BANK OF ENGLAND

Speech

Resilience: three lessons from the financial crisis[1]

Speech given by

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Inverness Chamber of Commerce

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[1]With thanks to Tom Smith for his assistance in preparing these remarks and to staff across Bank, including Alex Baiden from the Bank's Advanced Analytics division and Nick Bate and Liam Crowley-Reidy from the Bank's Monetary Analysis directorate, for their many contributions, as well as my colleagues on the MPC for their helpful comments and suggestions.

1 Introduction

It's great to be here in Inverness, and to be speaking here this morning.

My talk today is going to focus on resilience. The first definition of resilience thrown up by Google is "the capacity to recover quickly from difficulties; toughness". It seems apt that I should be focusing on this here in Inverness as Scotland itself is a famously resilient nation. Robert the Bruce was taught resilience by a spider. Scotland's mountains epitomise geological resilience and tests the physical resilience of walkers and climbers. The Scottish economy has been through some tough times, but proved relatively resilient during the financial crisis, with Scottish onshore GDP falling much less than overall UK GDP. Even the existence of the Loch Ness monster has proved resilient to continued scientific investigation.

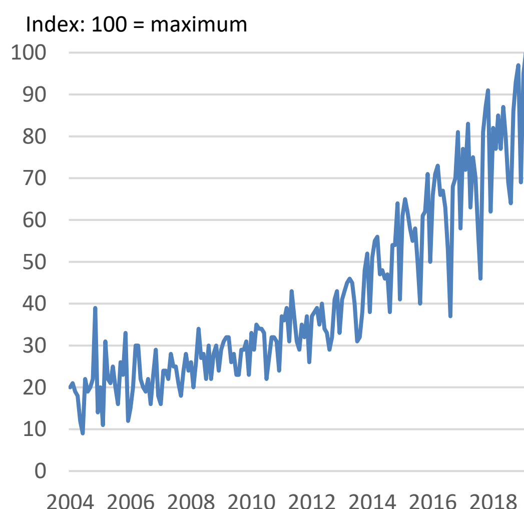
And resilience is a word that you hear a lot these days (**Chart 1**). Psychological resilience is lauded as a virtue as life becomes more complex and challenging. Ecological resilience is becoming increasingly prominent as the world comes to terms with the threat from climate change. In my role as Deputy Governor for Markets and Banking I've recently talked about the importance of resilience in the Bank's operations.[2]

What I want to focus on today is economic resilience, by which I mean the ability of an economy to withstand and recover from unexpected difficulties – what economists call "shocks". This is of particular relevance to two of the Bank's policy committees that I am a member of, the Monetary Policy Committee (MPC) and Financial Policy Committee (FPC).

Economic resilience is a subject I first really got interested in when I became Chief Economic Adviser at the Treasury in 2007. At this point the UK economy had been growing continuously for 15 years, a period characterised by solid growth, falling rates of unemployment, and low and stable inflation. And a similar pattern had held across other advanced economies.

The question economists were asking themselves, including in the UK, was what explained that pattern. Was it just good luck – had the economy been hit by fewer or smaller unexpected shocks than in previous decades? Or was it more down to good judgement – was the economy now, including because of

Chart 1: Google searches for "resilience"



Source: Google Trends. Google Trends indices show the number of searches on a specific topic as a proportion of all searches, normalised to give a maximum value of 100.

[2] For instance in my recent speech "Resilience and innovation in post-trade", available online at https://www.bankofengland.co.uk/-/media/boe/files/speech/2019/resilience-and-innovation-in-post-trade-speech-by-dave-ramsden.

improvements in policy, better able to adjust to shocks when they did happen?

One way analysts at the OECD and at the UK Treasury tried to answer that question was by looking at graphs like these (**Charts 2 and 3**).[3] These try to quantify the resilience of different countries in specific time periods in terms of shocks to GDP. They show a statistical estimate of the average GDP shock to hit the G7 economies in the first and second half of the available pre-crisis data – roughly, the pre-crisis decade and the previous decade – and how long that average shock persisted for. The scale on the X axis shows the number of years from the point the shock first hit. And the scale on the Y axis shows the deviation from trend output in each year. Broadly speaking, the smaller the average shock, and the faster it goes back to trend, then, as defined, the more resilient the economy.

There were a few conclusions that we drew from this analysis back in 2008. First, the scale of economic shocks, measured by the size of the initial impulse, had fallen significantly across all the G7 economies. And second, the shocks had generally become less persistent across economies. That's less obviously true for the UK in this version of the chart, but it appeared true in the data that was available at the time. Thirdly, the country whose resilience had increased the most between the two periods of all the G7 countries was the UK.

Chart 2: typical response to an economic shock, 1985-96 subsample

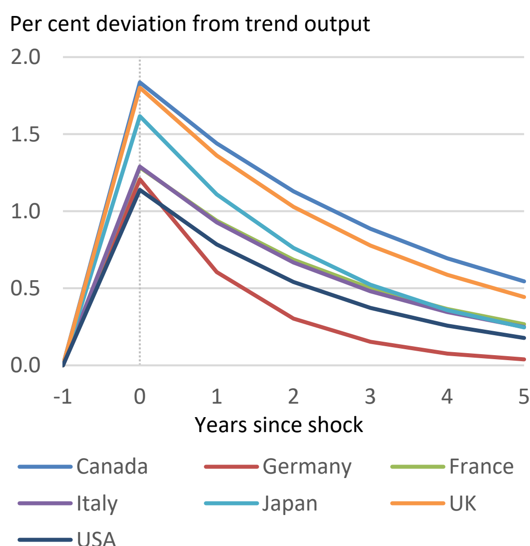
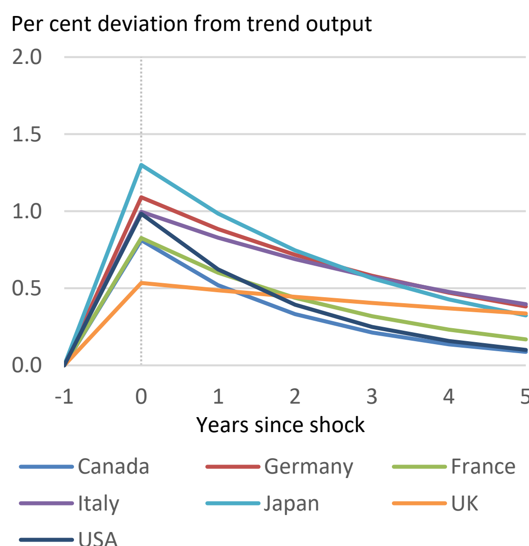


Chart 3: typical response to an economic shock, 1997-2007 subsample

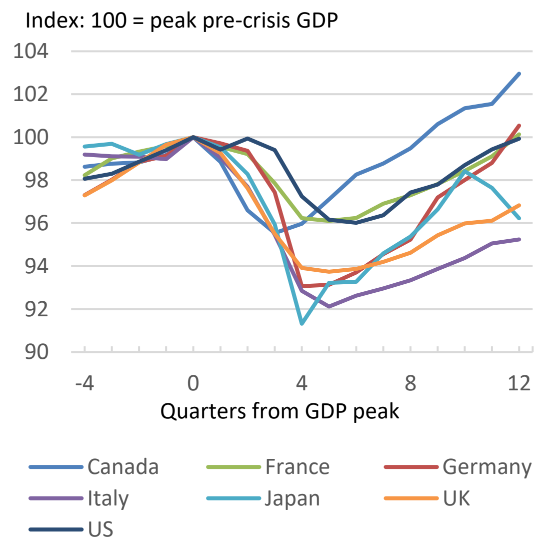


[3] These charts replicate charts 2.4a and 2.4b in Gurney (2008), "Resilience in the UK and other OECD economies: Treasury Working Paper No. 2", available online at https://webarchive.nationalarchives.gov.uk/20081112160625/http:/www.hm-treasury.gov.uk/d/bud08_workingpaper2_557_.pdf. The replication is only approximate as the OECD have discontinued their quarterly output gap series: we estimate a simpler AR(1) model using their annual estimates. See also the OECD work summarised in Duval, Elmeskov and Vogel (2007), "Structural Policies and Economic Resilience to shocks", available online at https://www.oecd-ilibrary.org/economics/structural-policies-and-economic-resilience-to-shocks_140152385131, which reached similar conclusions.

This analysis alone couldn't prove whether the increase in UK resilience was down to good judgement or to good luck – the UK might simply have had the good fortune to be hit by smaller and less persistent shocks. But given the policy changes that had been made – things like successive labour market reforms and changes to the monetary and fiscal frameworks – it was suggestive.

You'll have noticed that my sample in the second chart ends in 2007. Of course everyone knows what happened next. The global financial crisis triggered the biggest UK recession in post-war history. Unemployment rose to 8.5%, annual GDP growth troughed at -6.1% and inflation see-sawed between close to 1% and over 5%. And the UK fared worse than most of its peers (**Chart 4**).

Chart 4: G7 GDP in the financial crisis



Why did the crisis trigger such a severe recession, and why was it particularly bad in the UK? One reason was that the pre-crisis build-up of debt had been so large. Another was the very large size of the UK financial sector, which acted to amplify rather than reduce the blow. Interest rates on credit spiked, and lending to households and businesses came to a standstill. Partly as a result, it gradually became apparent that the hit to demand had been accompanied by a large and permanent hit to the level of productivity – that is, the amount of output the economy was actually capable of producing – and a sustained slowing in its growth rate. GDP took many years to return to trend growth. And that trend was itself much weaker than what had become seen as normal in the pre-crisis decades.

Having appeared to be among the most resilient economies in the G7, the UK revealed itself to be one of the least resilient.

I take three key lessons from the financial crisis and what followed. The first lesson – which seems obvious in hindsight – is that the past is not necessarily a good guide to the future. The second is about what constitutes resilience. We had thought the UK economy was resilient, but we were looking at a narrow form of resilience – by focusing on resilience in terms of GDP growth and inflation, we had failed to realise how fragile the financial system had become, both in response to and as a source or amplifier of shocks. We should have been thinking about and tracking developments much more broadly. And, following on from the first two, the third lesson is that policy needs to be prepared for the unexpected.

What I want to use the rest of this speech to talk about is how I think about stability and resilience in light of those three lessons now that I'm at the Bank of England, and how that has influenced my approach to monetary and financial policy setting in the face of recent and future shocks.

2 A broader assessment of resilience

My first lesson from the financial crisis was that the past is not necessarily a good guide to the future. For the MPC this is most obviously true when it comes to thinking about supply growth – that is, the economy's underlying growth potential. The experience of the crisis showed us that it wasn't enough to think about business cycles relative to a fixed supply trend: that might have worked for the decades before the crisis, when supply growth averaged around 2½ %; these days we have to think about supply as much as we do about demand. That's because once the economy is on trend the growth of supply sets the "speed limit" for how fast demand can grow without generating above-target inflation. Reflecting that, for instance, the word "productivity" – a concept which is integral to our assessment of the speed limit – now appears almost three times as frequently in our Inflation Report as it did before the financial crisis (**Chart 5**). And the MPC have instituted an annual "supply stocktake" to enable us to have a regular, full and in-depth discussion of the subject.

Although we are uncertain about the pace of productivity growth, one thing that does seem likely is that it will remain lower for the foreseeable future than it was before the financial crisis. This judgement is embedded in our Inflation Report forecasts, where we now assume productivity growth of around 1%. This compares with around 2% before the crisis, but is still up on the 0.6% average rate since 2016.

The slowdown in productivity growth has been broad-based across the sectors of the economy. But it has been particularly pronounced in finance and manufacturing, to the point where they account for more than half of the overall slowing (**Chart 6**). If the weakness in finance sector productivity has been a result of households and firms paying down debt – a process which has now largely run its course – then you might

Chart 5: Frequency of mentions of "productivity" in the Inflation Report

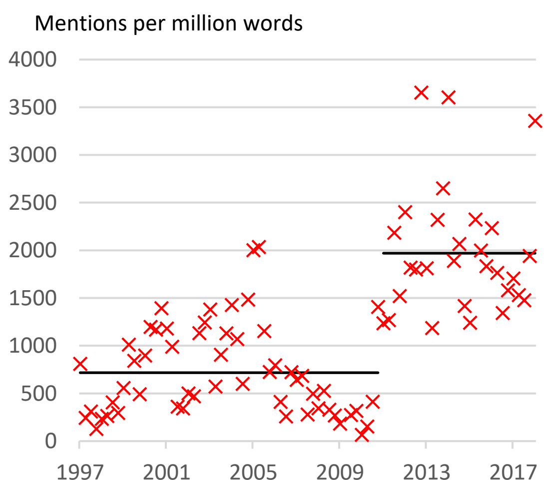
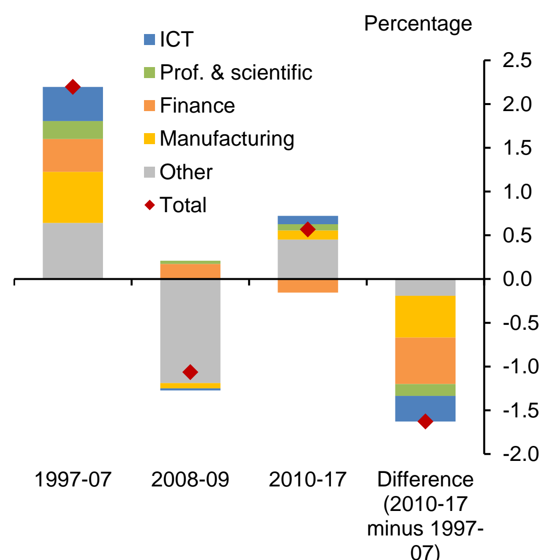


Chart 6: Sectoral contributions to the slowdown in productivity growth



expect to see an increasing contribution from finance in the coming years, and perhaps also spillovers to professional services and other complementary industries.[4] This would help underpin the pickup in productivity growth that we are forecasting at the aggregate level.

I am less confident, because I put more weight on the view that pre-crisis growth in finance sector productivity was simply unsustainable. Much of the apparent growth in finance sector productivity before the crisis reflected profits on the risky lending that led to the crisis itself. Indeed the way finance sector output is measured meant that the rate of bank balance sheet expansion translated directly into the measured contribution of the finance sector to productivity growth.

Strong pre-crisis growth in manufacturing productivity, meanwhile, was largely caused by structural changes in the sector catalysed by globalisation. Increased competition from abroad, especially from China, created a more challenging climate for UK manufacturers, incentivising them to raise productivity (often supported by significant foreign direct investment) or scale back production. The UK manufacturing sector is now much more productive as a result – but is also smaller.

Looking ahead, the risks to productivity from this channel also appear to be to the downside. The tensions between the US and China have led to increased tariffs which have contributed to a slowdown in world growth and a sharp slowing in goods trade. And in the UK, Brexit, on our forecast assumptions, is likely to lead to a reduction in the UK's integration with the EU in goods and services trade, which appears unlikely, at least in the near term, to be offset by an equivalent increase in integration with the rest of the world.

Putting all this together leaves me a little more pessimistic on productivity growth than the MPC's central forecast. Since productivity growth is a key determinant of how fast the economy can sustainably grow – what I just described as the economy's "speed limit" – that also means that, all else equal, I am a little more pessimistic about future GDP growth.

My second lesson from the crisis was that we need to think about resilience much more broadly. Reflecting that, economic policy makers now think as much about stability over the financial cycle as we do over the business cycle – a broader definition of resilience. One major response to the financial crisis was the creation of a new Financial Policy Committee as part of the Bank of England, giving it an explicit mandate to identify, monitor and take action to remove risks to the financial system. The Committee's goal is to ensure the financial system is resilient to shocks, so that it doesn't again act as an amplifier, worsening the impact on households and businesses in the real economy, as it did in the crisis.

[4] My MPC colleague SIlvana Tenreyro sets out these arguments in detail in her spech "The fall in productivity growth: causes and implications", available online at https://www.bankofengland.co.uk/-/media/boe/files/speech/2018/the-fall-in-productivity-growth-causes-and-implications.pdf.

The FPC has been active in pursuing this goal. We have a mandate to ensure the safety and soundness of the financial system as a whole. To do that, one of the things that we do is to regularly reassess and actively adjust the amount of loss-absorbing capital that banks, who are at the heart of the financial system, are required to hold as our assessment of the level of risks changes. (Our tool for doing this is called the counter-cyclical capital buffer rate, or CCyB.) And we also monitor new developments in the financial system to check that everything is appropriately covered by regulation and that we are not missing any new risks. We have taken action to insure against potential financial stability risks from the housing market. And we aim to protect the system against wider operational and cyber risks as well as from financial ones.

3 The UK's evolving economic resilience

What does all this mean for how we are setting policy today?

The biggest single shock to the UK economy since the global financial crisis has been the Brexit referendum result and its aftermath. In many ways the nations and regions which make up the UK have proved resilient to that ongoing shock. Employment growth has remained historically strong, with unemployment falling to 3.8%. Wage growth has picked up after years of subdued growth, with private sector regular pay growth now at 3½%. And GDP turned out to be robust: it has grown by around 1% more than we predicted in August 2016, immediately after the referendum – but still by around 1½% less than we predicted in May 2016.

Part of that resilience reflects the fact that Brexit has been a slow-moving policy and political process, now nearing the end of its third year. It also reflects the policy response to the shock – the MPC cut Bank Rate to 0.25%, launched a Term Funding Scheme to reinforce the pass-through of that cut, and embarked on a new round of asset purchases; and the FPC cut the CCyB. Fiscal policy has also been more supportive, and the world economy grew more strongly than we had expected.

But part of that performance also appears to reflect the underlying resilience of the UK labour market. The growing flexibility of the labour market has been a theme in UK economic policy developments for some time. The share of long term unemployed has fallen steadily from its 1980s peak of 4½% to reach 1% now; even in the financial crisis, when unemployment stayed around 8% for several years, long term unemployment remained below 3%.

This resilience is good news, and has been positive for households and businesses. But as policymakers it is important that we look at the underpinnings of this resilience. GDP growth since the Brexit referendum has mainly been supported by continued consumption growth, even despite the hit to real household income caused by the fall in sterling around the referendum. Consumption has instead been funded, perhaps less sustainably, by a historically low household saving ratio. Net trade on the other hand has performed less strongly; while it did support growth immediately following the referendum and in response to the

accompanying depreciation, that boost has now come to an end, and slowing trade is now dragging on growth.

Chart 7: G7 business investment

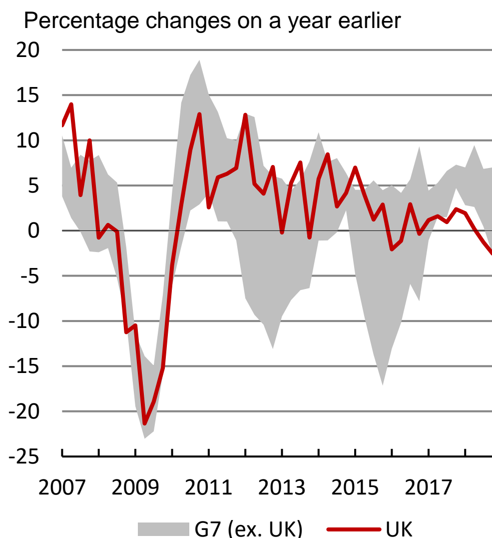
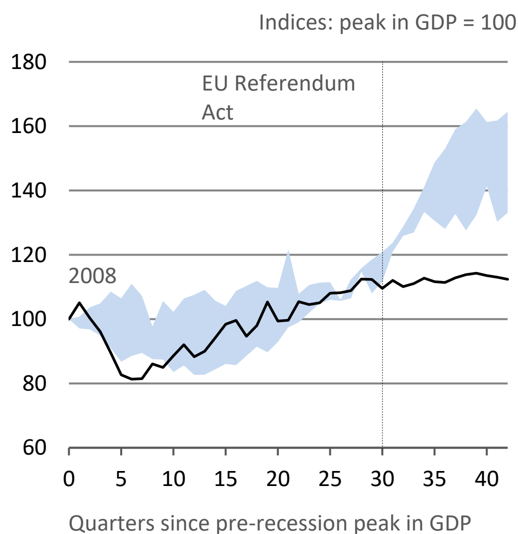


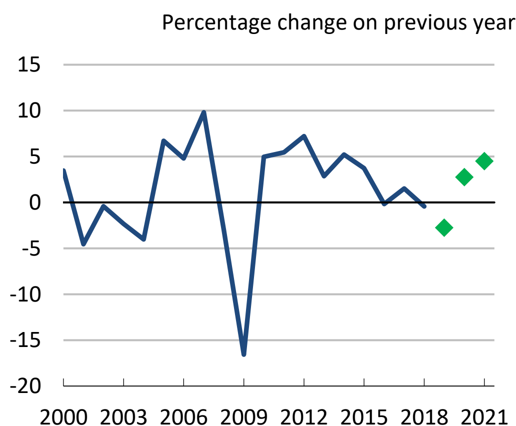
Chart 8: Business investment compared with previous recoveries



At the same time, business investment has been strikingly weak. Investment growth was already slowing ahead of the Brexit referendum (**Chart 7**). Following the referendum it has come to a complete stop. In fact the level of business investment has actually fallen slightly over the past three years – that is despite a supportive global environment and accommodative financial conditions that have supported growth in other countries, and in contrast to the 7%-plus annual growth we were forecasting ahead of the referendum. And over 2018 it fell for four consecutive quarters by a total of 2½% - the first time this has ever happened outside a recession, and completely outside the range of recoveries from previous recessions (**Chart 8**).

Given all this, while the ½% increase in investment in the most recent data is welcome if it can be sustained, so far it offsets only a tiny fraction of the investment weakness of the previous three years. And likewise the recent quarterly strength in GDP appears to have been driven more by stockbuilding ahead of the initial 29th March Brexit deadline, as well as by further rises in consumer spending, than by underlying strength.

Chart 9: Business investment in the May 2019 *Inflation Report*



The main driver of the investment weakness is the uncertainty generated by the Brexit negotiations, which is discouraging businesses from investing. We hear that

message clearly both from our Agents' and our own conversations with business leaders such as yourselves and through our formal Decision Maker Panel survey of over 7000 firms. That uncertainty intensified as the March Brexit deadline approached, explaining the further weakening in investment in 2018. If the government is able to agree a transition deal ahead of the new October deadline, that should lead to some easing in uncertainty. This is what we have assumed in our latest Inflation Report forecast, where conditional on a smooth Brexit investment growth resumes in 2020 and 2021 (**Chart 9**). But we are unlikely to achieve full certainty until the final outcome of negotiations is known, and there is a risk that more persistent uncertainty could push out the pick-up in investment and continue to drag on growth.

The weakness of investment also casts further doubt on how durable the resilience of the labour market has been. Usually business investment and employment rise and fall together – in aggregate, businesses either increase hiring and investment at the same time, or they cut them both. For businesses to be increasing employment at the same time that they are reducing investment suggests something unusual is going on. One explanation would be if they are substituting labour for capital, perhaps on the grounds that hiring would be easier to reverse in the event of a shock than capital expenditure. Another would be if demand is shifting away from capital-intensive, export-oriented businesses and into labour-intensive, domestically-focused ones.

Either way, this shift away from capital and towards labour matters for the economy. Bank staff calculations suggest it has left the economy around 1½% less capital-intensive than we were forecasting ahead of the Brexit referendum. By itself that reduction in capital intensivity accounts for a ½% reduction in labour productivity, even before allowing for the additional impacts of foregone innovation and process improvement. If this continues it will drag still further on the economy's already weak productivity trend, over and above the drag from reduced economic openness that I highlighted earlier.

I've talked so far from a whole UK perspective. And that's right because the MPC and FPC set policy for the whole country. But regional resilience is also an important aspect of resilience.[5]

And Scotland, like the UK, has been resilient in a number of ways. The Scottish economy has become increasingly diversified over time. I already mentioned Scotland's relatively robust performance in the financial crisis. And while the falls in the oil price weighed on growth in 2015-16, more recently GDP growth has broadly kept pace with the UK as a whole – although Brexit uncertainty is having the same negative effects in Scotland as elsewhere. Scottish labour productivity, while slower than pre-crisis as in the rest of the UK, has been better sustained, perhaps because there has been less of an impact from the financial sector. And unemployment is at 3.2%, even lower than the already record-breaking UK rate of 3.8%. In the Highland region it was 3.0% in the most recent data.

[5] Andy Haldane's speech "Is all economics local?", available online at https://www.bankofengland.co.uk/-/media/boe/files/speech/2019/is-all-economics-local-speech-by-andy-haldane.pdf, gives a sense of the kind of new ways the Bank is using regional data to get a better understanding of the economy.

Table A: Summary of the May 2019 Inflation Report forecast

	Projections			
	2019 Q2	2020 Q2	2021 Q2	2022 Q2
GDP[c]	1.6 (1.3)	1.5 (1.5)	2.1 (1.8)	2.2
CPI inflation[d]	2.1 (1.9)	1.7 (2.2)	2.1 (2.1)	2.2
LFS unemployment rate	3.8 (4.0)	3.9 (4.1)	3.7 (4.0)	3.5
Excess supply/Excess demand[e]	-¼ (-¼)	0 (0)	+½ (+¼)	1
Bank Rate[f]	0.7 (0.7)	0.8 (0.9)	0.9 (1.1)	1.0

4 The outlook for policy

The resilience of the economy to date has meant that the MPC and FPC have both adjusted policy. Demand, in terms of GDP growth, has exceeded growth in supply such that spare capacity in the economy has been, broadly speaking, used up. Reflecting that, and its implications for domestic inflationary pressure, the MPC has raised Bank Rate twice; it now stands at 0.75%. The FPC, meanwhile, judging that the domestic risk environment had returned to a standard level, has also raised the counter cyclical capital buffer twice to 1%.

Looking ahead, if we get a smooth Brexit with a transition deal, as assumed in the MPC's latest Inflation Report forecast (**Table A**), I expect growth to pick up, leading to excess demand and building domestic inflationary pressure, so that further monetary tightening is appropriate to maintain monetary stability.

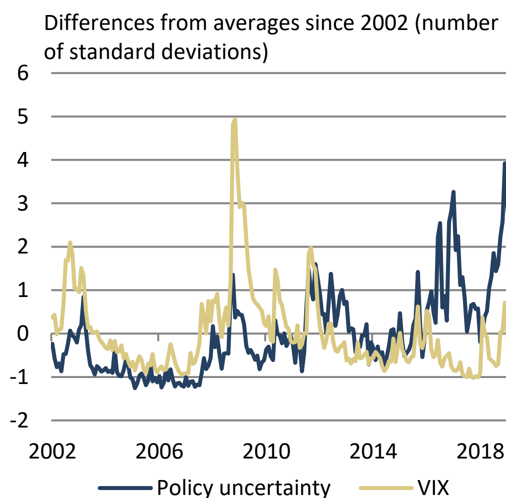
Relative to the best collective judgement expressed in the MPC's central forecast I am, as I have set out in my talk today, a little more pessimistic on GDP growth than my colleagues on the MPC. But as I have discussed, that is true both on the supply side, where I can see more downside risks to productivity, and on the demand side, where I am less optimistic that investment will recover as much as it does in the central forecast. Those two risks broadly offset each other in terms of the balance of demand and supply, meaning that my best guess for inflation, and the outlook for policy, is in line with the central view.

But as I have argued today, the outlook for policy depends on more than just our central expectation for the path for the economy – we need to consider the risks as well. My third lesson from the crisis was that policy needs to be prepared for the unexpected. That is true both for the MPC, who need to take the balance of risks to their central forecast into account when setting monetary policy, and for the FPC, who set financial policy based on their assessment of the risks to financial stability. The FPC track a very large number of risks; I will focus on just two – first, market volatility, and, second, Brexit.[6]

[6] Jon Cunliffe's speech "Financial stability post Brexit: risks from global debt", available online at https://www.bankofengland.co.uk/-/media/boe/files/speech/2019/financial-stability-post-brexit-risks-from-global-debt-speech-by-jon-cunliffe.pdf, goes into more detail on several key risks including Brexit and global risks.

First, one widely-used measure of the risks to economic stability is the measure of global policy uncertainty shown in **Chart 10**, taken from the May 2019 Inflation Report. This has risen sharply in the past couple of years and to historic highs; it fell back in the most recent, April, data, but remains high. Against the backdrop I have been discussing of slowing global growth, trade tensions and Brexit uncertainty, that is not surprising. But it suggests a policy environment that could potentially be challenging.

Chart 10: Measures of uncertainty



The policy uncertainty index is available at http://www.policyuncertainty.com/. This chart shows data to end-April.

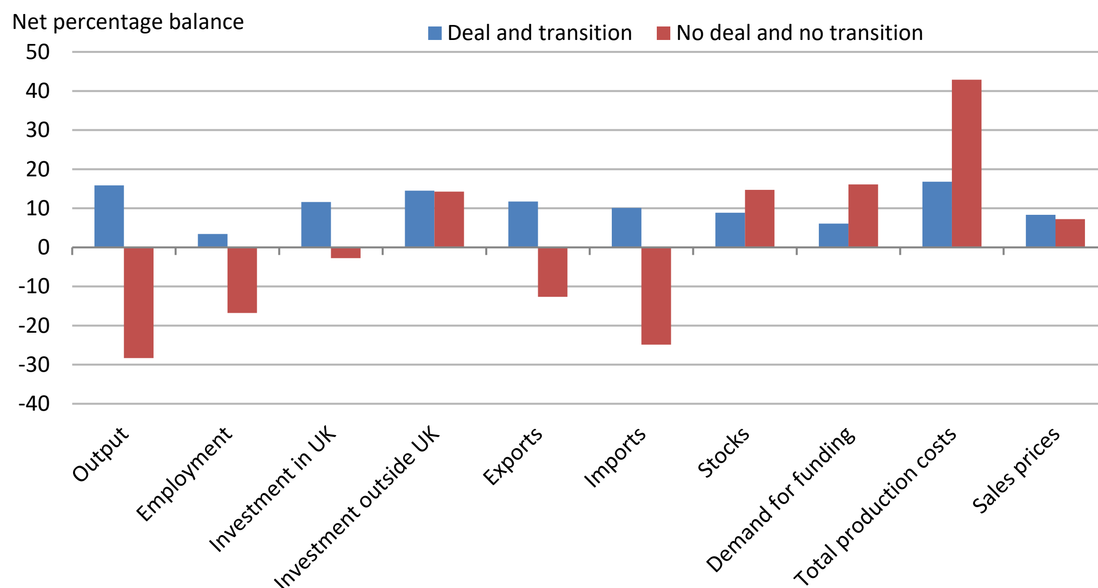
Many of the drivers of elevated policy uncertainty are fundamentally shocks to supply, which monetary policy is not able to offset, rather than demand. But they could introduce a more complicated policy trade-off for the MPC. And they represent risks to financial stability which the FPC needs to be mindful of and prepared to respond to.

That is particularly the case given the apparent disconnect between this measure of policy uncertainty and measures of market uncertainty, for example the VIX measure of US equity market uncertainty which is also shown on the chart. The VIX has risen far less than the policy uncertainty index in recent months, suggesting market participants see relatively little risk of major disruption. It has picked up a little in the recent data as US-China trade tensions intensified, but has also fallen back to below historical averages.

This apparent disconnect does not necessarily mean that markets are complacent – the policy uncertainty index might be more sensitive to short-term political developments, while market indices could also be factoring in a belief that monetary policy might be able to offset the impact of shocks. But if market participants are underestimating the extent of political risks materialising, that suggests the potential for sharp price corrections if those shocks do come about.

The second risk I want to highlight today, and unarguably biggest risk to the UK economy and UK financial stability, remains that of a Brexit outcome of no deal and no transition. That would have large negative economic effects, both in the Bank's view and in the views of the businesses we talk to up and down the country (**Chart 11**). This has been a key focus for the FPC in particular since the Brexit referendum, and we have taken many actions to prepare for and respond to it. We have evaluated what effect of a worst case disorderly scenario, featuring much lower GDP, higher inflation and unemployment and much lower house prices, would be on the core banking system, and concluded that it would be resilient to such an event – in other words that banks would be able to continue to lend to households and businesses in a way

Chart 11: Expectations for the impact of Brexit on business



they couldn't at the time of the financial crisis. Just as importantly, we have published our assessment of the most significant risks to financial stability from disruption to cross-border services in a disorderly scenario, and we have worked with other authorities in the UK and EU to mitigate those risks.

This work has been largely successful: in our view most risks to financial stability that could arise have been mitigated – although, particularly in the absence of further actions by EU authorities, some potential risks to financial stability, primarily to EU households and businesses, remain. And it's important to note that financial stability is not the same as market stability; a no deal, no transition Brexit could still be expected to bring significant market volatility, as well as economic instability.

One question I am often asked is how the MPC would respond in such a disorderly no deal scenario. Unfortunately this is not a question with an unambiguous answer. The lesson that we should take a broad view of resilience applies particularly in this case. A disorderly no deal scenario would certainly be a major negative supply shock – the largest since the 1970s. But the relative response of demand and supply will would depend on the precise nature of the shock that hit, as would the response of the exchange rate and other asset prices.

How the MPC would respond would depend on the balance of demand, supply and the exchange rate and the implications of all those for inflation, as we set out in a range of alternative scenarios that we published in November to aid understanding.[7] Each committee member will have their own assessment of the most likely combination of factors; but it is impossible to predict exactly what would happen in advance, and I would

[7] These are included in "EU withdrawal scenarios and monetary and financial stability", available online at https://www.bankofengland.co.uk/report/2018/eu-withdrawal-scenarios-and-monetary-and-financial-stability, which we published in November 2018 at the request of the House of Commons Treasury Committee.

want to wait and see how the situation unfolded. There are scenarios where the balance of those factors would mean looser monetary policy was appropriate, and other scenarios where it would be appropriate to tighten. In other words the response would not be automatic and could go either way: rates could go up or down as the situation demands.

5 Conclusion

The financial crisis reminded us that the past is not always a good guide to the future. It taught us there is more to resilience than the narrow economic cycle. And it demonstrated that policy needs to prepare for the unexpected.

While it is important to remain humble and vigilant, I think that the Bank of England has learned the lessons of the crisis. We have realised that we are uncertain about supply as well as demand. We have expanded our view of resilience to cover the financial cycle and risks to financial stability as well as the business cycle. And, through the FPC, we have been given a mandate to identify risks and new tools and powers to address those risks before they materialise.

Those lessons have guided our approach to Brexit. We have not assumed the future will look like the past: different outcomes from the negotiations could have very different effects on the economy. The MPC have set monetary policy based on what we expect to happen in the most likely outcome, based on the assumption of a smooth transition to an average of possible end-states, but with full recognition of the risk that things could turn out differently. And the FPC have actively sought to insure against the most serious downside risks. Whatever the eventual outcome, both the Bank's macroeconomic policy-making committees will continue to set policy to manage risks, ensure resilience and maintain monetary and financial stability.