



BANK OF ENGLAND

# Speech

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## Sea change

Speech given by

Mark Carney, Governor of the Bank of England

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I am grateful to Clare Macallan and James Benford for their assistance in preparing these remarks, and to Charles Gundy, Emil Iordanov, David Glanville, George Rodger, Alison Schomberg, Anina Thiel, Mo Wazzi and Gabija Zemaityte for background research.

It is a pleasure to join this Local Government Association (LGA) conference. The LGA supports councils across the country as they deliver local solutions to national problems, helping them to build the skills they need and ensuring the voice of local government is heard at the national level.

My only regret is not being able to enjoy the beaches for which Bournemouth is rightly famous. The closest I will get is using a nautical analogy – a sea change.

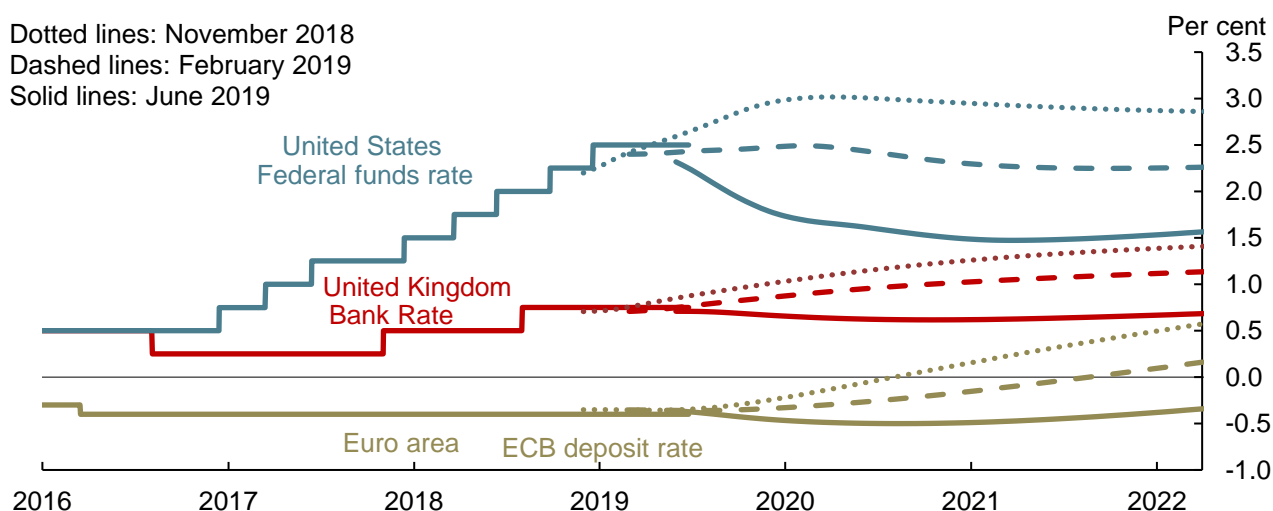
A sea change is a profound transformation. The term was originally coined by Shakespeare in *The Tempest*, of which there are five productions across Dorset this summer.<sup>1</sup> These productions will mix tragedy and comedy in a play whose themes range from magic and creation to betrayal and revenge.

My focus is more limited and prosaic – but also more immediately relevant to your work. In recent months, there has been a sea change in financial markets driven by growing concerns over the global economic outlook. I will assess these global developments before turning to what they may mean for the UK’s economic prospects.

### Global financial market developments

In recent months, the expected paths of policy interest rates in advanced economies have shifted sharply lower, most notably in the US where an expectation of two further rate hikes over the next three years has flipped to four rate cuts by the end of next year. In the euro area, markets have begun to price in further rate reductions and asset purchases (**Chart 1** and the charts in the annex).

**Chart 1: Expected paths of policy rates shifted sharply downwards**



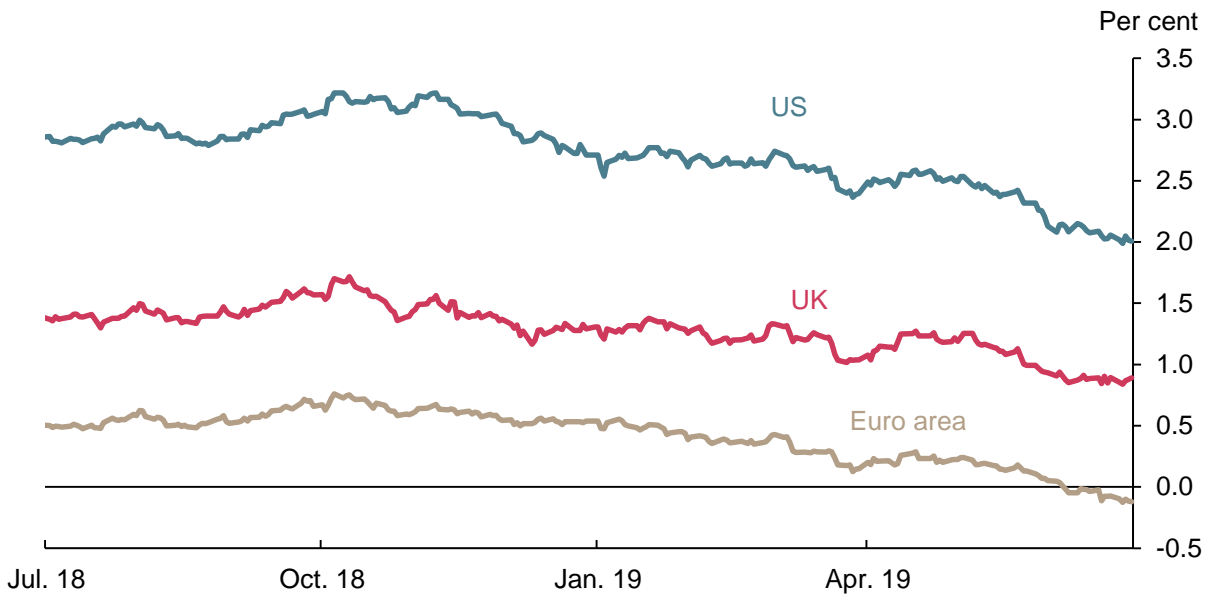
Sources: Bank of England, Bloomberg Finance L.P., ECB, Federal Reserve, Eikon from Refinitiv, Tradeweb and Bank calculations.  
Notes: The June 2019 and February 2019 and November 2018 curves are estimated using instantaneous forward overnight index swap rates in the 15 working days to 19 June 2019, 30 January 2019 and 24 October 2018 respectively. The federal funds rate shows the top of the target range.

<sup>1</sup> Shakespeare used it to refer to a literal change wrought by the sea. It appears in a song sung by Ariel, to Ferdinand, a prince of Naples, after Ferdinand's father's apparent death by drowning: Full fathom five thy father lies, / Of his bones are coral made, / Those are pearls that were his eyes, / Nothing of him that doth fade, / but doth suffer a sea-change, / into something rich and strange, / Sea-nymphs hourly ring his knell, / Ding-dong. / Hark! now I hear them, ding-dong, bell.

Long-term government bond yields have fallen sharply in tandem (**Chart 2**), with US 10-year yields their lowest in two and a half years, 10 year gilt yields their lowest since the immediate aftermath of the referendum, and German 10-year bund yields their lowest ever. \$13 trillion of global investment-grade debt is now trading at negative yields. Lower discount rates have provided substantial support to equity prices, which are near all-time highs in the US despite an economic outlook that is becoming less robust and more uncertain.

**Chart 2: Long-term bond yields sharply lower too**

10-year nominal government bond yields



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

**The global outlook**

These market developments reflect a sea change driven by growing concerns over the impact of rising trade tensions and policy uncertainty.

Certainly the portents are worrying. The storm that the modern Prospero has conjured is having an impact.

Over the past year, the global economy has shifted from a robust, broad-based expansion to a widespread slowdown, with the proportion of the global economy growing above trend falling from four fifths to one sixth.

In its *May Inflation Report*, the MPC projected that global growth would soon stabilise before recovering to around its potential rate by the middle of next year. This reflected:

- i) the relative absence of fundamental imbalances in the global economy that would by themselves be expected to derail the expansion;
- ii) a considerable degree of expected policy support to the expansion; and
- iii) some positive momentum in trade discussions.

On 5 May, with the ink on the MPC's *Report* barely dry, President Trump announced further increases in tariffs on imports from China and China retaliated. Later that month, the US additionally threatened new tariffs on Mexico despite having only recently agreed a revised NAFTA accord. The US threat to increase tariffs on auto imports from Europe remains.

The latest actions raise the possibility that trade tensions could be far more pervasive, persistent and damaging than previously expected. The rationales for action are broadening. Initially motivated by concerns over bilateral trade imbalances, trade measures are now being taken in response to issues ranging from immigration to Intellectual Property protection to control of the technologies underpinning the Fourth Industrial Revolution.<sup>2</sup> It has even become fashionable for some to speak of a new Cold War.

That bears a moment's reflection for a lot has changed. At the height of the Cold War, US-USSR trade was worth \$2 billion a year; today, US-Chinese trade clocks \$2 billion a day. More broadly trade in intermediate goods and services has doubled since the fall of the Berlin Wall, and production has become increasingly integrated across borders.<sup>3</sup>

The longer current tensions persist, the greater the risk that protectionism becomes the norm. Once raised, tariffs are usually slow to be lowered. Consider that half a century ago the US imposed tariffs on light trucks due to a dispute over chicken exports to Europe. While the chickens were soon forgotten, the truck tariffs remain in place.

Reflecting the more febrile atmosphere, a trade war has shot to the top of the risks most worrying investors (**Chart 3**) and measures of global economic policy uncertainty have reached record highs (**Chart 4**).

Such concerns are contributing to sharp reductions in corporate earnings expectations (**Chart 5**), though for the time being the falls in expected policy rates have cushioned the impact on equity prices. The markets' faith in the power of monetary policy is notable.

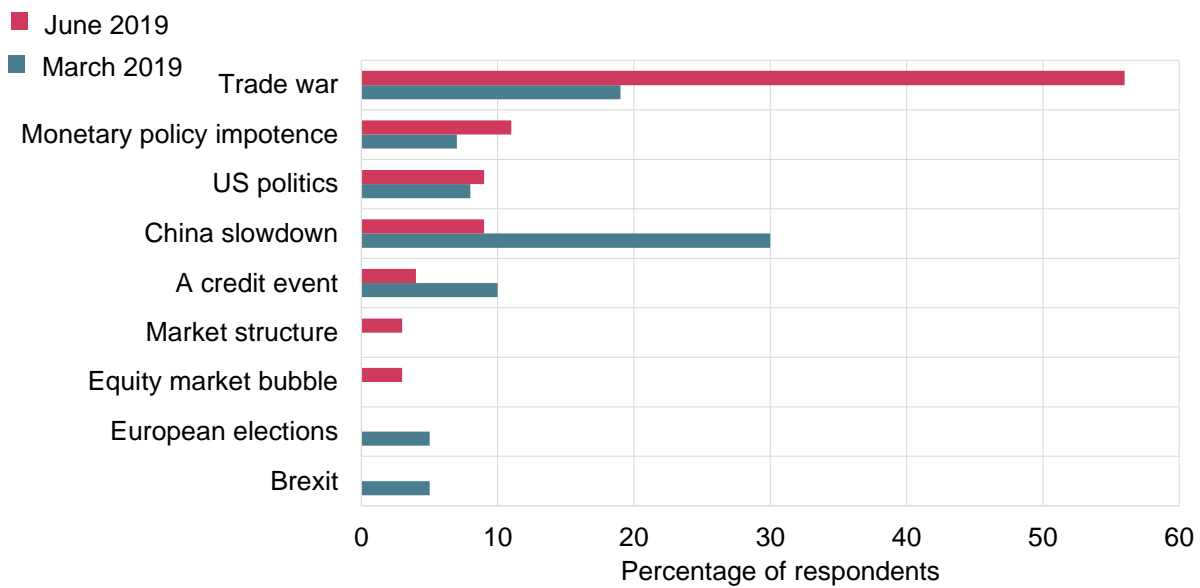
Business confidence has fallen across the G7 to its lowest level in five years (**Chart 6a**) with sentiment among manufacturers particularly weak. Households have also become gloomier about the general economic outlook, though they remain relatively upbeat about their own financial situation (**Chart 6b**), likely reflecting robust labour markets. This is a similar pattern to that which emerged in the UK following the referendum.

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<sup>2</sup> In mid-May, the US placed Chinese company Huawei on its 'entity list', in effect banning US companies from selling to it without US government. China retaliated, publishing its own list of unreliable entities at the end of that month.

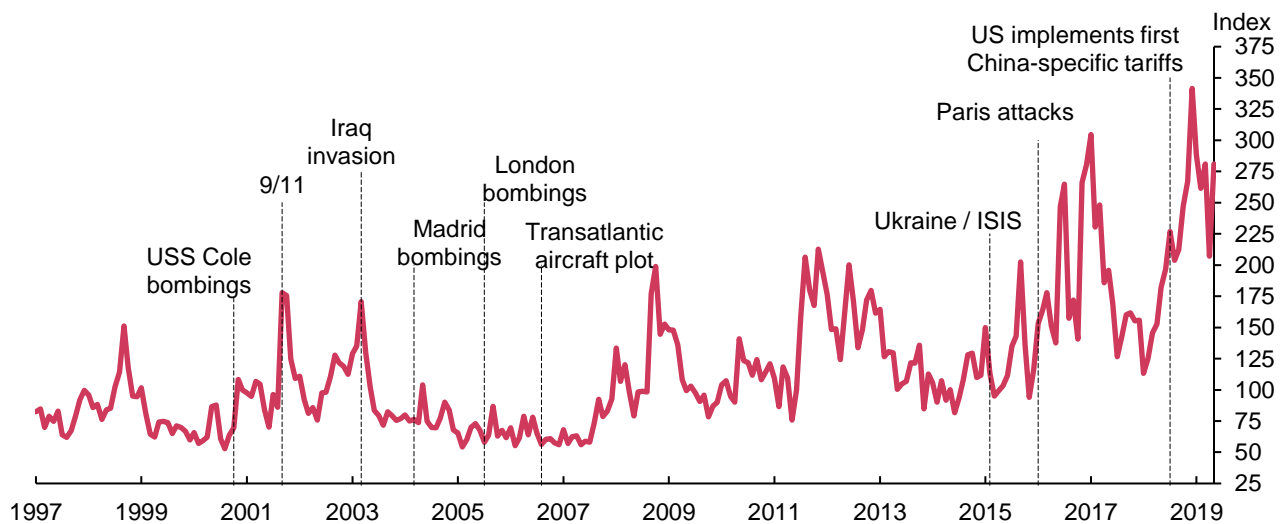
<sup>3</sup> Trade in intermediate goods and services doubled between 1989 and 2014 and the value added of imports as a share of exports rose from 10% in 1990 to around 20% in 2015. See Auer, R, Borio, C and Filardo, A (2017), 'The globalisation of inflation: the growing importance of global value chains', *BIS Working Paper No. 602*.

**Chart 3: Investors now see a trade war as the top tail risk**



Sources: Bank of America Merrill Lynch Global Fund Manager Survey.

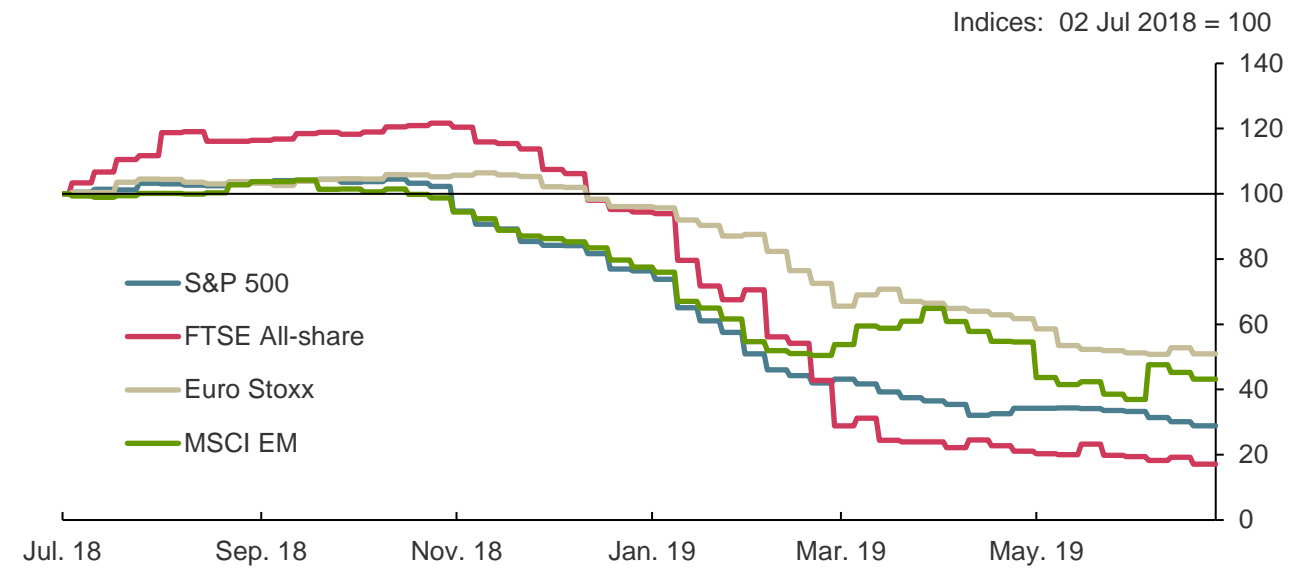
**Chart 4: Global economic policy uncertainty reached record highs**



Source: Baker, S, Bloom, N and Davis, S (2015), "Measuring economic policy uncertainty", NBER Working Paper No. 21633.

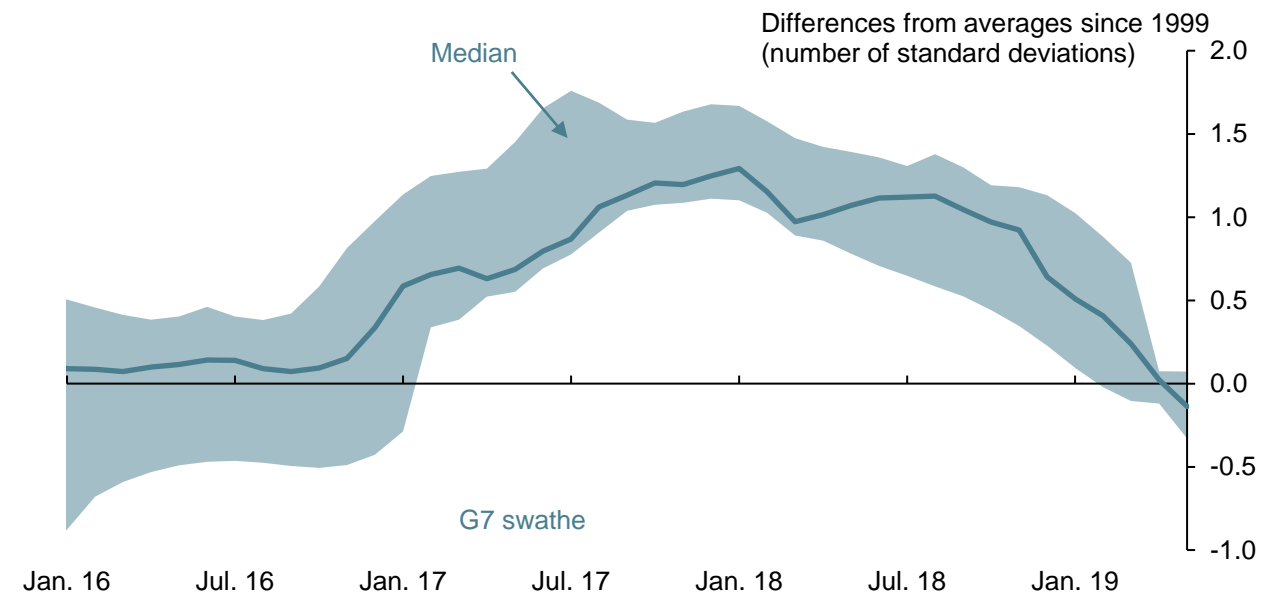
**Chart 5: Expected corporate earnings growth expectations sharply lower**

Expected growth in earnings per share in 2019



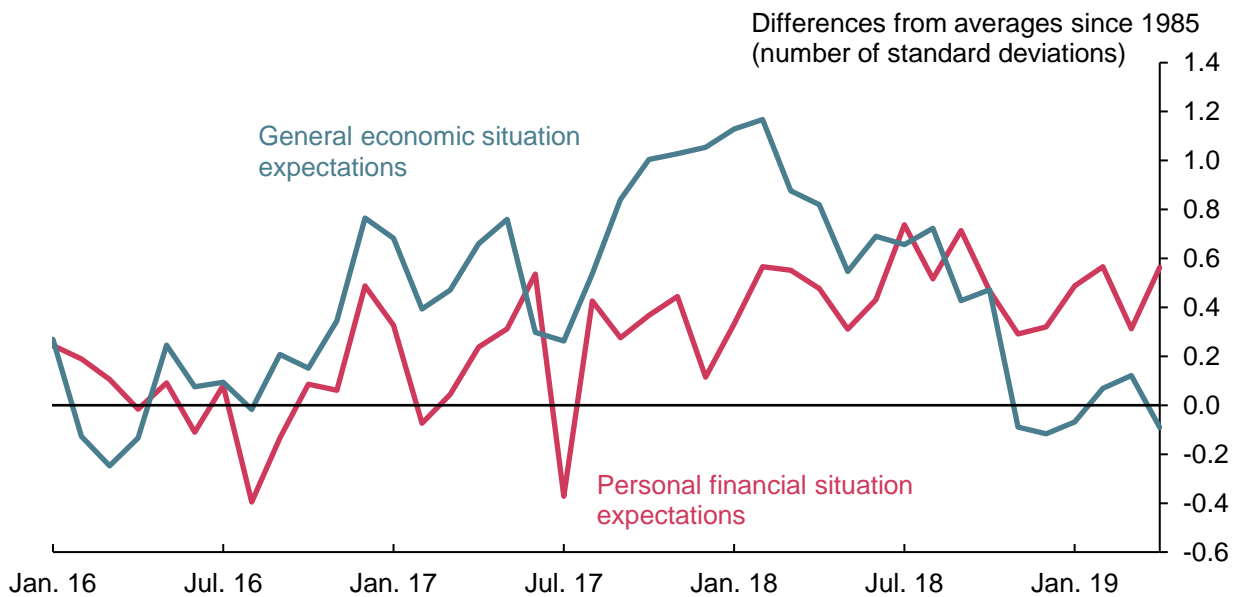
Sources: Eikon from Refinitiv and Thomson Reuters I/B/E/S.

**Chart 6a: Global business confidence down**



Sources: OECD Business Confidence Indicator and Bank calculations.

**Chart 6b: But households still optimistic about their own prospects**



Sources: European Commission, University of Michigan consumer sentiment index, and Bank calculations.  
Notes: The chart shows the median across the G7 euro area countries (France, Germany and Italy) and the US.

### Reconciling market moves with global developments

All in all, the risks to the global economy have shifted to the downside. But to what extent? Does the sea change in financial markets presage a sea change in the global economic outlook? And what does the UK experience suggest?

A lot will rest on the scale and breadth of the trade effects.

Traditional trade models suggest that the direct effects of the tariff measures implemented so far<sup>4</sup> are likely to be small. The Bank estimates that these measures will reduce global GDP by only around 0.1%, and the further US-China tariffs that took effect in May and June will roughly double that effect (**Table 1**).<sup>5</sup>

But that may not be the end of the story. The additional tariffs threatened by the US on China and on auto imports more generally would raise average US tariffs to rates not seen in half a century (**Table 2**). If implemented, they could reduce global GDP by an additional 0.6% through direct trade channels alone (**Table 1**).

<sup>4</sup> US tariffs on steel and aluminium and the reciprocated 25% tariff on \$50bn of US imports from China.

<sup>5</sup> The hit to global GDP may be cushioned somewhat by trade diversion, which will likely benefit non-China Asian EMEs.

**Table 1: Direct effects of tariff increases small but indirect effects potentially far greater**

	Change in level of GDP (%)				
	US	China	Euro area	UK	World (PPP-weighted)
Measures taken in previous years	-0.4	-0.3	-0.1	-0.1	-0.1
Additional US-China tariffs implemented in May and June 2019	-0.5	-0.4	-0.2	-0.1	-0.2
Additional marginal reduction in GDP in the event that...					
US-China raise tariffs on all imports to 25%	-0.5	-0.5	-0.1	-0.1	-0.2
US imposes 25% tariffs on all auto imports and all countries reciprocate	-1.2	-0.3	-0.3	-0.2	-0.4
Total if all measures are implemented	-2.1	-1.2	-0.6	-0.4	-0.8

Sources: Bank calculations.

Notes: The table shows the peak impact over a three-year period.

**Table 2: Weighted average bilateral tariffs**

Tariffs imposed by:	the US	China	US	the EU
On imports from:	China	the US	the EU	the US
Prior to any measures taken	2.6	9.1	3.3	3.0
With measures already implemented	13.7	22.4	3.7	3.3
With contemplated measures as well	25.0	25.0	6.7	7.7

Sources: Bank calculations.

Notes: Measures already implemented are the US tariffs on steel and aluminium and the reciprocated 25% tariff on \$250bn of US imports from China. Contemplated measures are 25% US tariffs on all imports from China and retaliatory measures and the US tariffs on EU motor vehicles and parts.

Moreover, these estimates may underestimate the non-linear effects of tariffs on tightly integrated global supply chains.

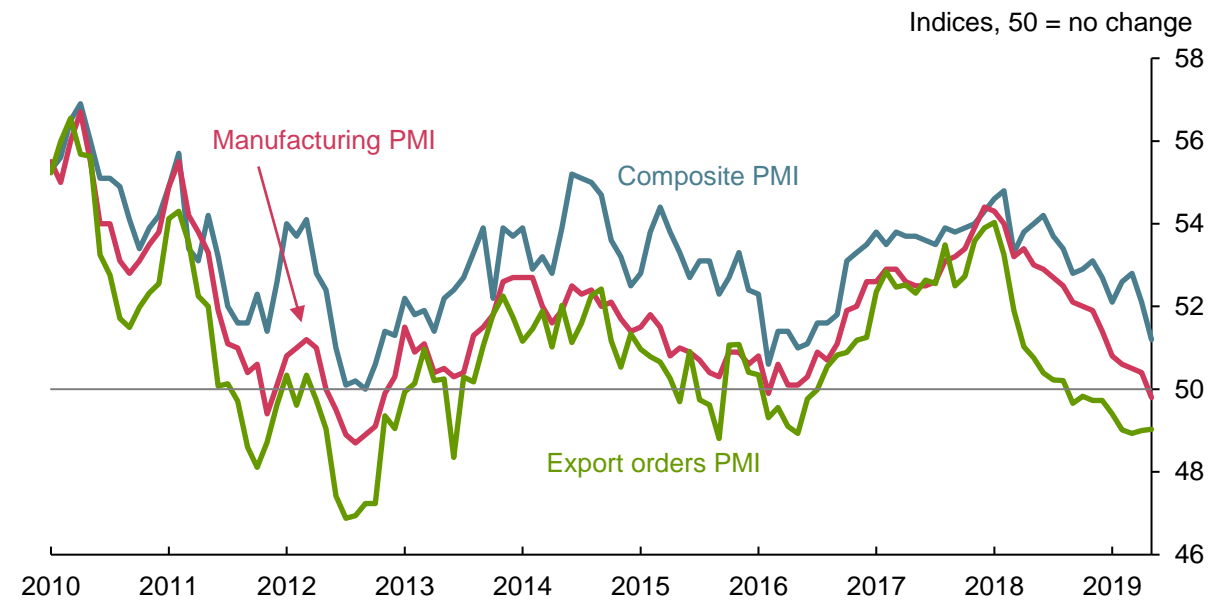
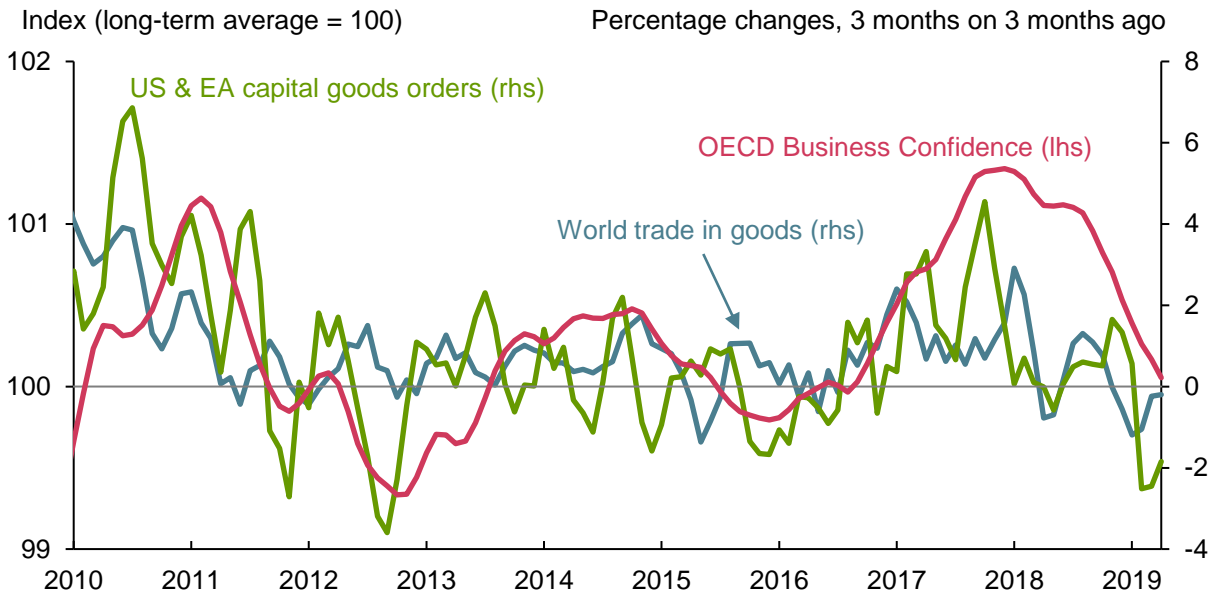
In this regard, the early indications are not promising. The more hostile and uncertain trading environment is coinciding with sharp slowdowns in global trade, manufacturing, industrial production and capital goods orders (**Chart 7**).

As a consequence, the quality of global growth has deteriorated. Across the G7, the growth rate of business investment has almost halved since its peak in late 2017, leaving the global expansion more reliant on consumer spending (**Chart 8**) and reducing its resilience.<sup>6</sup>

<sup>6</sup> BIS analysis finds that increasing shares of private consumption in GDP can be a leading indicator of future growth slowdowns. The work suggests a number of possible mechanisms: consumption that is financed by debt could mean that subsequent spending is more constrained; households may choose to consume from equity gains related to house price rises during expansions but may need to cut spending if those rises reverse; and a lack of investment opportunities could also play a role, weak investment and associated weak GDP growth could show up as consumption-led growth, not least because consumption is stickier. For more details, see [www.bis.org/publ/qtrpdf/r\\_qt1703e.htm](http://www.bis.org/publ/qtrpdf/r_qt1703e.htm).

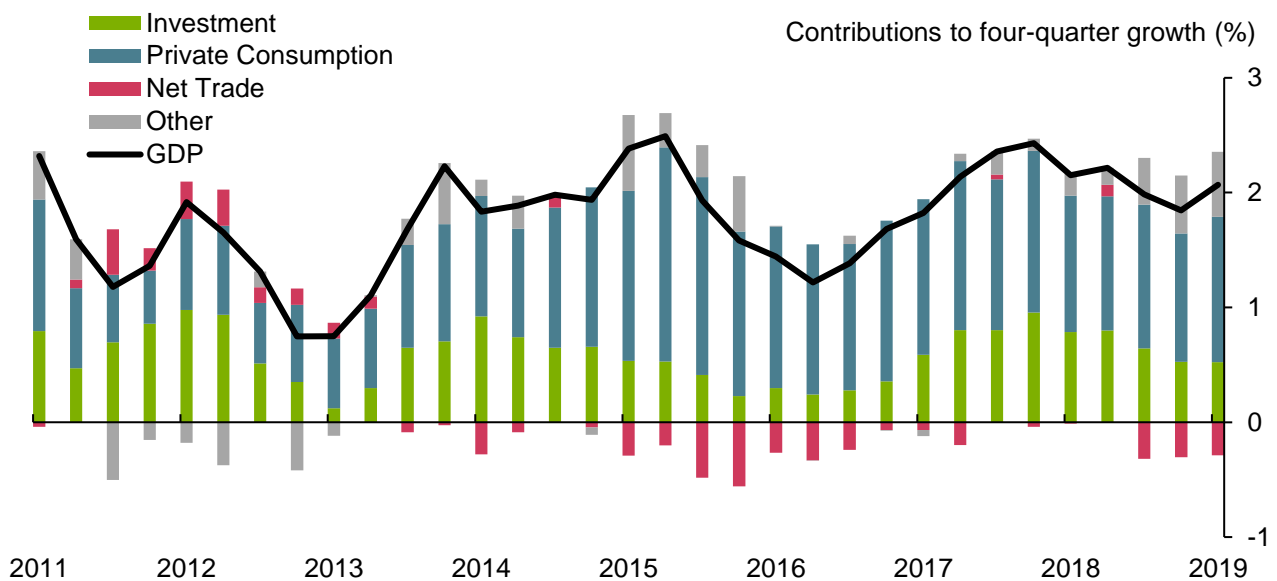


**Chart 7: Evidence of a trade-led global slowdown**



Sources: Conference Board, CPB, European Commission, ECB, Markit Economics, OECD, and Bank calculations.

**Chart 8: G7 growth increasingly reliant on consumption**



Sources: Eikon by Refinitiv, IMF WEO, OECD and Bank calculations.  
 Notes: Growth in real purchasing power parity (PPP)-weighted GDP.

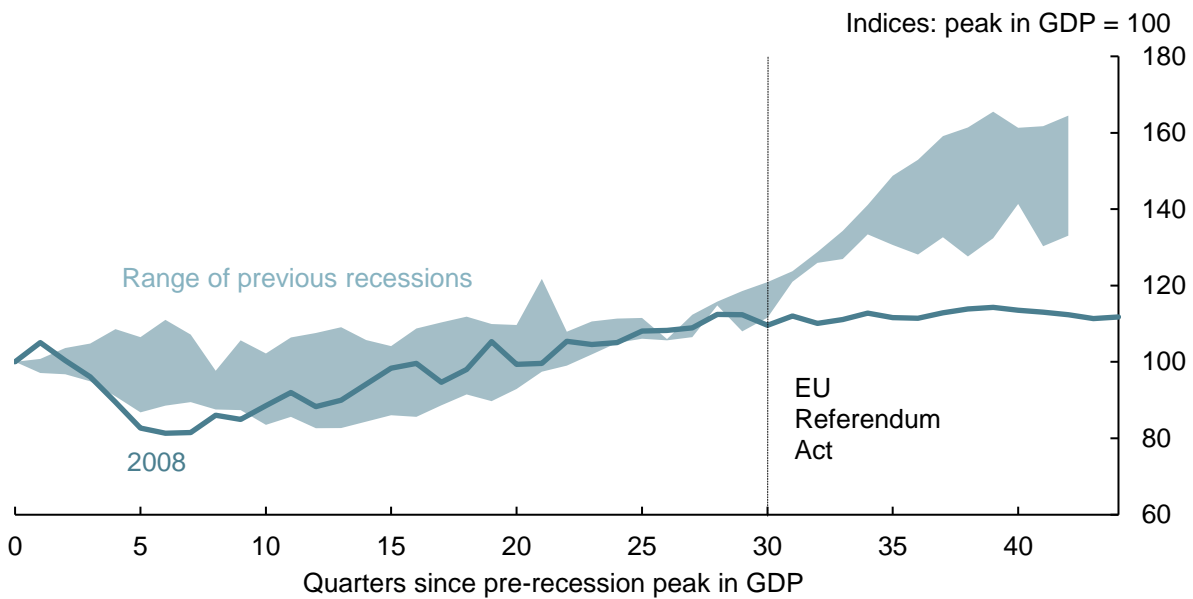
As the experience of Brexit has shown, the indirect effects of trade tensions on business confidence and investment can be much more material than the direct effects alone.

UK business investment has flat-lined since the referendum, underperforming both previous recoveries and the international experience (**Charts 9a and 9b**). There is also evidence that these uncertainty effects are holding back foreign direct investment in the UK.<sup>7</sup>

The UK's experience can be used to assess the extent to which the deteriorating trade outlook can explain the sea change in financial markets.

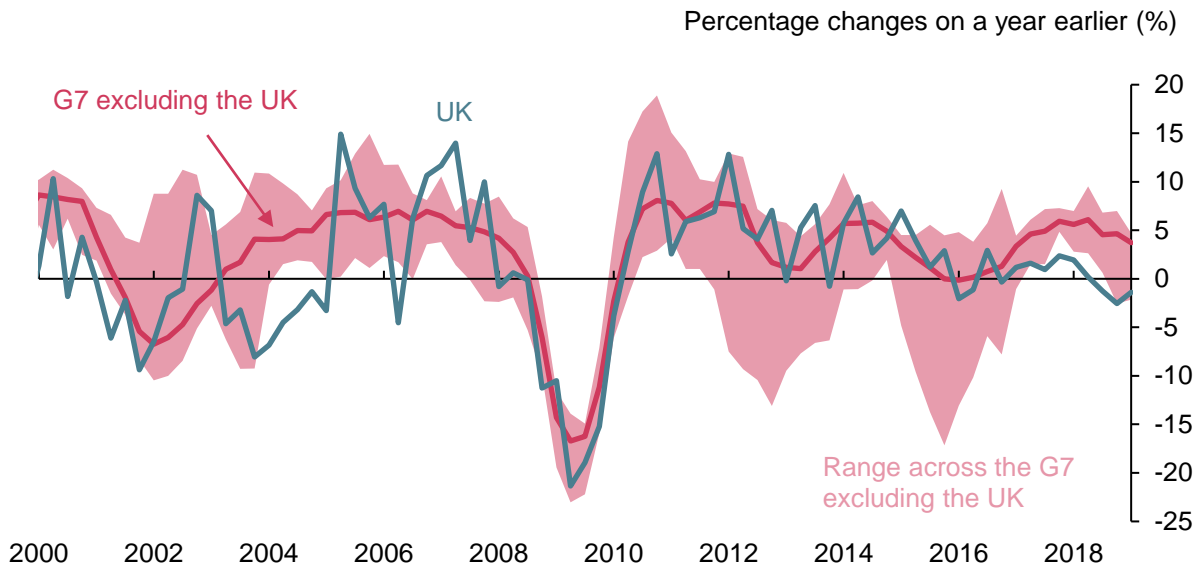
<sup>7</sup> [Data](#) from the Department for International Trade indicate that the number of new FDI projects in the UK in 2018/19 fell to its lowest level in five years.

**Chart 9a: UK business investment underperformed compared with previous recoveries...**



Sources: ONS and Bank calculations  
 Notes: Chained-volume measure. Recessions are defined as at least two consecutive quarters of negative GDP growth. Previous recessions include those beginning in 1973, 1975, 1980 and 1990. A recovery ends if a second recession occurs in the period shown.

**Chart 9b: ...and international experience**



Sources: Eikon from Refinitiv, Japanese Cabinet Office, OECD, ONS, Oxford Economics, Statistics Canada, US Bureau of Economic Analysis and Bank calculations.  
 Notes: Chained-volume measure. Business investment is not an internationally recognised concept. This swathe includes similar series derived from other countries' National Accounts. 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.

There are three ways to measure the scale of the UK investment underperformance.

- First, by using evidence from the Bank’s Decision Maker Panel survey of companies.<sup>8</sup> Since the referendum, Brexit has ranked as one of the three most important sources of uncertainty for over one third of respondents to this survey – and for one half since autumn last year.<sup>9</sup> Investment growth has been persistently weaker among these companies (**Chart 10**), reducing total business investment by an estimated 6 to 14%.
- Second, by comparing the performance of business investment in the UK with the rest of the G7. Prior to Brexit, UK business investment was growing in line with the average across the rest of the G7. Since then, it has risen by just 1% in the UK, while it is up by 12% on average elsewhere, and by 16% in the US.
- And third, by comparing to pre-crisis trends. The current level of business investment is some 20% below the MPC’s projection from May 2016, conditioned on a vote to remain.

These three approaches average to a 12% hit to UK business investment caused by Brexit uncertainty.

To compare that to what markets may be pricing in for global trade effects, consider that expected policy rates in the US have fallen by around 150 basis points since the first trade measures took effect in July last year. That is enough to offset a reduction in GDP of some 1.5%<sup>10</sup> – three times the Bank’s estimate of the hit from the direct effects of the tariffs implemented so far (**Table 1**).

Indeed, the scale of market moves suggests a shock to US and Chinese business confidence and investment analogous to what has happened in the UK (**Table 3**).

**Table 3: A significant confidence shock could lower US GDP by more than 1½ %**

	Change in level of GDP (%)				World (PPP-weighted)
	US	China	Euro area	UK	
Severe shock to business confidence in the US and China	-1.8	-1.8	-0.7	-0.7	-0.9
Direct trade effects if all measures are implemented	-2.1	-1.2	-0.6	-0.4	-0.8
Total	-3.9	-3.0	-1.3	-1.1	-1.7

See sources and notes to Table 1.

<sup>8</sup> Currently a sample of over 7,000 companies. More details on the Panel are available at <https://www.bankofengland.co.uk/statistics/research-datasets>.

<sup>9</sup> Similarly, in the Deloitte Survey of CFOs, 54% of respondents rated the level of uncertainty as high or very high in 2019 Q1, up from 25% in 2018 Q2.

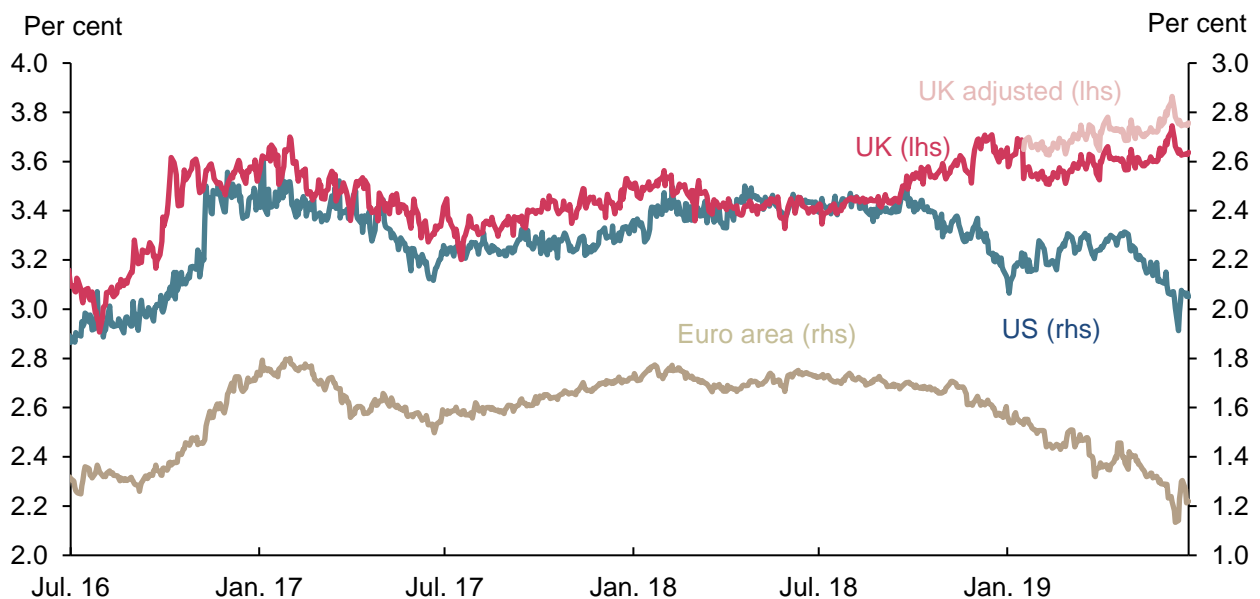
<sup>10</sup> This assumes a multiplier of 1 – that is, a 1 percentage point fall in the federal funds rate boosts US GDP by 1%. This multiplier lies between the estimates published by the Fed for the two variants of their FRB/US model: one in which expectations are formed using a VAR and the other in which they are model consistent. In the former, a 1 percentage point shock to the federal funds rate boost GDP by around ¾%; in the latter, the same shock boosts GDP by around 1½%.

That seems a bit extreme, since the US and China are far less closely integrated through trade, financial and labour market linkages than are the UK and the EU. For example, 45% of the UK's trade is with the EU, while under 20% of the US's trade is with China and only 7% of China's trade is with the US.

It is possible that concerns about still-quiescent inflation in major economies and the related risk of a global liquidity trap are contributing to the recent large moves in interest rates. In the US, core PCE inflation fell back below the FOMC's 2% target earlier this year. In the euro area, core inflation has been hovering around 1% for much of the past five years. For both economies, market measures of long-term inflation expectations have drifted down over the past year (**Chart 10**).

Persistent low inflation could signal that the equilibrium interest rate – the rate consistent with inflation at target and the economy operating at full capacity – is lower than currently assessed, and therefore the stance of monetary policy is tighter than intended. Here again, trade tensions and wider economic policy uncertainties are relevant as both could reduce the equilibrium interest rate.<sup>11</sup> If so, that monetary policy space could be more limited in some jurisdictions, increasing the desirability that fiscal policy supplement it if a downturn materialises.

**Chart 10: Market measures of long-term inflation expectations drifting down in US and euro area**



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

Notes: The chart shows 5-year inflation 5 years ahead. The UK series has been adjusted higher to account for the fall in inflation swap rates that took place on 17 January following publication of the House of Lords Economic Affairs Committee Inquiry into the use of RPI.

<sup>11</sup> See '[Real interest rates and risk](#)', speech by Gertjan Vlieghe at the Society of Business Economists' Annual conference, 15 September 2017.

## Global developments, Brexit and UK monetary policy

Now consider the implications of global developments for the outlook for UK inflation and growth

Unlike many other jurisdictions, inflation in the UK is currently at the MPC's 2% target, the labour market remains tight with wages and unit labour costs growing at target-consistent rates, and inflation expectations of UK households and businesses remain well-anchored.

The UK outlook also continues to be shaped by Brexit.

Until the turn of the year, the UK economy had been growing around its trend rate. As the MPC had anticipated, this year increased Brexit uncertainty is causing volatility in the UK data. Output increased by 0.5% in the first quarter of this year, boosted by an important contribution from companies bringing forward production to build stocks ahead of the potential 29<sup>th</sup> March cliff edge.

Growth in the second quarter will be considerably weaker, in part due to the absence of that stock building effect and Brexit-related, temporary shutdowns by several major car manufacturers.<sup>12</sup> Recent data also raise the possibility that the negative spillovers to the UK from a weaker world economy are increasing and the drag from Brexit uncertainties on underlying growth here could be intensifying. The latest surveys point to no growth in UK output.

Looking across the first half of the year, in my view, underlying growth in the UK is currently running below its potential, and is heavily reliant on the resilience of household spending.

The intensification of trade tensions has increased the downside risks to global and UK growth. In this regard, the news at the weekend that the US and China agreed to restart trade talks is welcome – though as we have learnt, progress today is no guarantee of progress tomorrow.

To recap, the direct effect of the measures announced thus far would have only a marginal impact on the UK, of -0.1% of GDP. That would rise to -0.4% if all measures, including auto tariffs, were implemented. If there were a Brexit-style business confidence shock in the US and China, the total impact on the UK would start to be material, rising above -1% of GDP (**Table 3**).

Since the middle of last year, expectations of UK rates three years ahead have fallen by around half a percentage point and 10-year gilt yields are similarly lower. That would roughly offset the hit to UK GDP in the downside scenario of a significant, Brexit-like hit to US and Chinese business investment.

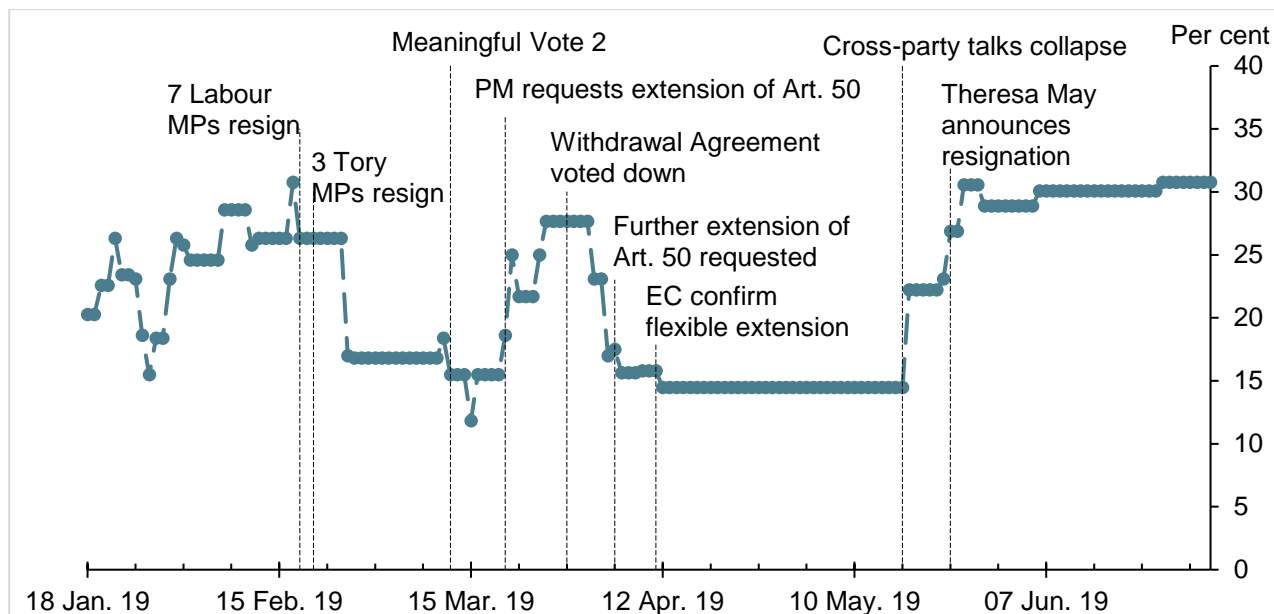
But global trade tensions are not the only factors influencing UK financial conditions. They also remain highly sensitive to the perceived probabilities of different Brexit outcomes. That's because asset prices are mean expectations, reflecting the weights that market participants place on every possible outcome.

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<sup>12</sup> As the MPC noted in the minutes to its June meeting, several major car manufacturers had brought forward their regular annual shutdowns from the summer to April, as part of their Brexit contingency plans.

Over the past two months, markets have placed a growing weight on the possibility of No Deal, with the betting odds doubling to almost one in three (**Chart 11**).<sup>13</sup> Financial market participants have marked down UK-focused equity prices, sterling and *their expectations* for MPC policy accordingly.<sup>14</sup>

**Chart 11: Perceived probability of No Deal Brexit up again**



Sources: Betfair odds that the UK leaves the EU in 2019 without a Withdrawal Agreement in place and Bank calculations.

While the MPC would do what it could to support the economy in the event of No Deal, I would underscore the MPC's caution that the response of monetary policy to Brexit will not be automatic.

As the MPC has repeatedly emphasised, the appropriate monetary response to Brexit will depend on the balance of its effects on demand, supply and the exchange rate. A No Deal outcome would result in an immediate, material reduction in the supply capacity of the UK economy as well as a negative shock to demand. There is little monetary policy can do to offset the former. A major negative supply shock is extremely unusual in advanced economies – the last one was the 1970s oil shock, even if the possibility of the next one is brewing in the Twittersphere.

Given the exceptional circumstance associated with Brexit, the MPC would use the flexibility in its remit to support our economy's transition as much as possible. But there are clearly limits to our ability to do so. The MPC can stretch the horizon over which it returns inflation to target but it would never do so to the point of breaking.

The possibility that Brexit would lower the equilibrium interest rate and therefore the stimulus provided at a given level of Bank Rate reinforces this point. In the UK as in other advanced economies, if there is a

<sup>13</sup> These moves in betting odds are consistent with financial market indicators of No Deal risk, such as the skew in the option-implied distribution for sterling.

<sup>14</sup> Since the referendum, UK-focused equity prices have underperformed the FTSE-100 by around 25 percentage points and the S&P by some 45 percentage points. Sterling has hovered some 15-20% below its November 2015 peak.

material trade shock, other policies, including fiscal policy, would likely need to play important roles in supporting the economy.

## Conclusion

For now, a global trade war and a No Deal Brexit remain growing possibilities not certainties. Monetary policy must address the consequences of such uncertainty for the behaviour of businesses, households and financial markets. In some jurisdictions, the impact may warrant a near term policy response as insurance to maintain the expansion. Markets are currently pricing in much more stimulus than this, suggesting greater pessimism about trade developments as well as potentially concerns about the absence of inflationary pressures.

In the UK, the combination of the relatively strong initial conditions – including a tight labour market and inflation at target – and the prospect of greater clarity emerging in the near term regarding the UK and EU's future relationship argues for a focus on the medium term inflation dynamics. These will be importantly influenced by global developments and even more so by the form that Brexit takes.

The MPC's projections for the UK economy are based on the assumption of a smooth Brexit to the average of a range of outcomes. That assumption is consistent with the MPC's standard approach to condition its projections on the government policy and with the fact that agreeing a deal is the preferred strategy of both candidates to be the next Prime Minister.

If Brexit progresses smoothly, we expect that the current heightened uncertainties facing companies and households will fade gradually, business investment will rebound, the housing market to rally, and consumption to grow broadly in line with households' real incomes. This would accelerate economic growth, strengthen domestic inflationary pressures, and require limited and gradual increases in interest rates in order to return inflation sustainably to the 2% target.

It is unsurprising that the path of interest rates consistent with achieving the inflation target in this scenario differs from current market pricing of a lower expected path for Bank Rate given that the market places significant weights on both the probability of No Deal and on cuts in Bank Rate in that event.

As the perceived probability of a No Deal has picked up, the levels of Bank Rate, sterling and other UK asset prices in our projections have therefore become increasingly inconsistent with the smooth Brexit assumption in the MPC's projection.

That doesn't mean that the market is wrong or that the MPC is right about the likely outcome of the negotiations. It just highlights the extent to which the levels of interest rates, sterling and other asset prices might increase if a deal were reached. The MPC will explore how to best illustrate these sensitivities as we update our projections for the August *Inflation Report*.

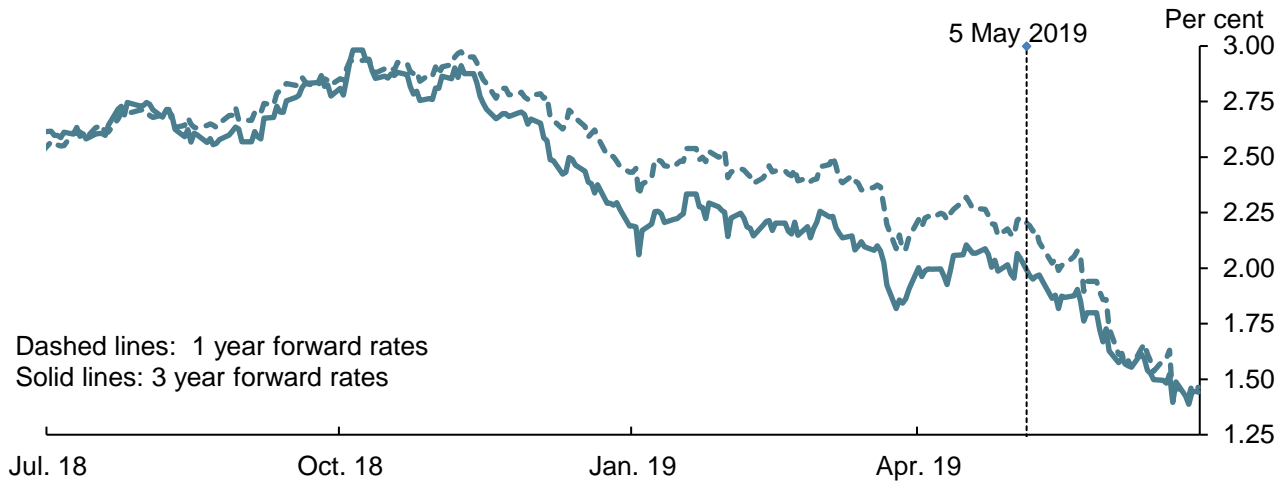


We will also make a detailed assessment of the potential implications of the global sea change currently underway. As I have sought to illustrate, whether current trade tensions shipwreck the global economy or prove to be a *tempest in a teacup* will have an important influence on the outlook for growth and inflation in the UK.

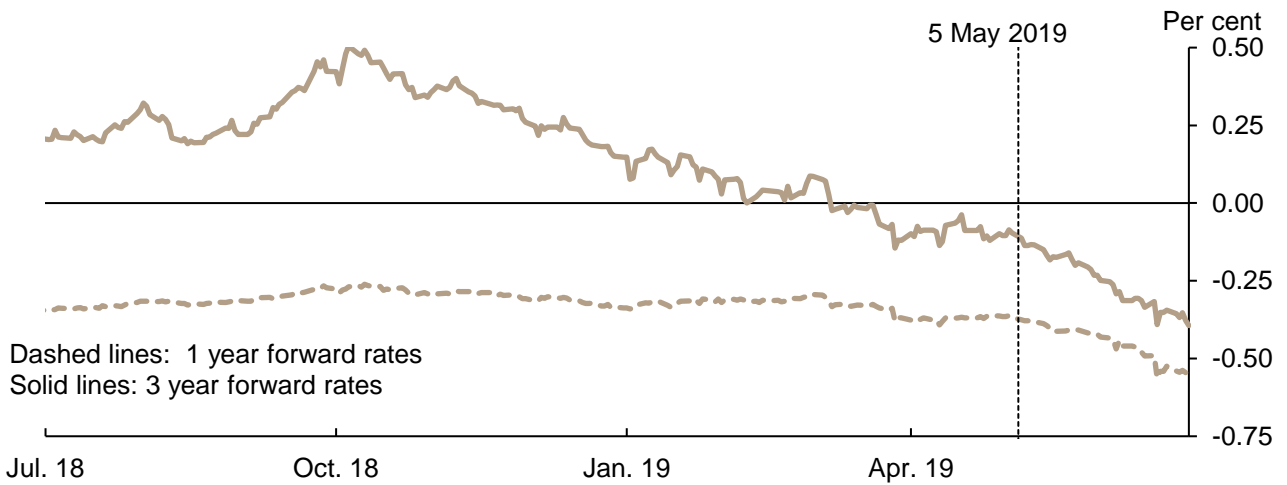
However trade tensions evolve and the Brexit process unfolds, UK monetary policy will remain guided by the constancy of the inflation target. The MPC will respond to any material change in the outlook, adjusting policy in either direction, as required to bring inflation sustainably back to the 2% target while supporting jobs and activity during this most important transition for the people of the United Kingdom.

## Annex: Expected paths of policy rates shifted sharply downwards

### United States



### Euro area



### United Kingdom

