments in the global economy in more detail.

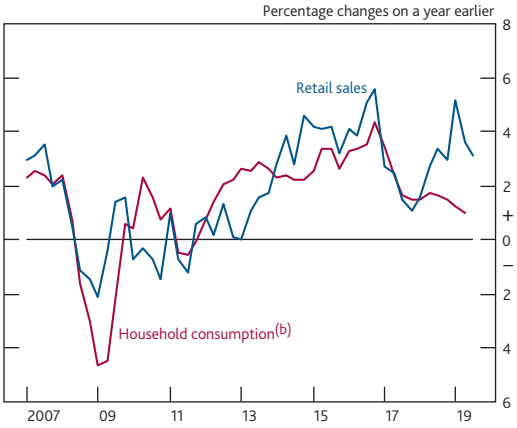
Consumer spending growth has slowed…

Consumer spending appears to have been relatively resilient to the uncertainty around Brexit, although its growth has also slowed (**Chart 2.17**). In 2019 Q2 it grew by 0.3% — similar to the average rate since 2017, but lower than the average from 2013–15 of 0.6%. Timelier indicators of consumer spending suggest consumption continued to grow at a similar pace in Q3. Official data on retail sales growth have been strong in recent months (**Chart 2.17**), even though surveys of the retail sector have been relatively gloomy.

Low household interest rates have supported consumer spending. Mortgage rates and personal loan rates remain near historical lows, with the rates on some fixed-rate mortgages continuing to fall over the past few months (**Table 2.B**). Interest rates on credit cards have increased, although the effective rate paid by the average borrower has remained stable, in part because of the past lengthening of interest-free periods.

Chart 2.17 Consumption growth has eased, although retail sales growth has remained strong

Household consumption and retail sales[a]



(a) Chained-volume measures.
(b) Includes non-profit institutions serving households (NPISH).

Table 2.B Household lending rates remain low

Selected household lending rates[a]

	Oct. 2019 (per cent)	Changes since (basis points) July 2019	July 2018	Aug. 2017	Jan. 2017
Mortgages					
Two-year fixed rate, 60% LTV	1.37	-16	-36	13	4
Two-year fixed rate, 75% LTV	1.55	-8	-20	12	10
Two-year variable rate, 75% LTV	1.61	1	7	22	12
Five-year fixed rate, 75% LTV	1.74	-20	-30	-22	-48
Two-year fixed rate, 90% LTV	2.07	-7	-23	-26	-43
Two-year fixed rate, 95% LTV	2.98	3	-80	-104	-64
Consumer credit					
£10,000 personal loan	3.61	0	-15	-18	-8
£5,000 personal loan	7.80	-2	4	-11	-165
Credit card	20.03	2	168	207	207

(a) The Bank's quoted rate series are weighted monthly average rates advertised by all UK banks and building societies with products meeting the specific criteria. Not seasonally adjusted. In February 2019 the method used to calculate these data was changed. More information is available here.

…and there are signs consumers are becoming more cautious.

The growth of spending on non-essential items[1] has slowed over the past year, which could be consistent with increasing consumer caution. Households have also increased the proportion of income they save each quarter. Recently revised data show that the saving ratio increased from an average of 5% over 2017 to 7% in 2019 Q2. The household financial balance — which captures the difference between saving and investment — was revised up to a greater extent, partly as a result of changes to the accounting treatment of student loans.

Headline measures of consumer confidence remain close to their past averages, but expectations about the general economic situation have been below average, and declining, for some time. The GfK/EC October survey recorded the highest balance of people expecting unemployment to rise since 2013 (**Chart 2.18**).

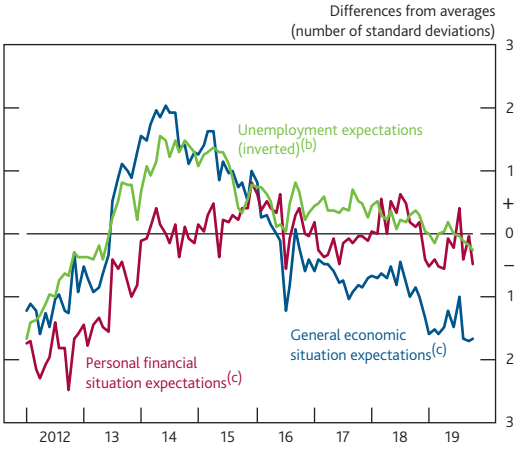
Demand in the housing market remains subdued.

Households' concerns about the economic situation are likely to help explain subdued demand in the housing market. Transaction and mortgage approvals figures have been broadly flat for around five years now. House price growth has also moderated across the UK since the EU referendum, and prices have fallen in London and the South East over the past year (**Chart 2.19**).[2] Leading indicators of the housing market, including timelier but narrower measures of house

(1) Spending excluding: most food and non-alcoholic beverages; housing, water and energy costs; repair of household appliances; non-durable household goods for routine maintenance; dwelling and transport insurance; and financial services not elsewhere classified.
(2) Other factors are also likely to have weighed on house price inflation, including affordability constraints, buy-to-let policy changes and increased housing supply. See Box 4 in the May 2019 *Inflation Report* for more details.

Chart 2.18 Households are pessimistic about the economy, although confidence in their own financial situation has held up

Indicators of consumer confidence[a]



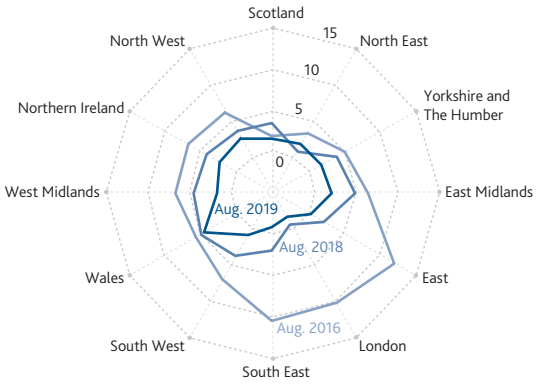
Sources: GfK (research carried out on behalf of the European Commission) and Bank calculations.

(a) Differences from averages since 1997.
(b) Net balance of respondents expecting that the number of people unemployed will rise over the next 12 months.
(c) Net balances of respondents reporting that they expect their personal financial situation or the general economic situation to improve over the next 12 months.

Chart 2.19 UK house price inflation has slowed; prices in London and the South East have fallen

House price inflation by area[a]

Per cent



Sources: HM Land Registry and Bank calculations.

(a) Percentage changes, three months on a year earlier. Data for Northern Ireland are available on a quarterly basis and are seasonally adjusted by Bank staff.

prices, suggest UK house price inflation has stabilised just above zero. The lower rate of price inflation may be feeding through to house building: the number of private housing starts in England was around 10% lower in 2019 Q2 than a year earlier.

Higher government spending should continue to boost growth.

Government spending has been growing faster than expected recently. Central government spending in cash terms was around 5% higher in the fiscal year to September than the previous year — well above the Office for Budget Responsibility's forecast from March. In the National Accounts, real government consumption in Q2 was 4% higher than a year ago — the fastest rate of growth since 2008. Government borrowing has been revised up over the recent past following changes to the accounting treatment of student loans and a correction to corporation tax receipts data.

Most recently, the Government announced a large increase in spending in September as part of *Spending Round 2019*. This included £2 billion of additional departmental spending in 2019–20 and £13 billion in 2020–21. All else equal, this is expected to raise GDP by around 0.4% over the MPC's three-year forecast period.

2.3 Supply, costs and prices

The slowdown in underlying GDP growth might suggest there is emerging spare capacity.

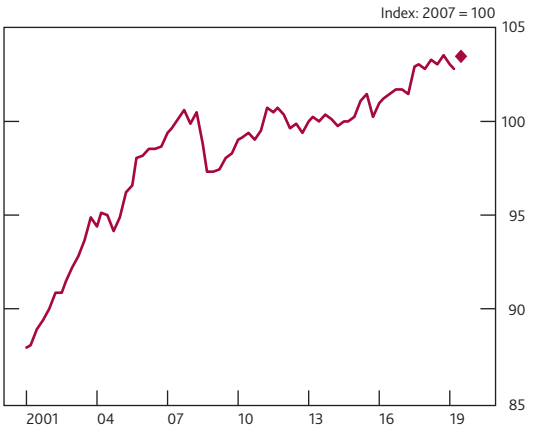
GDP growth — at around 0.2% per quarter on average over 2019 — has now slowed to below the MPC's estimate of potential growth in the medium term of between 0.3% and 0.4% a quarter. That estimate is based on an annual assessment of the supply side of the economy.(3) The MPC judges that demand and supply were broadly in balance around the start of the year. Therefore, if supply growth has remained stable, a degree of spare capacity has probably opened up in the economy.

But supply growth may also have slowed.

Labour productivity, measured as output per hour worked, fell by 0.5% in the year to Q2, although it is expected to have recovered a little in Q3 (**Chart 2.20**). While productivity growth has been consistently weak since the financial crisis a decade ago, the fall in the year to Q2 was the biggest four-quarter fall since 2012. As discussed in previous *Reports*, much of the post-crisis weakness in productivity growth can be accounted for by the financial and manufacturing sectors. Productivity growth remained weak in those sectors in the latest data, but the decline over the past year reflects broader weakness (**Chart 2.21**). As well as reflecting weaker demand, it is possible that the weak

(3) See the February 2019 *Inflation Report* for more information.

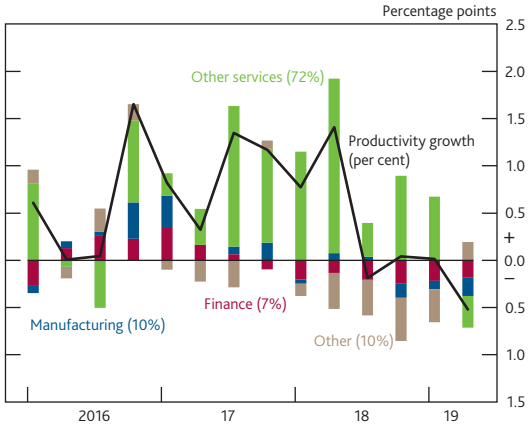
Chart 2.20 Productivity has been weak since the crisis
Hourly labour productivity[a]



Sources: ONS and Bank calculations.

(a) Output is based on the backcast for the final estimate of GDP. Diamond shows Bank staff's projection for 2019 Q3, based on data to August.

Chart 2.21 The slowdown in productivity growth over the past year has been broadly based
Contributions to four-quarter hourly labour productivity growth[a]



Sources: ONS and Bank calculations.

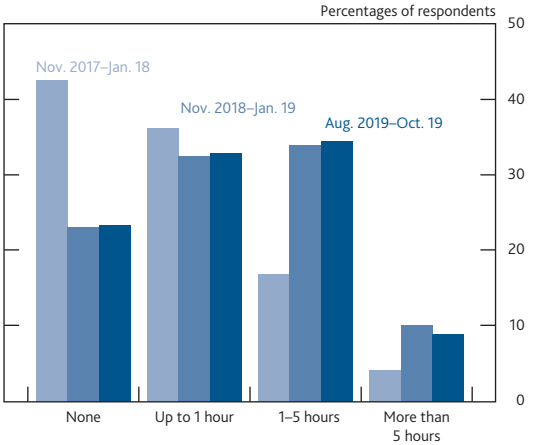
(a) Figures in parentheses are weights in nominal GVA. Weights do not sum to 100 due to rounding.

productivity observed in the data has a structural supply-side element that has reduced potential supply growth. This would imply that less spare capacity has emerged than the fall in GDP growth might suggest in isolation.

Brexit preparations could have dragged on productivity and supply growth.

The recent weakness in productivity growth could be a consequence of firms making Brexit preparations. The Bank's DMP Survey shows that many firms are committing several hours a week of senior management time to Brexit planning (**Chart 2.22**). This could be reducing the time available to make sales or organise production, potentially detracting from output and productivity growth. Stockbuilding may also have tied up funds that would otherwise have been used for productivity-enhancing investments. Finally, Brexit may have reduced the growth of internationally exposed firms by more than domestically focused firms. As the former tend to be more productive, this effect would reduce average productivity. Research using the DMP Survey estimates that Brexit has reduced productivity by around 2% since the EU referendum. It may continue to weigh on output while uncertainty remains elevated.

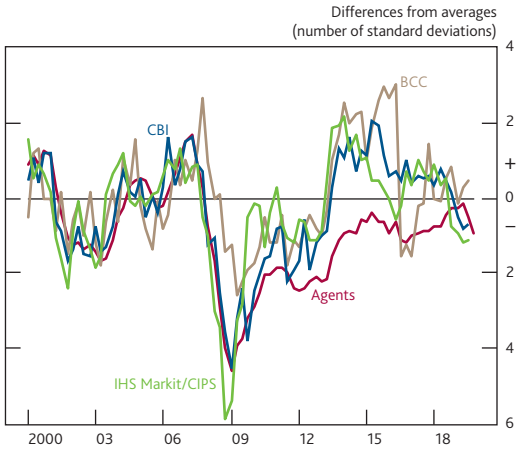
Chart 2.22 Businesses have devoted more time to Brexit preparations, which may have reduced productivity growth
CFO time spent on Brexit[a]



Sources: Decision Maker Panel (DMP) Survey and Bank calculations.

(a) Question: 'On average, how many hours a week is the CFO of your business spending on preparing for Brexit at the moment?'. The DMP currently consists of around 8,000 businesses with around 3,000 responses a month being received.

Chart 2.23 Most indicators of capacity utilisation have fallen over the past year
Survey indicators of capacity utilisation[a]



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

(a) Differences from averages between 2000 and 2007. Measures from the Bank's Agents, the BCC (non-services and services), the CBI (manufacturing — capacity; financial services, business/consumer/professional services and distributive trade — business relative to normal) and IHS Markit/CIPS (manufacturing — backlogs; services — outstanding business). Sectors are weighted using shares in gross value added. The BCC data are not seasonally adjusted. The Agents' data for 2019 Q4 are for October.

Some spare capacity may have emerged within firms…

The weakness of productivity could also reflect increasing spare capacity within firms. Most survey indicators suggest spare capacity has widened over the past year, and some imply that capacity utilisation is now below normal levels (**Chart 2.23**). However, some of these indicators can be volatile, and the mapping from them to capacity utilisation is uncertain.

…and although there appears to be little spare capacity in the labour market…

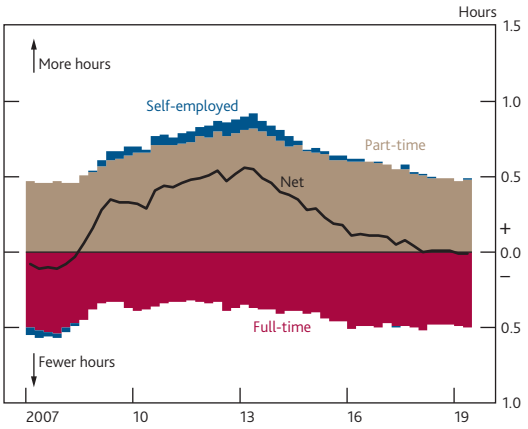
The unemployment rate increased slightly to 3.9% in the three months to August, but it remains at a historically low level. It is also below the MPC's estimate of the equilibrium rate of unemployment — 4¼% — that would be consistent with inflation at the target in the medium term.

Broader measures of underemployment also suggest there is little spare capacity in the labour market. The average number of extra hours people would like to work has stabilised around zero, with full-timers wishing to work fewer hours almost exactly offsetting part-timers who wish to work longer hours (**Chart 2.24**). And the proportion of the population who report they would like a job but are not currently seeking one — the marginal attachment ratio — is also very low. That suggests there is little spare capacity among those not actively looking for a job.

The MPC judges that, while spare capacity has emerged in the UK economy, its degree is limited, and it is a little smaller than the slowing in GDP growth alone might suggest.

Chart 2.24 People no longer wish to work longer hours, on average

Net additional desired hours[a]

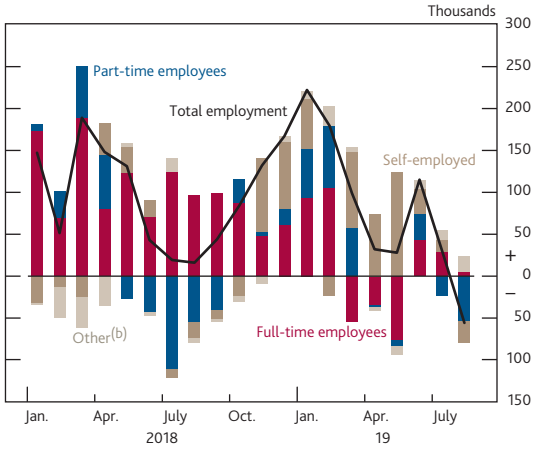


Sources: Labour Force Survey and Bank calculations.

(a) Number of net additional hours that the currently employed report they would like to work, on average, per week.

Chart 2.25 Employment has fallen in recent months

Decomposition of changes in employment[a]



(a) Three months on previous non-overlapping three months.
(b) Unpaid family workers and those on government-supported training and employment programmes classified as being in employment.

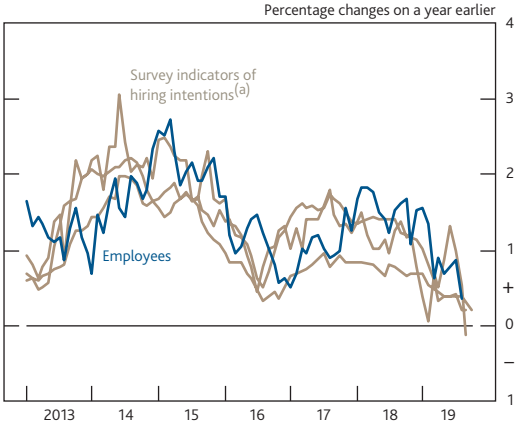
…there is mounting evidence of weakening demand for labour.

While the labour market remains tight, it no longer appears to be tightening. Employment growth has slowed over the past year, consistent with the weakening in underlying output growth. Employment actually fell in the three months to August (**Chart 2.25**). The weakness appears set to continue: surveys of hiring intentions have softened in recent months (**Chart 2.26**). And the number of vacancies in the economy has fallen by around 50,000 since the start of the year, the sharpest fall since 2009 — although the number of vacancies is still very high (**Chart 2.27**).

The tight labour market has caused pay growth to strengthen further…

Pay growth has increased steadily over the past few years as the labour market has tightened. Private sector regular pay growth was 4.0% in the three months to August, as high as it has been in over a decade (**Chart 2.28**). The strength in pay growth has been broadly based, with growth picking up in both the private and public sectors in recent years.

Chart 2.26 Surveys of hiring intentions have weakened
Employees and surveys of hiring intentions



Sources: Bank of England, IHS Markit/CIPS, KPMG/REC Report on Jobs, ONS and Bank calculations.

(a) Survey indicators are scaled to match the mean and variance of annual growth in employees since 2000. Indicators include surveys from: the Bank's Agents (employment intentions over the next six months); IHS Markit/CIPS (PMI composite employment index); and KPMG/REC (index of demand for staff).

Chart 2.27 There has been a sharp fall in vacancies
Number of vacancies

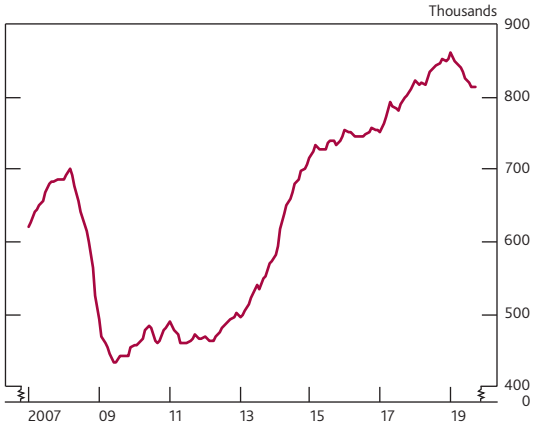
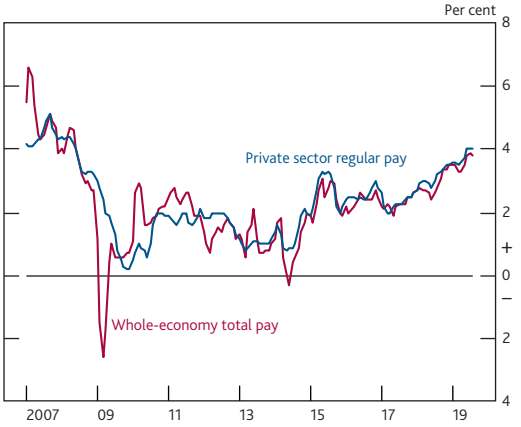
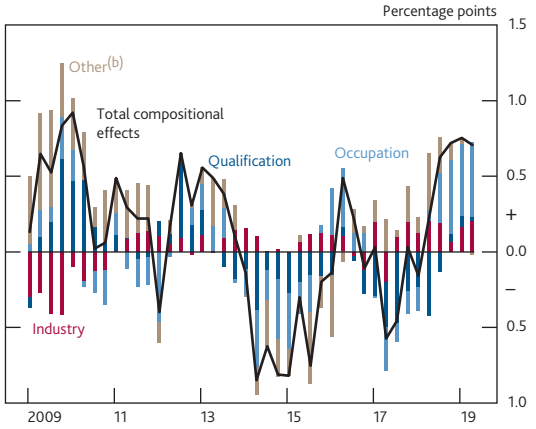


Chart 2.28 Pay is growing at its fastest rate in over a decade
Measures of pay growth(a)



(a) Three-month average growth on the same period a year earlier.

Chart 2.29 Compositional effects have been pushing up pay growth
Estimates of the contribution of employment characteristics to four-quarter wage growth(a)



Sources: Labour Force Survey and Bank calculations.

(a) Estimates are shown relative to their averages over 1995–2010. Estimates of the effect of individual and job characteristics are derived from a regression of these characteristics on levels of pay. The estimate of the total compositional effect is obtained by combining these estimates with changes in the composition of the labour force.
(b) Other includes age, tenure, gender, region of residence, whether full-time and whether in public sector employment.

…but there are signs pay growth will moderate over the coming months.

A number of indicators suggest that pay pressures are no longer building, and pay growth may cool over the coming months (**Table 2.D**). The Bank's settlements database suggests pay awards are clustering between 2% and 3%, slightly lower than a year ago. Surveys by the REC and the Bank's Agents also suggest pay growth is stabilising a little below the pace of growth in the official data. It is possible that growth in the official pay figures has been temporarily boosted by the changing composition of the workforce. Employment has increased in higher paying occupations and industries, which will tend to increase average pay growth, but only as long as the compositional shift continues (**Chart 2.29**). Such effects on pay growth have tended not to persist in the past.

More broadly, underlying pay pressures may cool a little in coming quarters as the weakening in GDP growth and demand for labour reduce pressure on employers to raise pay.

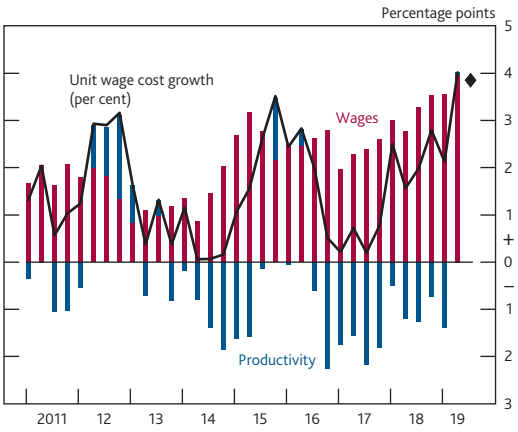
Pay growth has increasingly outpaced productivity growth, causing unit labour cost growth to accelerate.
The impact of faster pay growth on firms' costs has been compounded by weak productivity growth. This has caused the growth of unit labour costs (ULCs) — the cost of labour needed to produce one unit of output — to pick up (**Chart 2.30**). Measures of ULC growth now appear to be above the ranges judged to be consistent with inflation at the target.

A moderation of pay growth as a result of weaker demand would probably cause ULC growth to fall. But a moderation as a result of compositional effects fading may have less of an effect: the make-up of the workforce should have similar effects on pay and productivity, and hence have little effect on ULC growth.

Firms may have temporarily absorbed higher costs in their profit margins…
The Bank's Agents report that firms in the consumer services sector have struggled to pass higher costs on to customers. That could explain why CPI-based measures of domestic price pressures still paint a somewhat weaker picture than labour cost-based measures.

…but measures of domestic price pressures based on consumer prices are picking up.
Nevertheless, CPI-based measures of domestic price pressures have been increasing recently, suggesting cost pressures have begun to feed through the supply chain. Core services price inflation increased to 2.5% in September, the highest rate in almost two years (red line in **Chart 2.31**). Excluding rents inflation — which has been unusually weak primarily because of restrictions on social housing rents — core services inflation increased to 2.9%. And the median services inflation rate — a measure of services price inflation less affected by volatility in individual items — has been increasing steadily since 2015 (blue line in **Chart 2.31**).

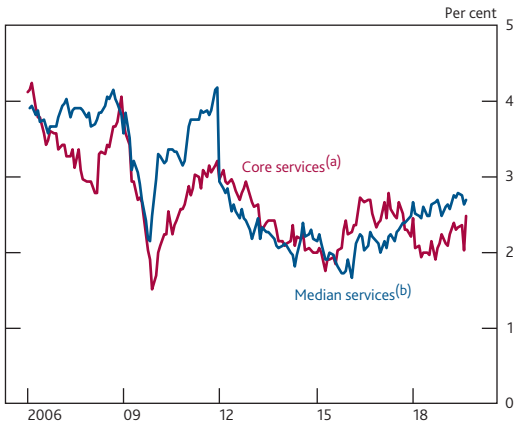
Chart 2.30 Unit labour cost growth has picked up as a result of strong pay and weak productivity growth
Contributions to four-quarter unit wage cost growth(a)



Sources: ONS and Bank calculations.

(a) Private sector AWE regular pay divided by private sector productivity per head, based on the backcast for the final estimate of private sector output. The diamond shows Bank staff's projection for 2019 Q3. See Table 4.C in the November 2018 *Inflation Report* for more details on measures of unit labour costs.

Chart 2.31 Services prices suggest domestic price pressures have picked up a little
Core services and median services CPI inflation



Sources: ONS and Bank calculations.

(a) Core services CPI excludes airfares, package holidays, education and an estimate of the impact of changes in VAT.
(b) The median annual inflation rate of around 190 services items in the CPI basket.

CPI inflation has been close to the target recently…
Headline CPI inflation is determined by both domestic and external cost pressures. Inflation has been close to the 2% target in recent months: it averaged 1.8% over Q3, broadly in line with the August *Inflation Report* forecast (**Chart 2.1**). External cost pressures — such as energy prices and other import prices — are currently making a small contribution to inflation. Core inflation, which excludes the effects of energy prices and some other volatile components, was 1.7% in Q3.

…but will fall over the coming months as a result of lower energy prices.
CPI inflation is expected to average 1.4% in Q4. Most of the fall reflects a lower contribution to inflation from energy prices. In October Ofgem reduced the energy price caps affecting default and pre-payment tariffs. Electricity prices were cut by 3% and gas prices by 9% for the typical default tariff customer. As a result, household energy bills are expected to drag on inflation in Q4 (**Chart 2.32**).

Fuel prices are also expected to pull down inflation over the next few months. Sterling oil prices are almost 10% lower than at the time of the August *Report* and over 20% lower than a year ago. Altogether, the contribution to CPI inflation from energy prices is expected to fall from around 0.2 percentage points in Q3 to -0.2 percentage points in Q4.

Regulated prices will pull inflation even lower in 2020.

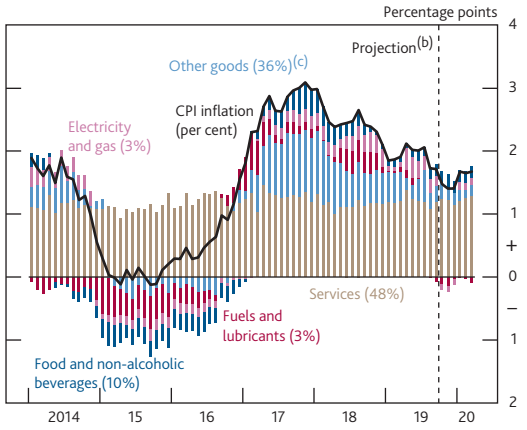
A number of other regulated prices are likely to affect inflation over the coming year. Water bills are expected to fall in April as a result of action by the regulator Ofwat. That will be offset partially by an increase in the social housing rents cap. These changes, in addition to a further drag from energy prices from April, are expected to result in inflation falling to 1.2% in 2020 Q2 (Section 1). Core inflation is expected to remain closer to the target, at around 1.5%.

Cheaper imports will also pull down inflation.

CPI inflation is also sensitive to import prices, which are heavily influenced by the exchange rate. Import price inflation has been subdued over the past year, following high rates over 2016 and 2017 after sterling's referendum-related decline (**Chart 2.33**). Sterling has appreciated by 4% since the August *Report*. If sustained, that will lead to lower import prices over the coming year and pull down CPI inflation.

Chart 2.32 Energy prices are expected to fall in Q4, pulling inflation down

Contributions to CPI inflation(a)

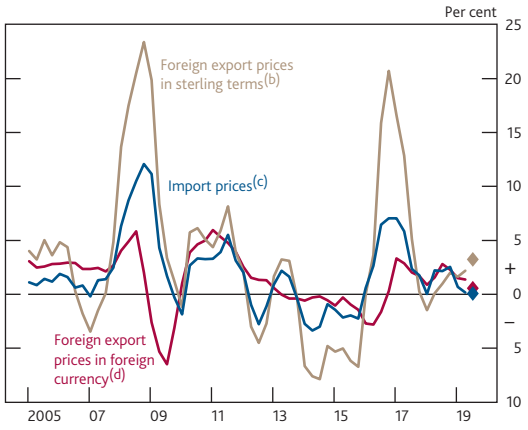


Sources: Bloomberg Finance L.P., Department for Business, Energy and Industrial Strategy, ONS and Bank calculations.

(a) Contributions to annual CPI inflation. Figures in parentheses are CPI basket weights in 2019.
(b) Bank staff's projection. Fuels and lubricants estimates use Department for Business, Energy and Industrial Strategy petrol price data for October 2019 and are then based on the sterling oil futures curve.
(c) The difference between CPI inflation and the other contributions identified in the chart.

Chart 2.33 Import price inflation was close to zero in the year to 2019 Q2

Import price and foreign export price inflation(a)



Sources: Bank of England, CEIC, Eikon from Refinitiv, Eurostat, ONS and Bank calculations.

(a) The diamonds show Bank staff's projections for 2019 Q3.
(b) Domestic currency export prices as defined in footnote (d), divided by the sterling effective exchange rate index.
(c) UK goods and services import deflator excluding fuels and the impact of MTIC fraud.
(d) Domestic currency non-oil export prices of goods and services of 51 countries weighted according to their shares in UK imports. The sample excludes major oil exporters.

Brexit may have put upward pressure on short-term inflation expectations.

Measures of households' expectations for inflation in one and two years' time increased slightly in Q3 (**Table 2.C**) and are above their post-crisis averages. It is unusual for short-term inflation expectations to increase while the actual inflation rate has been falling (**Chart 2.34**). This could be happening now because households are expecting Brexit to increase prices. In the latest *Inflation Attitudes Survey*, 50% of respondents reported that Brexit had raised their expectation for inflation in one year's time, compared with 10% of respondents who said it had lowered their expectation.

Short-term inflation expectations derived from financial market indicators also increased over Q3, although they fell back at the start of Q4 (**Table 2.C**). Market contacts attribute much of the movement to changing expectations about Brexit and associated expectations for the exchange rate.

Long-term expectations appear stable, although financial market measures have become harder to interpret.

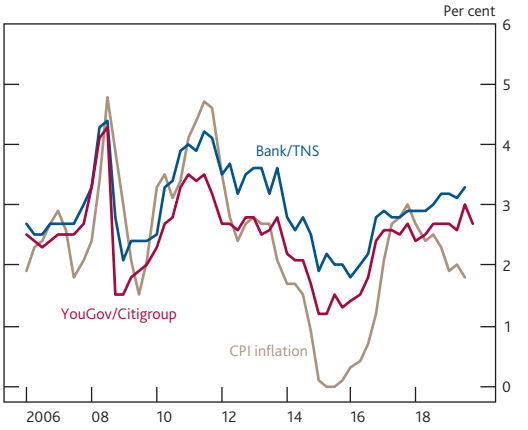
Measures of households' long-term expectations fell or remained stable in Q3, and are close to their post-crisis averages (**Table 2.C**). Implied expectations for RPI inflation in financial markets at longer horizons have also fallen (**Chart 2.35**). There have been similar falls in the US and euro area, suggesting there may be an international factor

behind the move. Some of the fall could also be in response to the UK Statistics Authority's recently announced plan to bring the method of calculating RPI into line with that used for CPIH, which would lower RPI inflation. The exact date for the change is uncertain: the Chancellor has announced his intention to consult on whether to allow the change to take effect between 2025 and 2030. This uncertainty makes interpreting the signal from these measures more difficult.

Overall, the MPC judges that indicators of inflation expectations are consistent with inflation close to the 2% target.

Chart 2.34 Households' short-term inflation expectations have drifted up over the past year, despite inflation falling

Measures of households' one year ahead inflation expectations and CPI inflation[a]

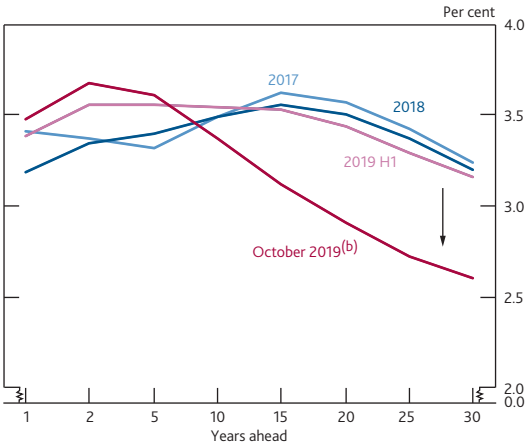


Sources: Bank of England, Citigroup, TNS, YouGov and Bank calculations.

(a) Quarterly data. Final YouGov/Citigroup data point is for October only. Data are not seasonally adjusted.

Chart 2.35 Long-term expectations of RPI inflation have fallen

Implied expectations of RPI inflation from swaps[a]



Sources: Bloomberg Finance L.P. and Bank calculations.

(a) Instantaneous RPI inflation expectations implied by swaps.
(b) October 2019 is an average to 30 October.

Table 2.C The MPC judges that inflation expectations remain anchored

Indicators of inflation expectations[a]

Per cent

	2000–07[b]	2010–18	2019 Q1	2019 Q2	2019 Q3	2019 Q4[c]
One year ahead inflation expectations						
Households[d]						
Bank/TNS	2.4	3.0	3.2	3.1	3.3	n.a.
Barclays Basix	2.8	2.6	2.6	2.5	2.8	n.a.
YouGov/Citigroup	2.5	2.4	2.7	2.6	3.0	2.7
Companies[e]	n.a.	1.7	1.0	1.2	0.5	n.a.
Financial markets[f]	2.6	2.9	3.4	3.4	3.7	3.5
Two to three year ahead expectations						
Households[d]						
Bank/TNS	n.a.	2.8	2.9	3.0	3.0	n.a.
Barclays Basix	3.2	3.0	3.0	3.0	3.3	n.a.
Companies[e]	n.a.	n.a.	1.4	1.2	-0.1	n.a.
External forecasters[g]	2.0	2.1	2.0	1.8	2.0	2.0
Financial markets[f]	2.8	3.1	3.5	3.6	3.8	3.7
Five to ten year ahead expectations						
Households[d]						
Bank/TNS	n.a.	3.3	3.4	3.8	3.1	n.a.
Barclays Basix	n.a.	3.7	4.0	4.1	4.1	n.a.
YouGov/Citigroup	3.5	3.2	3.1	3.2	3.2	3.1
Financial markets[f]	3.0	3.3	3.5	3.6	3.6	3.5
Memo: CPI inflation	1.6	2.3	1.9	2.0	1.8	n.a.

Sources: Bank of England, Barclays Capital, Bloomberg Finance L.P., CBI, Citigroup, ONS, TNS, YouGov and Bank calculations.

(a) Data are not seasonally adjusted.
(b) Averages from 2000, or start of series, to 2007. Financial market data start in October 2004, YouGov/Citigroup data start in November 2005 and professional forecasters data start in 2006 Q2.
(c) Financial market data are averages to 30 October 2019. YouGov/Citigroup data are for October.
(d) The household surveys ask about expected changes in prices but do not reference a specific price index. The measures are based on the median estimated price change.
(e) CBI data for the distributive trades sector. Companies are asked about the expected percentage price change over the coming 12 months and the following 12 months in the markets in which they compete.
(f) Instantaneous RPI inflation one and three years ahead and five-year RPI inflation five years ahead, implied from swaps.
(g) Bank's survey of external forecasters, CPI inflation rate three years ahead.

Table 2.D Monitoring the near-term outlook[a]

	2019 Q3		2019 Q4–2020 Q2	
	Latest[b]	August projection	Latest	Changes since August
World GDP (UK-weighted)	0.4	0.5	To average ½%	Revised down slightly
World GDP (PPP-weighted)	0.7	0.8	To average ¾%	Revised down slightly
Euro-area GDP[c]	0.2	0.3	To average ¼%	Revised down slightly
US GDP[c]	0.5	0.5	To average ½%	Broadly unchanged
Emerging market GDP (PPP-weighted)	0.9	1	To average 1%	Revised down slightly
UK GDP[d]	0.4	0.3	To average ¼%	Broadly unchanged
Household consumption	0.3	0.2	To average ¼%	Broadly unchanged
Business investment	-0.8	-1.2	To be broadly flat	Revised up
Housing investment	0.5	-0.7	To average ½%	Revised up slightly
Contribution of net trade to GDP	0.8	0.6	To average -¼pp	Revised down
Real post-tax labour income	-0.2	0.5	To average ¼%	Revised up slightly
Household saving ratio	6.8	4.7	To average 6%	Revised up
Credit spreads[c][e]	1.6	1.6	To average 1.6	Broadly unchanged
Excess supply/excess demand	-¼	-¼	To average -¼%	Broadly unchanged
Hourly labour productivity[d]	0.7	0	To average ¼%	Broadly unchanged
Employment[d]	-0.3	0.2	To be broadly flat	Broadly unchanged
Average weekly hours worked[d][e]	32	32	To average 32	Broadly unchanged
Unemployment rate[d][e]	3.8	3.7	To average 4%	Broadly unchanged
Participation rate[d][e]	64	64	To average 64%	Broadly unchanged
CPI inflation[c]	1.8	1.7	To fall to 1¼% in Q2	Revised down
UK import prices	0.1	1.9	To be 0% in Q2	Revised down
Energy prices — direct contribution to CPI inflation[c]	0.2	0.1	To average -¼pp	Revised down slightly
Average weekly earnings regular pay[d][f]	3.8	3.5	To average 3¾%	Revised up
Unit labour costs	3.7	2.8	To average 3%	Revised up slightly
Private sector regular pay based unit wage costs	3.9	3.8	To average 3¼%	Revised up slightly

Sources: Bank of England, Bloomberg Finance L.P., Department for Business, Energy and Industrial Strategy, Eurostat, IMF *World Economic Outlook* (*WEO*), ONS, US Bureau of Economic Analysis and Bank calculations.

(a) Definitions of underlying series are as given in footnotes of **Table 1.C** in Section 1, unless otherwise stated. Figures show quarterly growth rates unless otherwise stated. All price and wage measures are four-quarter growth rates.
(b) Data are projections unless otherwise stated.
(c) Data for 2019 Q3 is an outturn.
(d) Projections based upon official data to August 2019.
(e) Quarterly level.
(f) Whole-economy regular pay. Growth rates based on KAI7.

Box 3
Agents' update on business conditions

The key information from Agents' contacts considered by the Monetary Policy Committee at its November meeting is highlighted in this box.(1)

Overall economic activity slowed in the past three months compared with a year ago, reflecting ongoing Brexit uncertainty and the slowdown in the global economy.(2) Growth in business services, consumer spending and housing market activity was muted and construction output growth weakened. Investment intentions also eased further.

The Agents' scores for manufacturing output and exports were their lowest in more than three years. This reflected a number of factors such as trade tensions and the waning effect of the past depreciation of sterling.

The Agents' score for capacity utilisation also eased markedly, particularly in manufacturing, reflecting slower activity.

Labour market activity appeared to be stabilising. Companies' employment intentions for the coming 12 months were broadly flat, and recruitment difficulties appeared to have stopped increasing, though they remained elevated. Pay growth also seemed to be stabilising, with settlements averaging around 2%–3%. However, some contacts reported giving larger increases to address skill shortages or to keep pace with the National Living Wage.

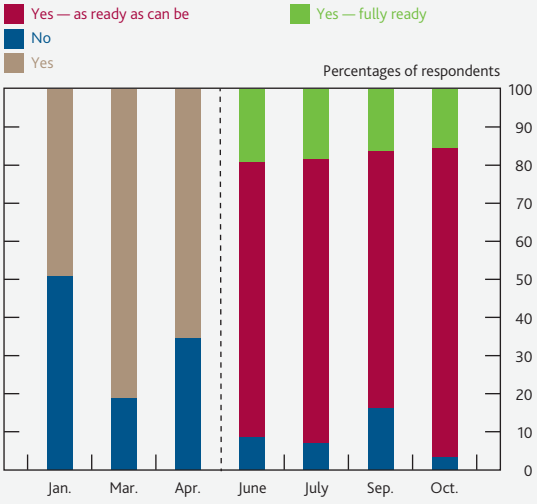
Agents' survey on preparations for EU withdrawal

The Agents surveyed over 300 business contacts on their preparations for EU withdrawal.(3)

Almost all respondents said they were either 'fully ready' or 'as ready as can be' for a no-deal Brexit, up from around four fifths of respondents in the September survey (**Chart A**).

Chart A Most companies think they are 'as ready as can be' for a no-deal Brexit

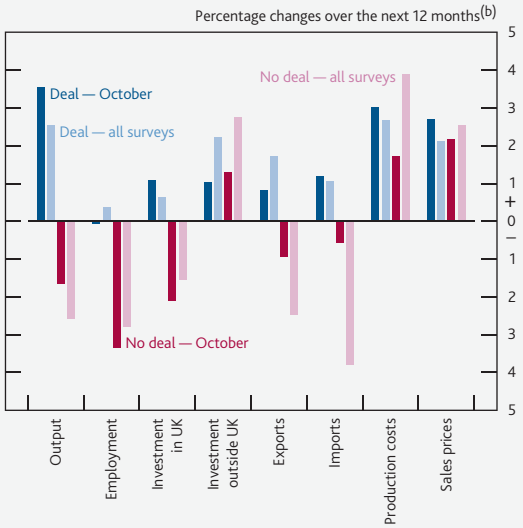
Readiness for a 'no deal and no transition' Brexit(a)



(a) Companies were asked 'Do you think your company is ready for a 'no deal and no transition' Brexit?'. In the January, March and April surveys, we only gave the option to choose 'Yes' or 'No'. In June, July, September and October respondents could choose between 'Yes — fully ready', 'Yes — as ready as can be' and 'No'. Anecdotal evidence suggests that some respondents before June who answered 'yes' might have responded 'as ready as can be' had they been given the option.

Chart B Companies expect output, employment and investment to be lower in a no-deal Brexit

Expectations for a deal and no-deal Brexit(a)



(a) Companies were asked 'Relative to the last 12 months, what is your expectation for the following aspects of your business over the next year in each scenario?'.
(b) Respondents were asked to choose between 'Fall greater than 10%'; '-10 to -2%'; 'Little change'; '+2 to +10%' and 'Rise greater than 10%'. To calculate these approximate growth rates, the following midpoint estimates were assumed for each response bucket: ±6% for the '±2-10%' response category; 0% for the 'little change' response category, and ±15% for the '± >10%' category.

(1) A comprehensive quarterly report on business conditions from the Agents is published alongside the MPC decision in non-*Monetary Policy Report* months. The next report will be published on 19 December 2019.
(2) This is a summary of economic reports compiled by the Agents during September and October 2019. References to activity and prices relate to the past three months compared with a year earlier. The Agents' scores are available here.
(3) The survey was conducted between 5 September and 15 October. There were 341 responses from companies employing around 316,000 employees. Responses were weighted by employment and then reweighted by sector employment.

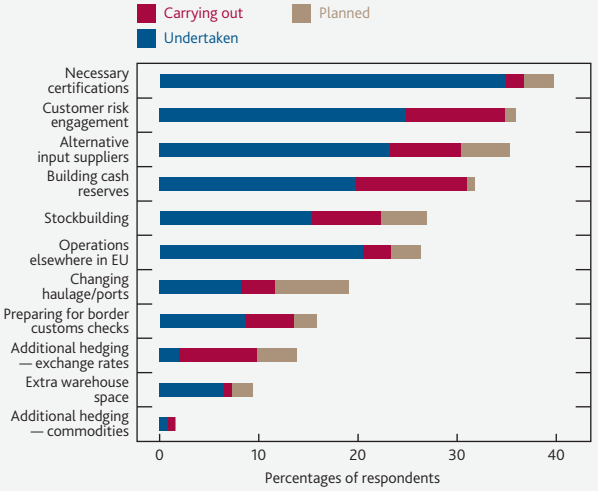
However, the survey also showed that companies still expected output, employment and investment to be markedly lower in a no-deal Brexit compared with a scenario with a deal and transition period (**Chart B**). This was also the case for companies that felt 'ready' for a no-deal Brexit.

Most respondents said they had already implemented or were going to implement some form of contingency plan. The most commonly reported form of contingency plan by companies in the October survey was obtaining necessary certifications, followed by engaging with customers to manage risk, seeking alternative input suppliers and building cash reserves (**Chart C**). The proportion of companies that said they were stockbuilding was somewhat lower than in previous surveys.

Taking on extra warehouse space was one of the least popular contingency plans. This is supported by other Agency intelligence which suggests that companies have been using their own premises to store stock. In addition, availability of warehousing space was reported to be limited due to the usual stockbuilding ahead of Christmas.

Chart C Applying for necessary certifications was the most common contingency plan

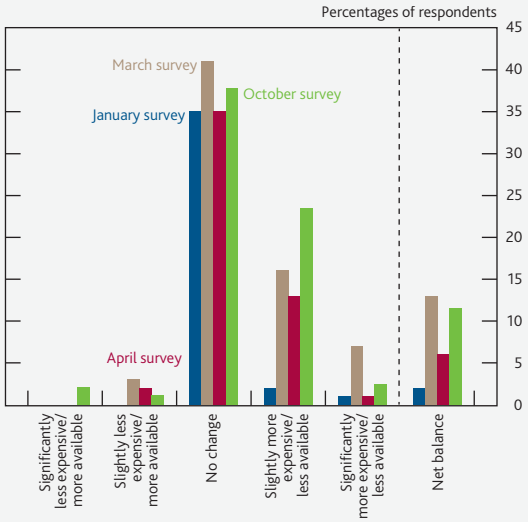
Types of contingency action(a)



(a) Companies were asked 'If applicable, what type of contingency actions has your company undertaken, is planning or carrying out? (please tick any that apply)'.

Chart D There has been a tightening in the cost and availability of finance

Cost/availability of trade and/or bank finance(a)



(a) Companies were asked 'Have you noticed any change in the cost and/or availability of trade and/or bank finance in the last 12 months?'.

To shed light on whether Brexit might be affecting trade flows, contacts were also asked whether they had seen any reorientation of supply chains. Eight per cent of respondents reported that overseas companies had begun to reorient away from UK suppliers. Agency intelligence also suggested that some overseas customers have been reluctant to close new deals until there is greater clarity on post-Brexit trading arrangements. Fourteen per cent of survey respondents said that they had made slight shifts away from their overseas suppliers. This was mainly reported by contacts in consumer and business services.

Around a fifth of companies said that preparing for Brexit had raised their working capital needs, compared with a third in the September survey. Those companies said they had generally financed working capital needs through internal cash flow or depleting cash reserves.

The proportion of contacts who reported that finance had become slightly more expensive or less available over the past year increased a little in the latest survey (**Chart D**). According to Agency intelligence, the range of sectors reporting that credit availability had tightened has widened to include car dealerships, smaller house builders and some manufacturers, particularly in the automotive sector. Credit availability remained relatively tight for retail, leisure and construction firms. There were signs of a pickup in corporate failures, albeit from a very low base.

3 In focus Trade protectionism and the global outlook

A number of trade barriers have been introduced since mid-2018, the most significant of which have been higher tariffs on bilateral trade between the US and China. This increase in protectionism has contributed to the slowdown in global growth, both via the direct effects on trade flows, supply chains and import costs, and via the wider indirect effects on business sentiment, uncertainty and investment around the world. Further protectionist measures taken since August have led the MPC to revise down its projection for the global economy and the forecast for UK output growth.

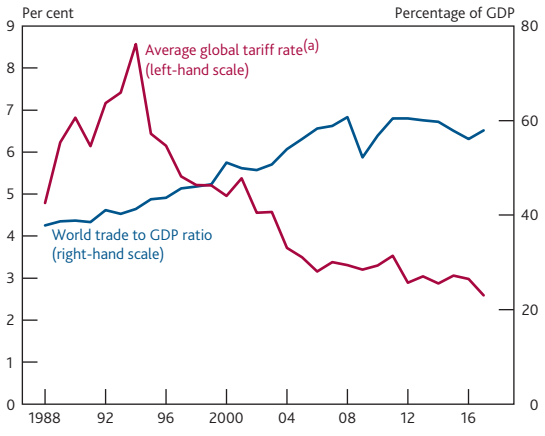
For most of the past 50 years, there has been a general trend across the world towards trade liberalisation. Tariffs on goods have fallen steadily: the average global tariff rate fell from 8½% in 1994 to 2½% in 2017 (**Chart 3.1**). Since mid-2018, however, that trend has begun to reverse. In particular, bilateral tariffs on trade between the US and China have risen substantially.

The fundamental shift in the direction of trade policy has affected global business sentiment. Measures of trade and economic policy uncertainty have increased sharply during 2019 (**Chart 3.2**) and surveys suggest that investors view a trade war as the top risk to the global outlook. These developments have taken place at a time when the global economy was already slowing, reflecting the tightening of financial conditions in 2018 — particularly in emerging markets — and slowing growth in China.

This section sets out the MPC's assessment of the impact of trade protectionism on the global economy. It discusses how protectionist policies affect the economy (Section 3.1), developments in trade policy to date (Section 3.2) and provides estimates of their impact on global economic growth so far (Section 3.3). The final section (Section 3.4) briefly sets out how the slowdown in the global economy has affected the MPC's forecasts.

Chart 3.1 Global tariffs have been falling steadily, while trade has been increasing as a share of world GDP

Average global tariff rate and the world trade to GDP ratio

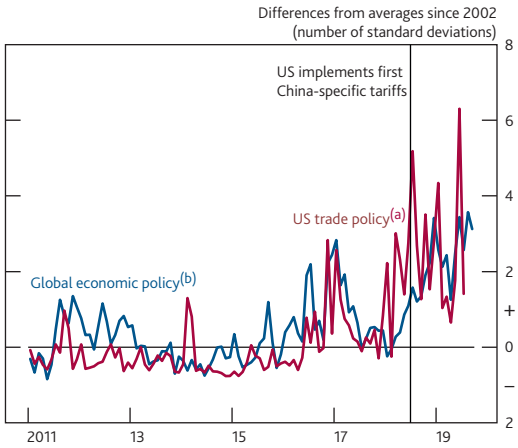


Sources: World Bank and Bank calculations.

(a) Average trade-weighted tariff rate. Data are to 2017.

Chart 3.2 Global economic policy uncertainty has increased, particularly in relation to US trade

Global economic policy and US trade policy uncertainty



Sources: policyuncertainty.com and Bank calculations.

(a) Monthly measure reflecting the frequency of articles in US newspapers that discuss policy-related economic uncertainty and also contain one or more references to trade policy.
(b) Monthly measure of media citations of terms related to economic policy uncertainty, based on data from 20 countries. The index is weighted by PPP-adjusted GDP and together these countries account for an estimated 70% of global GDP. For details, see Baker, S R, Bloom, N and Davis, S J (2016), 'Measuring economic policy uncertainty', *The Quarterly Journal of Economics*.

3.1 How trade protectionism affects the economy

Imposing trade barriers tends to reduce output in the near term…

Trade barriers make it more costly, or more difficult, for domestic businesses and consumers to buy goods from abroad, reducing trade flows. These barriers often take the form of tariffs, which for a given exchange rate increase the price of imported goods relative to those that are domestically produced.(1) Non-tariff measures including import quotas or changes to regulatory standards can also create barriers to trade.

A rise in the cost of imported goods due to tariffs will lower real incomes and in turn weigh on domestic demand growth. Some domestic production which uses imports as inputs might also be constrained if trade barriers cause supply-chain disruption.

…and in the long run.

Lower trade can reduce productivity growth as businesses are less exposed to global competition and new ideas, less able to exploit comparative advantages by specialising, and less able to benefit from economies of scale. Historically, there has been a strong relationship between trade openness and output via productivity. A study by Feyrer (2009), for example, suggests that a 20% reduction in trade flows tends to drag on output by around 5% in the long run. The integration of global supply chains in recent decades may have intensified that link.

The impact may spill over to other countries.

Countries that are not directly exposed to an increase in trade barriers might nonetheless feel some effect from their imposition elsewhere. Some might benefit from positive 'trade diversion' effects if they produce close substitutes for products supplied by those countries that become subject to tariffs. Most countries are likely to be negatively affected by the reduction in global demand, however, particularly if they supply inputs for affected countries' exports.

Spillovers could also occur via reduced business confidence and increased uncertainty. The introduction of trade barriers may make businesses more uncertain about the potential market for their products and services, and whether further protectionist policies will follow. That uncertainty is likely to reduce business investment, lowering the rate of global capital accumulation and so supply growth.

Global financial conditions could also be affected. The price of companies' equity or corporate bonds might fall, for example, if investors expect trade barriers to reduce profitability or increase the risks around it.

3.2 Recent developments in trade policy

The US-China trade war has led to a significant increase in bilateral tariffs…

Tariffs on goods traded between the US and China have been increasing since mid-2018 (**Table 3.A**). At the time of the August *Report*, the US had levied tariffs on a total of US$250 billion of imports from China, with China implementing tariffs on US$110 billion of imports from the US in response.

…with further increases since the August Report.

In September, US tariffs on a further US$112 billion of imports from China came into effect, and China responded with measures applied to some goods on a US$75 billion target list of US imports. As a result, bilateral tariffs between the US and China are estimated to be around 15 percentage points higher than at the start of 2018 (**Chart 3.3**). The initial waves of US tariffs on Chinese imports were predominantly levied on industrial supplies and capital goods, but more recent tariffs have affected a broader range of products, including consumer goods (**Chart 3.4**).

The US had previously announced a further increase in tariffs from 25% to 30% on US$250 billion of imports from China, but this increase was subsequently suspended. However, new 15% tariffs could still be introduced on almost all remaining US imports from China in December.

(1) In isolation, tariffs levied on imports would be expected to cause an appreciation of the exchange rate that would lower the impact on domestic prices. If another country reciprocates, however, that would reduce the exchange rate effect so the result would be higher prices in both economies.

Table 3.A Tariffs on goods traded between the US and China have been implemented in stages

Tariff rates by implementation date

Per cent

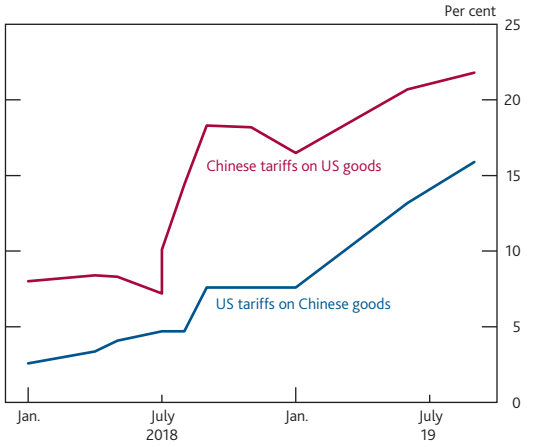
	Value of goods affected			
	Wave 1		Wave 2	Wave 3
	US$34 billion	US$16 billion	US$200 billion	US$112 billion
US tariffs on Chinese imports				
6 July 2018	25	–	–	–
23 August 2018	25	25	–	–
24 September 2018	25	25	10	–
10 May 2019	25	25	25	–
1 September 2019	25	25	25	15
	US$34 billion	US$16 billion	US$60 billion	US$75 billion[a]
China tariffs on US imports				
6 July 2018	25	–	–	–
23 August 2018	25	25	–	–
24 September 2018	25	25	5 to 10	–
1 June 2019	25	25	5 to 25	–
1 September 2019	25	25	5 to 25	5 to 10

Sources: Ministry of Commerce of the People's Republic of China and Office of the United States Trade Representative.

(a) The Chinese authorities specified a target list of 5,078 products that could be subject to tariffs. That target list had a total value of US$75 billion.

Chart 3.3 The average tariffs on bilateral trade between the US and China have increased since mid-2018

Weighted average tariff rates



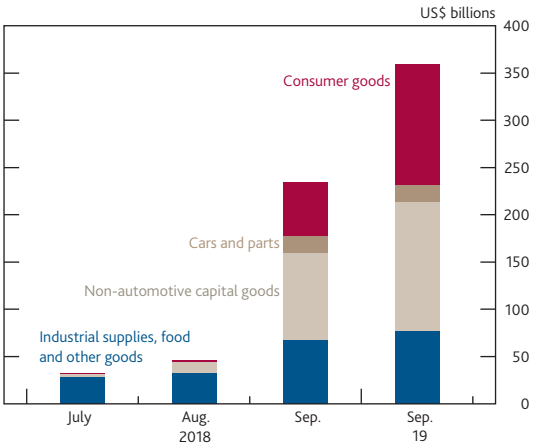
Sources: Ministry of Commerce of the People's Republic of China, Office of the United States Trade Representative and Bank calculations.

Other policies have also increased trade barriers.

While there are some recent examples of measures that reduce trade barriers — the EU and Japan agreed a trade deal which came into force in February for example — the number of protectionist measures introduced around the world over the past couple of years has been much larger (**Chart 3.5**). Some of these have raised non-tariff barriers. Japan, for example, has imposed restrictions on exports of certain raw materials to South Korea. Tariffs between countries other than the US and China have also increased. The US introduced new tariffs on US$7.5 billion of imports from the EU in October, following a long-running dispute over state subsidies to aircraft manufacturers.

Chart 3.4 The most recent US tariffs on Chinese imports have affected consumer goods

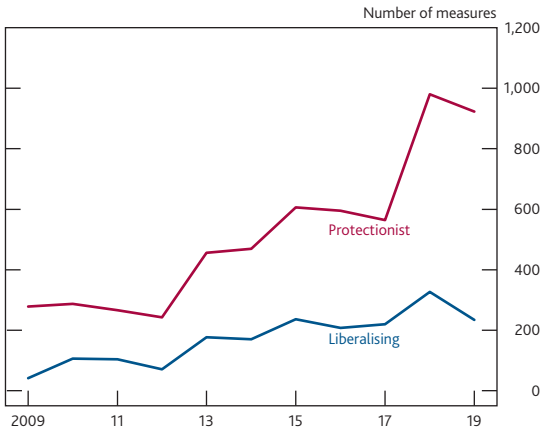
Total value of goods affected



Sources: Eikon from Refinitiv, Office of the United States Trade Representative, US Census Bureau and Bank calculations.

Chart 3.5 The number of protectionist trade measures introduced has increased significantly in 2018 and 2019

Trade measures introduced globally[a]



Source: Global Trade Alert database.

(a) Number of trade measures introduced in each year. Data have been adjusted for reporting lags.

Trade barriers could increase further…

Further trade measures could be implemented in future. The US administration is considering whether to impose tariffs on imported automotive products. If imposed, these could lower exports to the US from a number of regions, including the EU. Moreover, some previously proposed trade agreements which would have reduced trade barriers — such as that between the EU and the South American trade bloc Mercosur — are now in doubt.

…as the rationales for measures broaden.

As trade measures have become more widespread, the stated aims of trade policies has broadened significantly. Initially motivated by concerns over bilateral trade imbalances, trade measures are now being introduced in response to a range of issues, including immigration, intellectual property protection and control of new technologies. Protectionist measures could become more pervasive and persistent: over a third of respondents to a recent Bank of America Merrill Lynch survey considered the US-China trade war to be the 'new normal' with no expectation that it will be resolved.

3.3 The impact of trade policy measures to date

Trade between the US and China has fallen significantly since trade barriers increased…

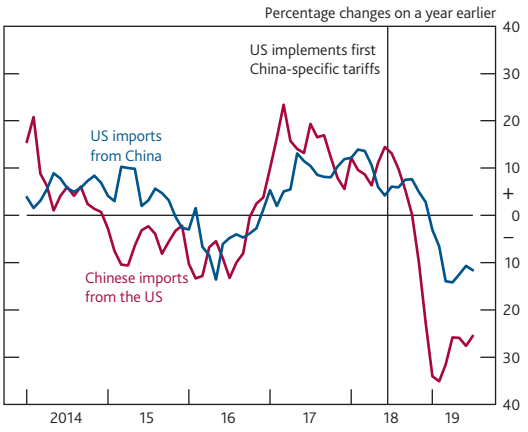
US-China tariffs have increased the price of imported goods in both countries and that has weighed directly on import growth. US imports from China fell by more than 10% in the year to 2019 Q2 and Chinese imports from the US were around 25% down on a year earlier (**Chart 3.6**).

…and evidence of trade diversion to other countries appears to be limited.

Those sharp declines in US-China bilateral trade flows might have been expected to lead to a boost to trade elsewhere as demand is diverted to other regions, but there has been little evidence of this so far. The rate of growth of US imports from some Asian economies such as Vietnam and Cambodia has increased since mid-2018, but imports from China are more than five times as large as from those countries combined. For most of the largest emerging economies in Asia, growth of exports to the US has not risen to the same extent (**Chart 3.7**). That suggests that the negative effect on those countries from disrupted supply chains may have more than offset any positive effect from trade diversion.

Chart 3.6 Bilateral trade between the US and China has contracted sharply since tariffs were first introduced

Import growth[a]

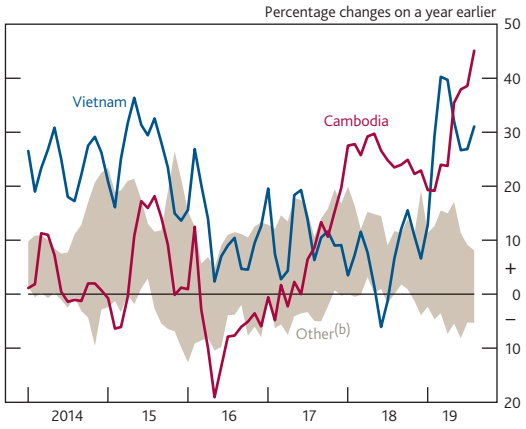


Sources: IMF Direction of Trade Statistics and Bank calculations.

(a) Three-month moving average. Current prices, not seasonally adjusted.

Chart 3.7 US import growth from some emerging economies in Asia has risen, but in most cases there has been little evidence of trade diversion

US import growth by country[a]



Sources: US Census Bureau and Bank calculations.

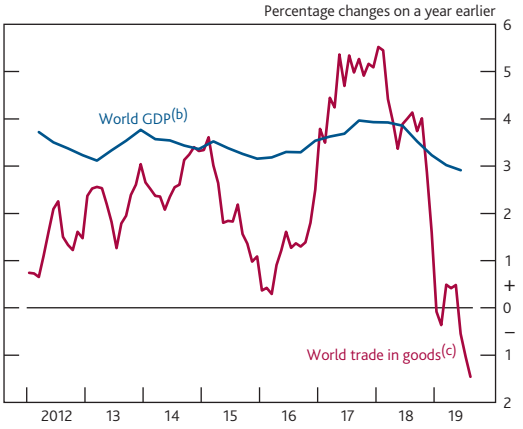
(a) Three-month moving average. Current prices, not seasonally adjusted.
(b) This swathe includes the six emerging economies in Asia with the highest share of US imports, other than Cambodia, China and Vietnam.

Global trade and output growth have both been slowing…

The increase in protectionism has led to a notable decline in global trade growth. World trade growth has fallen by 5½ percentage points over the past year (**Chart 3.8**), of which around 2½ percentage points is accounted for by lower imports growth in the US and China. Alongside this lower global trade growth, global GDP growth has fallen by 1 percentage point.

Chart 3.8 World trade growth has decreased notably and world GDP growth has also fallen

World trade in goods and PPP-weighted world GDP[a]

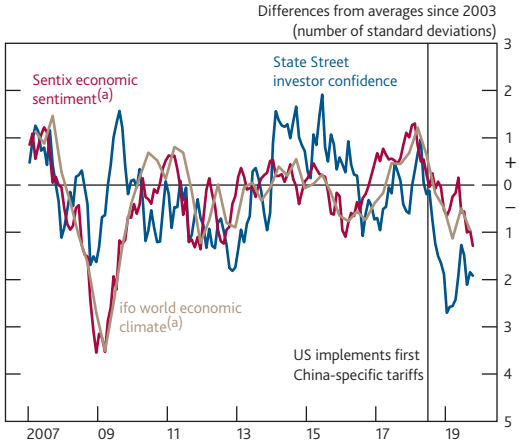


Sources: CPB Netherlands Bureau for Economic Policy Analysis, IMF *World Economic Outlook* and Bank calculations.

(a) Volume measures.
(b) 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.
(c) Three-month moving average.

Chart 3.9 Business confidence indicators have weakened globally

Survey indicators of investor confidence



Sources: Eikon from Refinitiv, ifo Institute for Economic Research World Economic Survey, Sentix, State Street Corporation and Bank calculations.

(a) Not seasonally adjusted.

…but trade protectionism is only part of the story.

Factors other than trade protectionism have also weighed on global output growth. These factors include a tightening in financial conditions during 2018, particularly in emerging markets, as asset prices adjusted to tighter policy in the US and China. Some country-specific factors caused particularly sharp slowdowns in countries such as Turkey and Argentina. The ongoing slowdown in China has dragged on growth in countries that rely on Chinese demand for their exports, such as Germany.

The direct impact of new trade barriers introduced since mid-2018 is estimated to have been modest…

The direct effect of increased protectionism on world GDP growth via trade flows, supply chains and import costs appears to have been modest. That reflects the fact that tariffs to date have been largely contained to two countries.

A general equilibrium model of the global economy which simulates the direct effect of higher tariffs on global output suggests that PPP-weighted global GDP is currently around 0.1% lower as a result of trade barriers introduced since mid-2018 (**Table 3.B**).[(2)]

External estimates also suggest that the impact of US-China tariffs has been relatively small to date. A recent study by Fajgelbaum *et al* (2019) found that US-China tariffs had reduced US GDP by just 0.04%. These estimates are sensitive to the underlying assumptions, however, including the monetary policy response.[(3)]

…but the indirect effects on investment via reduced business confidence may have been larger.

Growth is also likely to have been dampened by the decline in global business confidence and associated pickup in uncertainty (**Chart 3.2**), which are likely to be related to the increase in trade protectionism. Surveys of investor confidence have fallen since mid-2018, and are below their historical averages (**Chart 3.9**). In turn, four-quarter business investment growth across G7 countries (excluding the UK) has slowed from around 6% to less than 2% over the past year. Capital goods orders for the US and euro area continue to weaken.

These confidence effects can also be seen in financial markets. On days where there has been news about protectionist measures, US equity prices have tended to fall, while equity market volatility and risk premia have risen. That probably reflects investors' judgements that higher trade barriers will weigh on some companies' profits. The market-implied paths for interest rates have fallen significantly since mid-2018, in part reflecting expectations that looser monetary policy will be required to offset the impact of protectionism on global demand.

(2) For more details on the model, see https://nimodel.niesr.ac.uk/.
(3) See Tenreyro, S (2019), 'Monetary policy and open questions in international macroeconomics', John Flemming Memorial Lecture.

Table 3.B Trade measures are estimated to have reduced global GDP via direct channels, but have also weighed on business confidence, which has had a further indirect effect on global output
Estimated impacts on the levels of GDP

Per cent

	Impact to date[a]			Total anticipated impact[b]		
	Direct effects	Business confidence effects	Total[c]	Direct effects	Business confidence effects	Total[c]
US	-0.1	-0.6	-0.7	-0.7	-1.1	-1.7
China[d]	-0.1	-0.7	-0.8	-0.7	-1.2	-1.9
Euro area	0.0	-0.3	-0.3	-0.2	-0.5	-0.7
Emerging markets, excluding China	-0.1	-0.2	-0.3	-0.4	-0.4	-0.8
World (PPP-weighted)	-0.1	-0.4	-0.5	-0.4	-0.7	-1.1
World (UK-weighted)	-0.1	-0.3	-0.4	-0.3	-0.6	-0.9

(a) Percentage changes in the level of GDP in 2019 Q2.
(b) Peak effect on the level of GDP during the forecast period.
(c) Effects may not sum to the totals due to rounding.
(d) The direct tariff impact on Chinese GDP assumes that the Chinese authorities loosen policy to offset some of the impact of higher tariffs.

The size of these indirect effects is hard to quantify. There is a deep and long-standing literature establishing the link between higher uncertainty and lower spending (Section 4), but uncertainty linked to trade policy is hard to measure. Even if it were possible to represent trade policy uncertainty in one measure, its impact may not be well captured by models based on past relationships. There are few past examples of a sudden escalation in trade tensions following a long period of liberalisation.

To gauge the indirect effects of trade policy measures, Bank staff have estimated the impact of increased uncertainty on US business investment. Results from this approach suggest that increased uncertainty will reduce the level of US business investment by between 5% and 7%. Since China has also been directly affected by rises in tariffs, the effect on investment is assumed to be similar there. Uncertainty is also assumed to weigh on investment in the euro area. Businesses in some euro-area countries rely heavily on external demand and annual business investment growth has fallen from around 4% in mid-2018 to around 2% in 2019 Q2. Overall, the indirect effects of protectionism are judged to have reduced the level of PPP-weighted global output by 0.4% to date, somewhat larger than the direct effects (**Table 3.B**).

3.4 The impact on the MPC's forecasts

Trade protectionism has contributed to lower-than-expected global output growth.
The escalation in trade protectionism has contributed to the sharper-than-expected slowing in global growth over the past year and a half. In May 2018 — before the start of the US-China trade war — the MPC projected that PPP-weighted global growth would be around 3¾% in 2019 Q2. The outturn was 1 percentage point lower than that forecast.

Protectionism continues to weigh on the MPC's latest projection for global output growth…
The MPC expects trade protectionism and the associated increase in uncertainty to continue to weigh on global growth over the forecast period. On top of the effects seen to date, it is expected to lower PPP-weighted global GDP by a further 0.6%, such that protectionism is estimated to drag on global GDP by up to 1.1% in total (**Table 3.B**).

While trade protectionism continues to weigh on activity, global growth is projected to pick up a little during 2020. That pickup is partly accounted for by a recovery in growth in some emerging economies which have been hit by idiosyncratic shocks, for example in Turkey and Argentina. It is also supported by accommodative policies in the US and euro area.

…and on the MPC's projection for UK GDP growth.
Slow global growth is assumed to affect UK growth through trade channels. In addition, as in other countries, the higher uncertainty and reduced confidence associated with trade tensions weighs on UK business investment (Section 1).

4 In focus Uncertainty and Brexit

Uncertainty about future outcomes is an important driver of economic behaviour, over and above central expectations. The Brexit process has already affected the UK economy. It has made some firms and households more pessimistic about the central outlook. It has also increased the uncertainty around that central outlook. Bank research suggests that these Brexit effects have depressed investment spending and weighed on productivity. The MPC's latest projections assume that the progress of the Withdrawal Agreement removes some uncertainty. But some is likely to persist while the deal and the transition to it are negotiated.

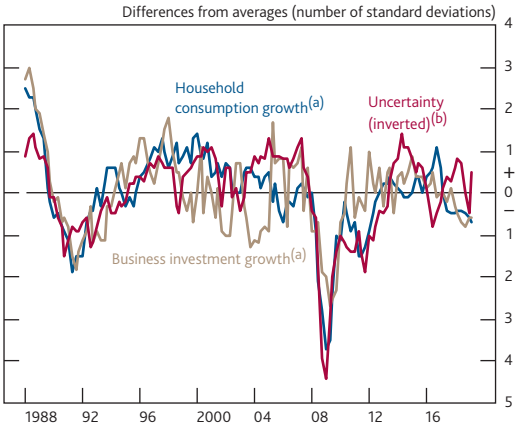
People's expectations about the economic outlook are important for spending and investment decisions. For example, people might spend less now if they think that their income is likely to be lower in future. In addition, there is a deep and long-standing literature showing that the degree of uncertainty around those expectations also has an important influence on behaviour. Higher uncertainty tends to weigh on investment and consumption (**Chart 4.1**), especially the former, and can reduce productive capacity.

Brexit will fundamentally change the nature of the UK's relationship with its largest trading partner. The wide range of potential outcomes appears to have both increased uncertainty (**Chart 4.2**) and made people more pessimistic about the economic outlook. Those effects, which are difficult to separate, are already influencing the UK economy. They have lowered business investment in particular, and may have weighed on productivity and consumption.

This section summarises how uncertainty can affect the economy in principle (Section 4.1). It then assesses the impact of Brexit on indicators of uncertainty (Section 4.2) and how this has affected the UK economy (Section 4.3). Finally, it sets out how uncertainty is assumed to evolve in the MPC's forecast (Section 4.4).

Chart 4.1 Uncertainty has a close relationship with spending

Annual growth of household consumption and business investment, and a measure of uncertainty

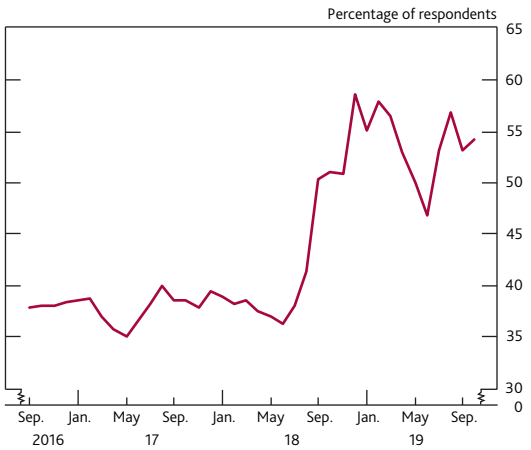


Sources: Bloomberg Finance L.P., CBI, Consensus Economics, Eikon from Refinitiv, GfK (research on behalf of the European Commission), Institutional Brokers' Estimate System, ONS, policyuncertainty.com and Bank calculations.

(a) Chained-volume measures. Business investment data are adjusted for the transfer of nuclear reactors from the public corporation sector to the central government in 2005 Q2.
(b) The first principal component extracted from the set of indicators: the average monthly standard deviation of external forecasts for GDP growth one and two years ahead; the standard deviation of analysts' forecasts for corporate earnings growth over the next year; CBI survey measure of demand uncertainty as a factor likely to limit capital expenditure for manufacturing and services; an index of UK policy uncertainty based on newspaper articles; household survey responses on their personal financial situation and unemployment expectations; the three-month option-implied volatility for the FTSE 100 (realised volatility used prior to April 1992); a weighted average of the three-month option-implied volatility of the sterling-euro and sterling-dollar exchange rates. Data are shown to Q2.

Chart 4.2 The proportion of firms that cite Brexit as an important source of uncertainty is elevated

Brexit in top three current sources of uncertainty(a)



Sources: Decision Maker Panel (DMP) Survey and Bank calculations.

(a) Question: 'How much has the result of the EU referendum affected the level of uncertainty affecting your business?'. Respondents can select: 'Not important'; 'One of many sources'; 'Two or three top sources'; or 'Top source of uncertainty'. Before August 2018, data are interpolated between waves and shown as three-month rolling averages. The DMP currently consists of around 8,000 businesses with around 3,000 responses a month being received.

4.1 The impact of uncertainty on the economy

Economic behaviour is forward looking.
When firms and households make decisions about investment and spending, they take the future into account. Their central expectations about the economic outlook — what they think is most likely to happen — are important. Uncertainty around those expectations also affects decisions being made now.

Uncertainty weighs on investment…
Uncertainty creates a value in waiting for news that might make the future outlook clearer. This means firms are more likely to delay investment decisions where the return will vary depending on how the economy evolves (see Bernanke (1983) and Dixit and Pindyck (1994)). Investment typically involves sunk costs and changes to processes, for example from installing a new production line. That makes it costly to reverse, and this irreversibility creates an incentive to delay decisions until more is known about the future, protecting firms from bad outcomes. The value of delaying is greater the worse the potential bad outcomes are.

The incentive to wait might be particularly strong if firms expect uncertainty to be resolved soon. Delaying investment until uncertainty falls comes with a cost. Firms forego the potential profits from the investment while they wait. The longer they wait, the higher the cost. Therefore delaying becomes more reasonable if uncertainty is expected to last only a short time.(1)

…including through its influence on financial conditions…
As uncertainty increases, investors are likely to demand a higher compensation for risk, causing credit conditions to tighten (see Whaley (2000) and Gilchrist, Sim and Zakrajšek (2014)). This can lower spending as credit becomes less readily available. But causality can also go the other way. A shock which tightens credit conditions can also lead to heightened uncertainty about the economic outlook. That occurred during the financial crisis, for example. As a result, it is important to separate the effect of changes in uncertainty from the effect of other shocks. In some of the empirical research, the estimated impact of uncertainty on demand falls once the effect of changes in credit conditions has been taken into account.(2)

…and can also reduce productivity and supply growth.
If investment is delayed, it affects the amount firms can produce in future through lower capital deepening and research and development (see Bonciani and Oh (2019)). Uncertainty can also cause firms to postpone hiring and firing decisions and can make workers reluctant to seek new jobs. The resulting fall in labour market churn could lower productivity if it results in labour being misallocated across firms (see Lazear and Spletzer (2012)).

Uncertainty might also affect consumption.
Higher uncertainty can cause risk-averse households to cut back on consumption temporarily (see Leland (1968) and Carroll (1997)). The literature suggests that uncertainty about job prospects is particularly important for household behaviour, as it encourages precautionary saving (see Benito (2004)). Households might delay spending that involves large costs, such as buying a house or car, similar to firms delaying investment. But because the majority of day-to-day household spending does not involve large one-off costs, the effect of uncertainty on total consumption may be smaller than for business investment.

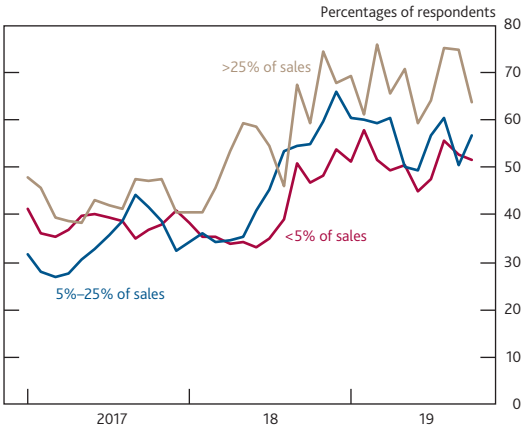
4.2 The impact of Brexit on uncertainty

Brexit has increased uncertainty.
Brexit will fundamentally change the nature of the UK's relationship with its largest trading partner. The impact of Brexit on indicators of uncertainty has been evident since the referendum. At least 30% of firms have cited Brexit in their top three sources of uncertainty in the Bank's Decision Maker Panel (DMP) Survey since it began in 2016 (**Chart 4.2**). This has risen to around 55% of firms in more recent surveys. Brexit uncertainty has been widespread, including for firms which are not reliant on sales to the EU (**Chart 4.3**).

(1) This channel is covered in more detail in Broadbent, B (2019), 'Investment and uncertainty: the value of waiting for news'.
(2) See Forbes, K (2016), 'Uncertainty about uncertainty'.

Chart 4.3 Brexit uncertainty has picked up for all firms, not just exporters to the EU

Brexit in top three current sources of uncertainty, by proportion of sales accounted for by exports to the EU[a]

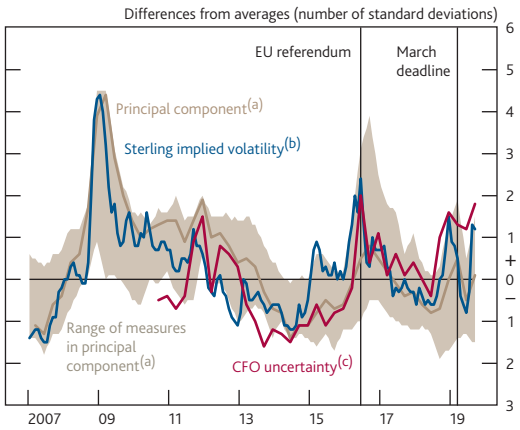


Sources: DMP Survey and Bank calculations.

(a) See **Chart 4.2** footnote.

Chart 4.4 Some measures suggest that uncertainty is close to post-crisis highs

Selected measures of uncertainty



Sources: Bloomberg Finance L.P., CBI, Consensus Economics, Deloitte, Eikon from Refinitiv, GfK (research on behalf of the European Commission), Institutional Brokers' Estimate System, ONS, policyuncertainty.com and Bank calculations.

(a) See **Chart 4.1** footnote (b). Differences from average for principal component are since 1988.
(b) Monthly weighted average of the three-month option-implied volatility of the sterling-euro and sterling-dollar exchange rates. Series starts in September 2001.
(c) Proportion of firms reporting that the general level of external financial or economic uncertainty facing their business is 'high' or 'very high'. Series starts in 2010 Q3. Not seasonally adjusted.

This is reflected in some more general uncertainty indicators…

As well as the DMP measure of Brexit-specific uncertainty (**Chart 4.2**), some indicators capturing general uncertainty have risen too. For example, an above-average proportion of respondents to the *Deloitte CFO Survey* — more than half — have reported high uncertainty in the past four quarters (**Chart 4.4**).

The implied volatility from sterling options — which captures perceived uncertainty around the exchange rate — has been elevated recently (**Chart 4.4**). This measure is likely to capture both political and business cycle uncertainty. It is suited to identifying UK-specific shocks, like Brexit, because the exchange rate reflects beliefs about relative economic prospects. It also has a historically reliable relationship with UK business investment and GDP growth.

In contrast, some other uncertainty indicators are less elevated. The range in **Chart 4.4** shows a broad set of measures, summarised in a principal component.[3] The principal component is currently around its historical average. This might be because some indicators do not capture Brexit uncertainty fully. For example, one measure is based on a range of external forecasters' central expectations for GDP growth. This might fail to pick up the degree of uncertainty that each forecaster has around their central projection.

…which suggest uncertainty is close to post-crisis highs.

Sterling implied volatility and uncertainty among CFOs rose substantially in the run-up to the Article 50 deadline in March 2019 (**Chart 4.4**). The proportion of firms which place Brexit in their top three sources of uncertainty also increased ahead of the March deadline and has remained elevated since (**Chart 4.2**). These measures suggest uncertainty in 2019 Q3 was close to post-crisis highs.

4.3 How has Brexit uncertainty affected the economy?

As well as increasing uncertainty, Brexit has made some households and firms more pessimistic…

Brexit appears to have made households and businesses more pessimistic about the economy, on average. The DMP Survey suggests that, on balance, firms expect that Brexit ultimately will have a negative impact on their sales (**Chart 4.5**). Household expectations for the general economic situation a year ahead have deteriorated since 2016, although confidence in their own financial situation has been less affected (**Chart 2.18**).

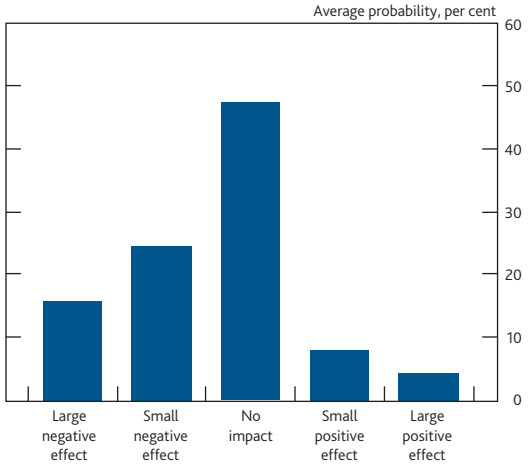
(3) The principal component summarises the signals from the range of measures into the single variable that accounts for the greatest amount of covariation between them. For more details see Haddow, A, Hare, C, Hooley, J and Shakir, T (2013), 'Macroeconomic uncertainty: what is it, how can we measure it and why does it matter?', *Bank of England Quarterly Bulletin*, 2013 Q2.

…and it is difficult to separate the impact of these two effects on the economy.

It is difficult to disentangle the influence of higher uncertainty from the effects of increased pessimism. Both can have similar effects on behaviour, weighing on consumption and investment. They have also moved together: the impact that firms expect Brexit will have on their sales is highly correlated with their uncertainty about Brexit (**Chart 4.6**). As a result, the estimated impact of Brexit uncertainty on the economy set out below might also be capturing some effects from increased pessimism.

Chart 4.5 On balance, firms expect Brexit to have a negative effect on their sales

Firms' expected eventual impact of Brexit on sales[a]

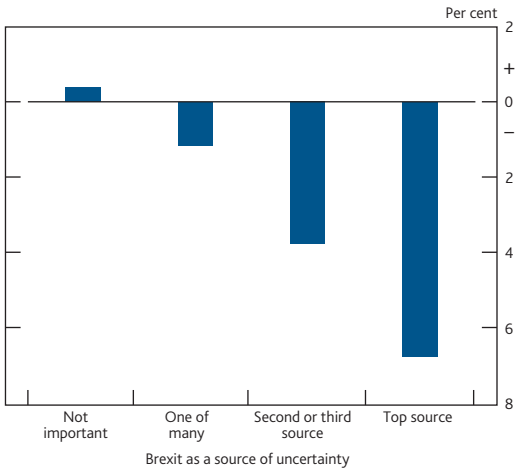


Sources: DMP Survey and Bank calculations.

(a) Question: 'How do you expect the eventual Brexit agreement to affect your sales once the UK has left the EU, compared to what would have been the case had the UK remained a member of the EU?'. Respondents are asked to provide the probability they place on each option, where a 'large' effect is more than 10% of sales. Responses collected between August and October 2019.

Chart 4.6 Firms with high uncertainty about Brexit expect it to weigh more on their sales

Firms' expected eventual impact of Brexit on sales, by Brexit uncertainty[a]



Sources: DMP Survey and Bank calculations.

(a) See **Chart 4.2** footnote for question about Brexit as a source of uncertainty and **Chart 4.5** footnote for question on the expected impact on sales. Point estimates are constructed by attaching midpoints of 5% and 20% to the response categories for a 'less than 10%' and '10% or more' impact respectively. Responses collected between August and October 2019.

Brexit has been a key factor in the stalling of business investment.

Heightened uncertainty has weighed on business investment in the UK. Over the past three years, cumulative growth in investment spending has been just 0.4%. This could be partly explained by slowing global growth, but investment has been weak even relative to other major advanced economies (**Chart 2.15**).

The biggest falls in investment growth have been by firms reporting high uncertainty about Brexit (**Chart 4.7**). Recent research (set out in Bloom *et al* (2019)) suggests that the level of business investment was around 11% lower in 2019 Q2 as a result of Brexit (**Chart 4.8**).

Business investment was still growing in the period soon after the referendum, albeit at a much slower rate than before, but it has fallen in almost every quarter since 2018. This further weakening could be partly explained by firms waiting to see if some uncertainty would be resolved by the March and October 2019 Brexit deadlines.

Consumer spending has been less affected so far…

Consumption has been more resilient than investment. While household expectations for the general economic outlook have fallen, uncertainty about job prospects has been more stable (**Chart 2.18**), and this is one of the most important channels through which uncertainty can affect spending. Spending has also been underpinned by real income growth and accommodative credit conditions.

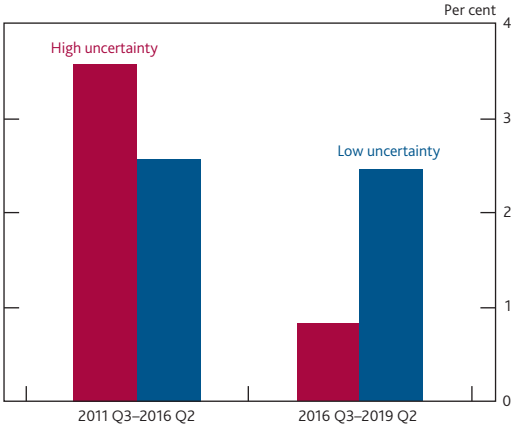
…but there have been some signs of uncertainty dampening consumption.

There is some evidence that uncertainty has affected large purchases and discretionary spending by households. The housing market has been subdued since 2016 (**Chart 2.19**). Surveys suggest this is at least partly due to Brexit, as households delay purchases given the large costs involved. Uncertainty could also partly explain why car purchases have been weak, although changes in emissions regulations have made recent data difficult to interpret. More broadly, consumer spending that might be seen as non-essential[4] has risen by just 0.5% over the past year, the weakest

(4) Spending excluding: most food and non-alcoholic beverages; housing, water and energy costs; repair of household appliances; non-durable household goods for routine maintenance; dwelling and transport insurance; and financial services not elsewhere classified.

Chart 4.7 Investment growth by firms that are more uncertain about Brexit has fallen since the EU referendum

Average annual investment growth for firms, by Brexit uncertainty[a]

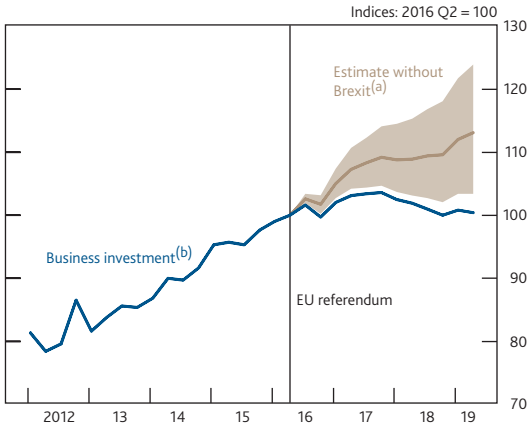


Sources: Bureau van Dijk, DMP Survey and Bank calculations.

(a) Sample uses DMP data where available (all post-referendum) and company accounts from Bureau van Dijk otherwise. See **Chart 4.2** footnote for question about Brexit as a source of uncertainty. 'High' uncertainty is defined as placing Brexit in the top three sources of uncertainty. Data are unweighted averages across firms.

Chart 4.8 Uncertainty has weighed on business investment

Business investment and indicative estimate without the effect of the Brexit process



Sources: Bloom *et al* (2019), DMP Survey, ONS and Bank calculations.

(a) Counterfactual is based on estimates of the annual Brexit impacts set out in Table 3 in Bloom *et al* (2019). Annual impacts are linearly interpolated for quarterly figures. The swathe illustrates the 90% confidence interval.
(b) Chained-volume measure.

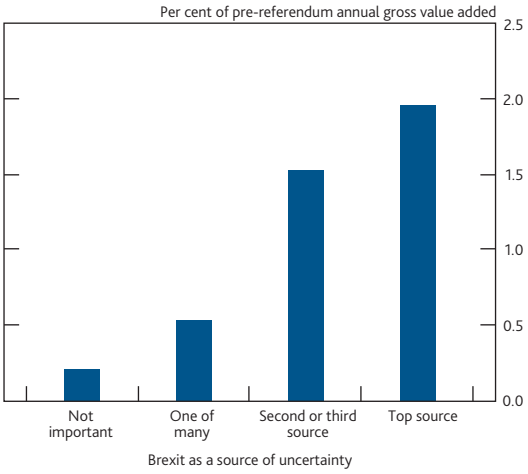
growth since 2011. In addition, the saving ratio and household financial balance have drifted up a little over the past couple of years, which might suggest some precautionary saving.

Uncertainty may also have affected supply capacity.

Evidence from the DMP Survey suggests that the Brexit process has reduced the level of UK productivity by 2%.(5) Most of this effect comes from reduced productivity *within* firms. This could be a result of firms preparing for Brexit, which may have diverted resources away from productive output or making improvements. Firms with higher uncertainty about Brexit have spent more resources on planning (**Chart 4.9**). Lower business investment due to heightened uncertainty may have also weighed on labour productivity through reduced capital deepening.

Chart 4.9 Firms that are more uncertain about Brexit have spent more on Brexit preparation

Brexit-related spending over the past three years, by Brexit uncertainty[a]

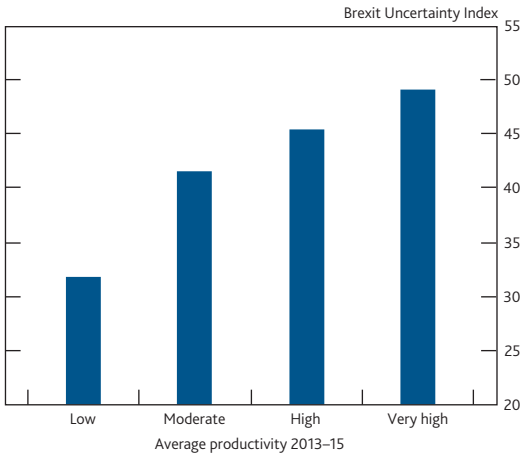


Sources: Bureau van Dijk, DMP Survey and Bank calculations.

(a) Question on spending: 'Approximately how much do you estimate that your business has spent on preparing for Brexit so far?'. See **Chart 4.2** footnote for question about Brexit as a source of uncertainty. Responses collected between August and October 2019.

Chart 4.10 More productive firms tend to be more uncertain about Brexit

Brexit uncertainty, by average level of productivity[a]



Sources: Bureau van Dijk, DMP Survey and Bank calculations.

(a) Productivity is defined as real value added per employee. The Brexit Uncertainty Index shows the percentage of firms which reported that Brexit was in the top three current sources of uncertainty for their business, September 2016 to June 2019 average.

(5) The research gives a range of 2%–5%. The estimate of 2% is calculated by weighting the results for each firm by its size, whereas 5% gives all firms equal weight. For this reason, the aggregate effect on UK productivity is likely to be closer to 2%. For more details, see Bloom *et al* (2019).

There may have also been a small effect on average productivity through changes in the relative growth rates *between* firms. Firms which were more productive before the EU referendum tend to report higher uncertainty about Brexit (**Chart 4.10**). The research suggests the Brexit process has weighed on the growth of more productive firms to a greater extent. Exporters tend to be more productive and demand for exports might have fallen by more than for domestic goods in response to Brexit. Intelligence from the Bank's Agents suggests uncertainty has lowered export demand, as some overseas customers are reluctant to enter new deals until there is greater clarity about future trading arrangements (Box 3).

4.4 Uncertainty in the MPC's forecast

The MPC projects that some uncertainty will be removed in the near term…

In October, the UK and EU agreed a Withdrawal Agreement and Political Declaration, and the UK House of Commons approved the second reading of the Bill which implements the agreement into law. The UK's EU membership was also extended by up to a further three months. Those developments are likely to reduce the uncertainty that has been facing households and businesses in the near term. In part that will reflect a lower perceived likelihood of a no-deal Brexit. For example, betting odds suggest that the probability of a no-deal Brexit in 2019 has fallen markedly. Responses to the DMP Survey also suggest that the average likelihood that firms attach to a no-deal Brexit in 2019 fell after the second reading of the Withdrawal Agreement Bill was passed.

…though it remains somewhat elevated over the forecast period.

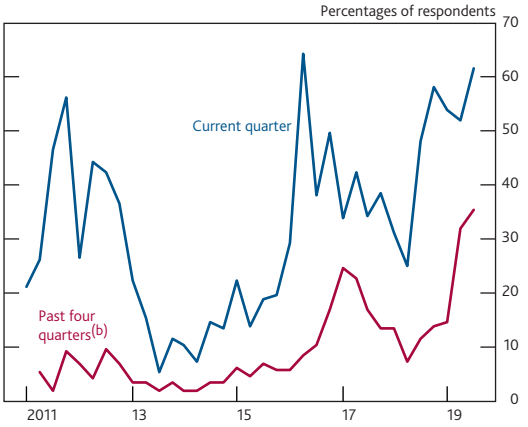
Some uncertainty is likely to persist, however. Brexit is a process rather than a single event. While the agreement sets out the broad parameters of the UK and EU's future trading relationship, the range of potential outcomes is still relatively wide. Most companies reported that uncertainty was high in Q3 (**Chart 4.11**). And the proportion of firms expecting Brexit-related uncertainty to last until after next year has picked up recently (**Chart 4.12**). Uncertainty is assumed to decline gradually over the forecast period, as the details of the UK and EU's eventual relationship emerge over time.

The reduction in uncertainty supports the recovery in UK demand growth.

As the dampening effect from Brexit-related uncertainties begins to dissipate, GDP growth is projected to pick up moderately. The decline in uncertainty is assumed to support business investment in particular. Four-quarter business investment growth is projected to rise from -1½% in 2019 Q2 to around 4% in 2021 (Section 1).

Chart 4.11 More firms have been persistently uncertain

Proportion of CFOs reporting 'high' or 'very high' levels of uncertainty(a)

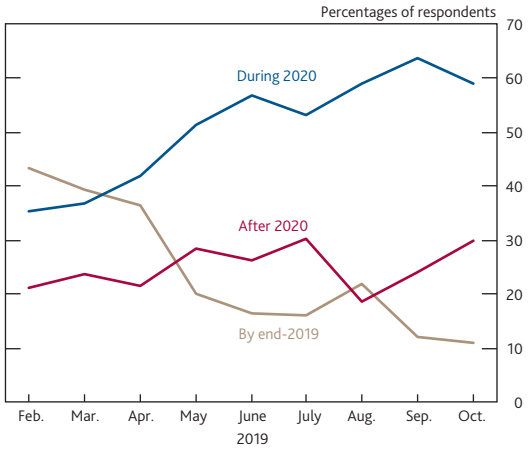


Sources: Deloitte and Bank calculations.

(a) See **Chart 4.4** footnote (c) for survey question.
(b) Firms reporting uncertainty is 'high' or 'very high' for four or more consecutive quarters.

Chart 4.12 Firms have been pushing back the date they expect Brexit-related uncertainty to be resolved

Date by which Brexit-related uncertainty is expected to be resolved(a)



Sources: DMP Survey and Bank calculations.

(a) Question: 'When do you think it is most likely that Brexit-related uncertainty facing your business will be resolved?'. Data are for businesses that state that they are affected by Brexit-related uncertainty.

Annex
Other forecasters' expectations

This annex reports the results of the Bank's most recent survey of external forecasters, carried out in October. The results of this survey are summarised in **Table 1**.(1)

On average, respondents expected four-quarter GDP growth to pick up slightly over the next three years to 1.7% in 2022 Q4. That is lower than the November *Report* forecast (**Chart A**).

Table 1 Averages of other forecasters' central projections

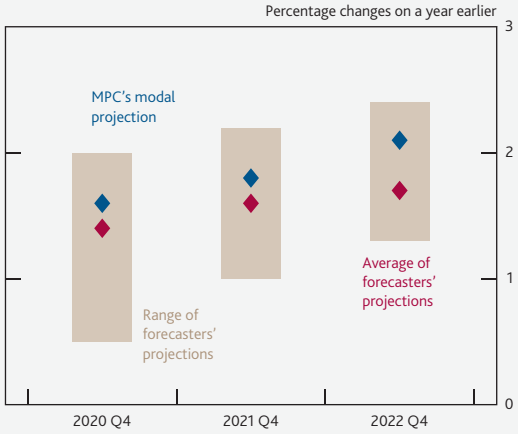
	2020 Q4	2021 Q4	2022 Q4
CPI inflation(a)	1.9	1.9	2.0
GDP growth(b)	1.4	1.6	1.7
LFS unemployment rate (per cent)	4.1	4.2	4.3
Bank Rate (per cent)	0.8	1.0	1.4
Stock of purchased gilts (£ billions)(c)	441	441	442
Stock of purchased corporate bonds (£ billions)(c)	9	11	11
Sterling ERI(d)	79.9	79.6	80.4

Source: Projections of outside forecasters as of 25 October 2019.

(a) Twelve-month rate.
(b) Four-quarter percentage change.
(c) Original purchase value. Purchased via the creation of central bank reserves.
(d) Index: January 2005 = 100.

Chart A On average, forecasters' central projection for GDP growth is a little below the MPC's

Projections for GDP



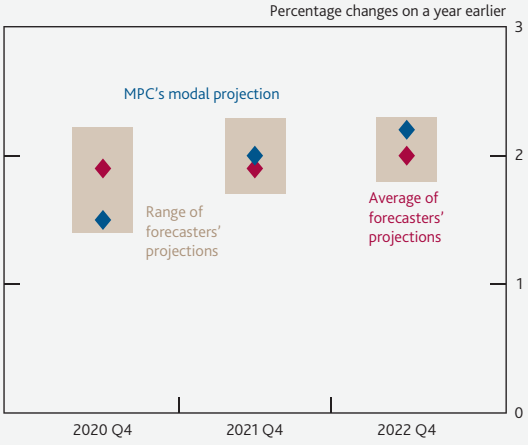
Source: Projections of outside forecasters as of 25 October 2019.

On average, external forecasters expect inflation to remain broadly stable over the next three years, at around 2%. That is higher than the November *Report* forecast at the one-year horizon, but lower at three years (**Chart B**).

External forecasters' central projections for Bank Rate in one and two years' time were lower, on average, than three months ago, while they were broadly similar at the three-year horizon (**Chart C**). The average central projection for Bank Rate remained well above the market-implied path upon which the November *Report* forecast is conditioned.

Chart B Forecasters project inflation to remain close to the MPC's target

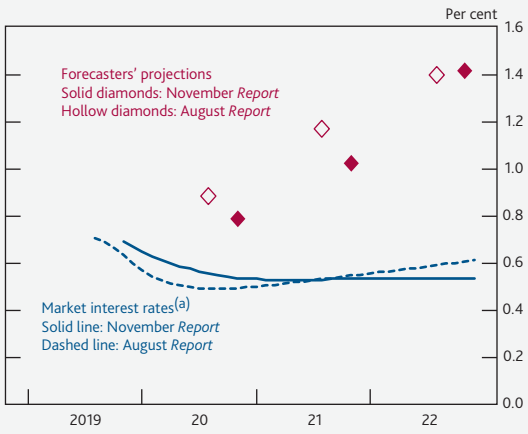
Projections for CPI inflation



Source: Projections of outside forecasters as of 25 October 2019.

Chart C Forecasters' central projection for Bank Rate remains well above the market path

Market interest rates and averages of forecasters' central projections of Bank Rate



Sources: Bloomberg Finance L.P. and projections of outside forecasters as of 25 October 2019 and 19 July 2019.

(a) Estimated using instantaneous forward overnight index swap rates in the 15 working days to 30 October 2018 and 24 July 2019 respectively.

(1) For detailed distributions, see 'Other forecasters' expectations'.

Glossary and other information

Glossary of selected data and instruments

AWE – average weekly earnings.
CPI – consumer prices index.
CPI inflation – inflation measured by the consumer prices index.
CPIH – consumer prices index including owner occupiers' housing costs.
DMP – Decision Maker Panel.
ERI – exchange rate index.
GDP – gross domestic product.
LFS – Labour Force Survey.
PMI – purchasing managers' index.
RPI – retail prices index.
RPI inflation – inflation measured by the retail prices index.
ULC – unit labour cost.

Abbreviations

BCC – British Chambers of Commerce.
CBI – Confederation of British Industry.
CEIC – CEIC Data Company Ltd.
CETA – Comprehensive Economic and Trade Agreement.
CFO – chief financial officer.
CIPS – Chartered Institute of Purchasing and Supply.
EC – European Commission.
ECB – European Central Bank.
EME – emerging market economy.
EU – European Union.
FDI – foreign direct investment.
FTA – free trade agreement.
FTSE – Financial Times Stock Exchange.
G7 – Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.
G20 – The Group of Twenty Finance Ministers and Central Bank Governors.
GfK – Gesellschaft für Konsumforschung, Great Britain Ltd.
GVA – gross value added.
ICE/BoAML – Intercontinental Exchange/Bank of America Merrill Lynch.
IMF – International Monetary Fund.
LTV – loan to value.
MPC – Monetary Policy Committee.
MTIC – missing trader intra-community.
NPISH – non-profit institutions serving households.
OECD – Organisation for Economic Co-operation and Development.
Ofgem – Office of Gas and Electricity Markets.
Ofwat – Water Services Regulation Authority.
ONS – Office for National Statistics.
PPP – purchasing power parity.
PwC – PricewaterhouseCoopers.
REC – Recruitment and Employment Confederation.
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 and results from the Decision Maker Panel (DMP) Survey, 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.