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Resolution Foundation
REPORT

Renewed interest

The role of monetary policy in crisis and beyond

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Executive Summary

Monetary policy after the financial crisis

The period since the global financial crisis of 2008 has been a remarkable one for monetary policy in the UK and around the world. A 4.5 percentage point reduction in the Bank of England's base rate in six months from October 2008 was sharp, but not especially remarkable when compared with previous periods of monetary loosening. Across all such events after 1970, the average reduction was actually slightly higher, at 5 percentage points. What set the latest episode apart was that it pushed the base rate to just 0.5 per cent – the lowest level reached in its history (stretching back to 1699) – and that seven years later it remains there.

The Monetary Policy Committee (MPC) would have cut rates further still had it not run up against what it thought to be the zero lower bound – the point beyond which rates could be cut. Faced with a crashing economy and having apparently run out of conventional monetary policy road, the MPC introduced a programme of quantitative easing (QE). Alongside the cut to 0.5 per cent in March 2009, the Bank used new money to purchase £75 billion of financial assets (rising to £375 billion in total by February 2012).

This was a policy that had been tried in Japan between 2001 and 2006, but it marked new territory for the UK with genuine uncertainty about its likely intended and unintended consequences – all founded on a noticeable absence of empirical evidence. Just once was the term mentioned by the Governor of the Bank in speeches in the decade before the collapse of Northern Rock (and that was with reference to Japan).

Assessments of its success are mixed to date, though there is some consensus that it helped deal with the worst of the fall-out from the crisis.

Preparing for the next downturn

The adoption of a policy, without much public debate and in the middle of a crisis is something all else equal we would want to avoid in the future. The hope must be that when the next downturn hits, the Bank and Treasury have a

settled view on which policy responses will be turned to, with those responses having been debated, interrogated and tested. The good news is that, unlike 2008, we can at least see the zero lower bound problem coming this time.

The danger of entering the next recession with a base rate significantly lower than it was in 2008 is material. It's not guaranteed of course, but interest rates are expected to grow very slowly in the coming years. Latest market expectations imply a base rate of roughly 1.6 per cent in 2021 and around 2.5 per cent in 2025 – still just half as high as it was in 2008.

How likely are we to face a downturn within that period? Obviously there's no way of knowing. But by looking at the business cycle patterns that have played out since the 1970s, we can establish simple recession probabilities. These provide us with a mechanical indication of how likely it is that we might face at least one year of economic contraction within a given time horizon. They suggest that there is a two-in-three chance of facing a downturn before 2021, and a four-in-five chance of one occurring by 2025.

Combining that with the projected interest rate paths implies that the headroom available to the MPC next time it comes to cut rates as a means of boosting demand will almost certainly be reduced compared to what it has been used to.

How much headroom has the Bank lost?

It's worth asking just how restrictive that would be. In one sense we can simply contrast the ability to cut rates by 4.5 per cent with the prospect of a 1.1 per cent cut in 2021 if market expectations were borne out, a recession arrived that year and the MPC again chose to reduce rates to 0.5 per cent. But it is helpful to dig a little into how that difference would manifest itself in the monetary policy transmission mechanism.

It is obviously significantly beyond the scope of this paper to try and quantify the overall relative affect of those two rate cutting scenarios, not least because there are a wide variety of channels through which monetary policy affects output and inflation, not to mention a lively debate as to their relative importance.

Instead we focus on a particular channel as it affects the household sector, which is the direct impact of rate changes on mortgage payments. This channel is important in the UK given the nature (primarily floating) and size

(frequently large) of mortgages we hold. To that end we develop a simple thought experiment to provide a quantitative insight into the scale of the reduction in impact through this channel that the Bank of England may experience in future due to the zero lower bound binding.

The 4.5 percentage point cut in the base rate of 2008-09 reduced average effective mortgage rates by 2 percentage points (from 5.7 per cent to 3.7 per cent) over the course of 2009. In part this partial pass-through reflected the fact that such changes take time to feed through to customers – those tied into fixed rate deals had to wait before switching to lower rates for example. But it was also a product of general weakness in the financial sector which meant that providers felt that increased margins were necessary as balance sheets were repaired. By 2015 the average effective rate had fallen to 3.1 per cent, with this overall 2.6 percentage point reduction still representing just 60 per cent of the overall base rate cut.

By applying this drop in rates to the £1.4 trillion stock of mortgage debt held in 2008, we can establish an illustrative figure for the specific impact of rate cuts on mortgage repayments (actual recorded repayments did not fall in the same way because they were affected by changes in borrowing decisions post-crisis that reflected a number of environmental changes which we deliberately ignore). The annual 'gain' to mortgage holders estimated in this way grows slowly over the period from 2008, reflecting the gradual reduction in mortgage spreads. The overnight 'gain' of £22 billion in 2009 becomes £24 billion by 2015 (all in 2015 prices). That's equivalent to roughly £2,500 per mortgage holder, and accounts for 2.3 per cent of aggregate household disposable income.

Repeating the exercise in the hypothetical 2021 world in which recession has struck when the base rate stands at just 1.6 per cent results in a much smaller boost to mortgage holders. Assuming spreads narrow a little as the base rate rises to 1.6 per cent, we take the average effective rate to be 3.7 per cent. Applying this to a mortgage debt projection of £1.6 trillion, the 'gain' associated with cutting the base rate back to 0.5 per cent comes in at just £8.5 billion, or 0.7 per cent of disposable income. The direct mortgage effect of the rate cut in this scenario would be roughly one-third the size of the one achieved last time round.

Of course, the transmission mechanism works in a number of ways, so these figures don't amount to an assessment of the overall impact of rate cuts. And cuts are bad news for some. Repeating the same exercise in relation to instant-access savings, we estimate that the 2008-09 rate cut resulted in 'losses' of around £11 billion, or roughly £400 per household. And we should also note that the final feed through to economic stimulus rests on much more than the size of the transfers. Bank of England estimates suggest that borrowers spend 50p of each additional pound they get, whereas savers spend just 10p.

But partial and illustrative though our mortgage example may be, it provides a sense of the extent to which the MPC might struggle to support the economy through conventional monetary policy when the next recession arrives.

A new world of lower rates

Of course, there is no reason to suppose that the economy will conform to the pattern of pre-crisis business cycles: we might avoid another downturn for significantly longer than five years. And the next contraction may be relatively mild – requiring much less stimulus on the part of the Bank.

But, the lower interest rate issue doesn't look to be going away any time soon. World real interest rates have been trending down for decades – long before the additional ratchet applied post-crisis. This process has been driven by slow-moving demographics and structural shifts in savings and investment preferences. And, while some of these forces may ease – or even reverse – in the coming years, there appear little concrete prospect of a rapid return to the 'old normal' for rates.

If not next time round, then at some point in the coming decades it appears likely that the Bank will bump up against the zero lower bound again. In any event, it is better to engage in discussion of the alternative policy tools that might be used when the lower bound approaches well ahead of the point at which their introduction is required.

Living with lower rates

The alternatives are many and varied. All are imperfect, but all are worth consideration.

Building on what's already happened, one approach is to accept a heightened role for QE. As a short-term means of stimulating a flagging economy, that might have some merit. But there is much more uncertainty around the efficacy of QE over the longer-term and especially against a backdrop of already-low yields on 'safe' assets. Suggestions of extending the use of QE into direct monetary financing of state spending also bring with them obviously very challenging questions of political economy, whether that is implemented through a form of 'helicopter money' or otherwise. If QE is to become a permanent part of central banks' armoury, then it is vital that we generate much more evidence and interrogate its effectiveness over the recent past and appropriateness for the future.

Following the example of various European central banks, a second approach might be to consider negative (nominal) interest rates. While economic theory suggests that charging interest on savings and paying it on debts could result in a flight to cash and any number of unexpected consequences, the experience to date for the ECB and in Sweden, Switzerland and Denmark implies that rates can drop at least a little below zero. Replacing physical cash with fully-electronic accounts might help push the lower bound still further into negative territory. Yet a lower bound is likely to remain in place somewhere – and the exchange rate implications are likely to mean that it is a little higher for an open country like the UK than might be the case elsewhere.

A third option relates to raising the Bank of England's inflation target. The idea is that this would create extra nominal rate setting headroom in a world in which real interest rates have fallen. A 2 per cent inflation target means that real interest rates of 4 per cent translate into nominal rates of 6 per cent, leaving plenty of room above the zero lower bound. With average real rates having fallen much lower, maintaining a 6 per cent nominal rate would require higher inflation.

It seems right that inflation targets should be reviewed in the light of secular decline in real rates, but changing the target risks de-anchoring inflation expectations and thereby damaging the reputation of the central bank. And, with inflation currently well-below its existing target of 2 per cent, it is hard to see quite how monetary policy could stimulate sufficient demand to move towards a new higher target in the near-term. The zero lower bound continues to bite.

A fourth discussion must centre on the appropriate balance between monetary and fiscal policy. If monetary policy is less effective when the next downturn hits, then the implication is that fiscal policy will need to be more active. The balance of burden is certainly very important – both from the perspective of policy efficiency and from the perspective of distributions. Rate cuts have benefited borrowers but penalised savers, while QE has supported asset prices and therefore helped the holders of those assets. Periods of fiscal stimulus vary in their impact, depending on the goals of government. If the balance between the two spheres is altered in the future, then so too will be the distributional outcome.

Finally, there appears to be a clear case for making more effort to engage in structural reforms that deal with the problem of lower rates at source. For example, the drag on growth (and therefore real rates) implied by ageing populations can be combatted by policies designed to boost economic participation (by raising the state pension age for example), while efforts to boost productivity remain key to generating new sources of growth. And, while public investment is unlikely to ever be sizeable enough to single-handedly push world interest rates back up, reversing its downwards trend would at least avoid making the situation worse. With borrowing costs set to be lower for longer, there is clearly a case for renewed infrastructure investment.

The world has changed in many ways since the crisis of 2008. Monetary policy has moved with it, but not always with confidence. Uncomfortable and uncertain though discussion of new forms of unconventional monetary policy might feel, it is vital that policymakers engage with debate ahead of the next storm, rather than waiting until it arrives.

Section 1

Introduction

Interest rates are at an all-time low. The Bank of England's base rate is about to enter its eighth year at 0.5 per cent – the lowest level in its history and its longest period of non-movement since the Second World War. Yet still UK inflation remains well below its 2 per cent target, bumping along around zero for much of 2015. It is probable that it would be lower still had the Bank not introduced an unprecedented programme of quantitative easing from 2009.

Amid increasing concerns that global economic growth is slowing, there is the non-negligible prospect that monetary policy may soon need to become looser still, in order to stimulate higher demand. Given the UK economy's relative health, the more likely outcome is that monetary policy can tighten a little before the next economic downturn hits. But the conventional headroom available to the Bank at this point is likely to be significantly reduced.

Rates are widely expected to rise very gradually over the coming years, and economic history tells us that we are more likely than not to face some form of contraction over the course of the next five to ten years. The expectation is that monetary policymakers – in the UK and around the globe – will increasingly find themselves bumping up against the zero lower bound in the coming years.

Against this backdrop, this report considers the potential scale of lost headroom facing the Bank and some of the prospects for dealing with a new lower rate environment. We set out a number of illustrative examples which highlight the importance of conventional monetary policy after 2008, the extent to which it looks to have been blunted and the probability that policymakers will run out of road over the next decade.

While the findings are all – necessarily – speculative, we highlight the need to enter into serious discussion of the efficacy and appropriateness of alternative monetary policy tools sooner rather than later. Specifically:

- Section 2 focuses on the Bank of England's policy reaction to the global financial crisis of 2008, discussing the part played by base rate cuts and the introduction of a new programme of quantitative easing in the face of the apparent proximity of rates to the zero lower bound;
- Section 3 speculates on the likelihood of the Bank again facing the zero lower bound when the next recession arrives. It sets out simple recession probabilities and matches these to interest rate expectations in order to give a sense of the likely headroom available to the Bank in the future;
- Section 4 presents a thought experiment that aims to quantify the effect of the reduced headroom facing the Bank. It focuses on one specific element of the monetary transmission mechanism – namely the direct effect of interest rates on mortgage repayments;
- Section 5 summarises the literature on the secular decline of interest rates around the world, highlighting the extent to which the zero lower bound issue is unlikely to disappear in the medium-term;
- Section 6 details a number of alternative monetary policy options that might be considered by central banks facing lower bound constraints, and briefly sets out the potential advantages and disadvantages associated with each.

Section 2

Monetary policy after the financial crisis

Following the onset of the global financial crisis in the Autumn of 2008, the Bank of England's Monetary Policy Committee enacted a dramatic period of monetary loosening. The official base rate was cut six times, settling at an all-time low of just 0.5 per cent in March 2009. Nearly seven years on, it remains at the same level. Yet even this wasn't enough. Alongside the final rate cut, the MPC enacted £75 billion of asset purchases (or quantitative easing (QE)), with the value of purchases rising to £375 billion by July 2012. It was an unprecedented action in the UK and one that was developed and implemented at pace.

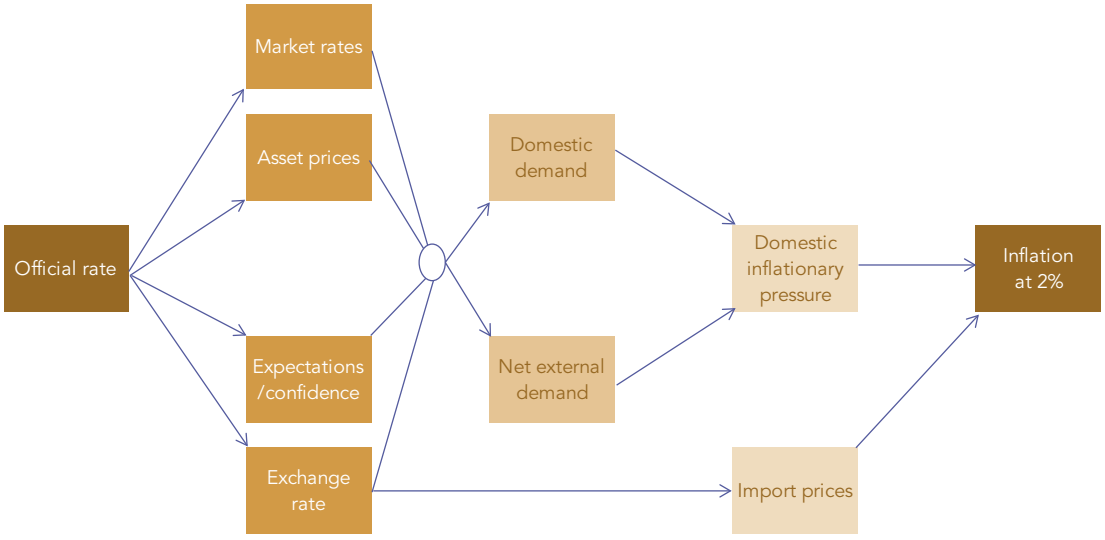
In this section we discuss the various ways in which the monetary transmission mechanism operates and recap on the chain of events that unfolded from 2008.

The monetary policy transmission mechanism

Monetary policy decisions affect household incomes, demand and the broader economy in a number of ways, as described in Figure 1. Most obviously interest rate changes feed through to market rates on loans and deposits, directly affecting the incomes of households and firms. They also drive asset prices and the exchange rate. Just as importantly – if not more so – policy announcements send a signal which can impact indirectly on expectations and confidence.

These direct and indirect effects in turn influence the behaviour of households and firms, helping to change levels of spending, saving and investment. By promoting or dampening demand in the economy, this mechanism is designed to influence the level of inflation.

Figure 1: The monetary policy transmission mechanism



Source: The Monetary Policy Committee, *The transmission mechanism of monetary policy*

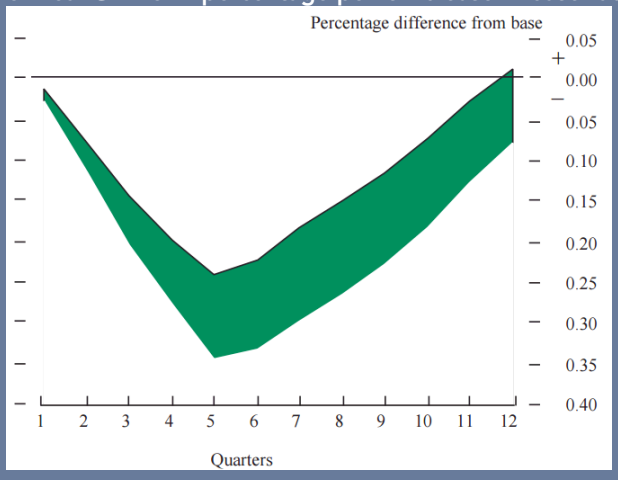
Of course, disentangling the effects of monetary policy from underlying economic conditions is extremely difficult, particularly given that rate changes are often announced in reaction to some form of negative or positive economic shock. Box 1 reproduces the findings from a pre-crisis MPC simulation of the potential economic effects associated with a base rate change.

i Box 1: The impact of interest rate changes on GDP

The precise impact of a given rate change – in terms of timing and scale – on spending, saving and investment across households and firms is impossible to quantify. And each period of loosening or tightening is different, reflecting variations in underlying conditions and motivations for action.

However, pre-crisis modelling by the MPC provides some indication of the potential scale of effect. Specifically, two simulations were run through the Bank of England's macro-economic model to gauge the impact of an unexpected 1 percentage point increase in the base rate which lasts for one year.

Figure 2: Bank of England illustrative estimate of effect on real GDP of 1 percentage point increase in base rate



Notes: The shaded area represents the range between the paths of two specific simulations. Rate movement is modelled as if it is maintained for one year.

Source: The Monetary Policy Committee, The transmission mechanism of monetary policy

Taking the range of outputs, the modelling identified effects that built over the course of year one, reaching a maximum of somewhere between 0.2 per cent and 0.35 per cent of GDP after five quarters as shown in Figure 2. Following the reversal of the rate change, the GDP impact then returns to base over the following two years.

The MPC was very clear that this is an 'illustrative' estimate – pointing out that alternative simulations based on different underlying assumptions could produce outputs lying outside of the range shown in the chart. The paper also emphasised the importance of business and consumer confidence, the credibility of the monetary policy regime, the prevailing fiscal stance and the extent to which the given interest rate change had been anticipated.

Notwithstanding these important caveats, the exercise gives a useful sense of the potential scale of effect associated with a given rate movement.

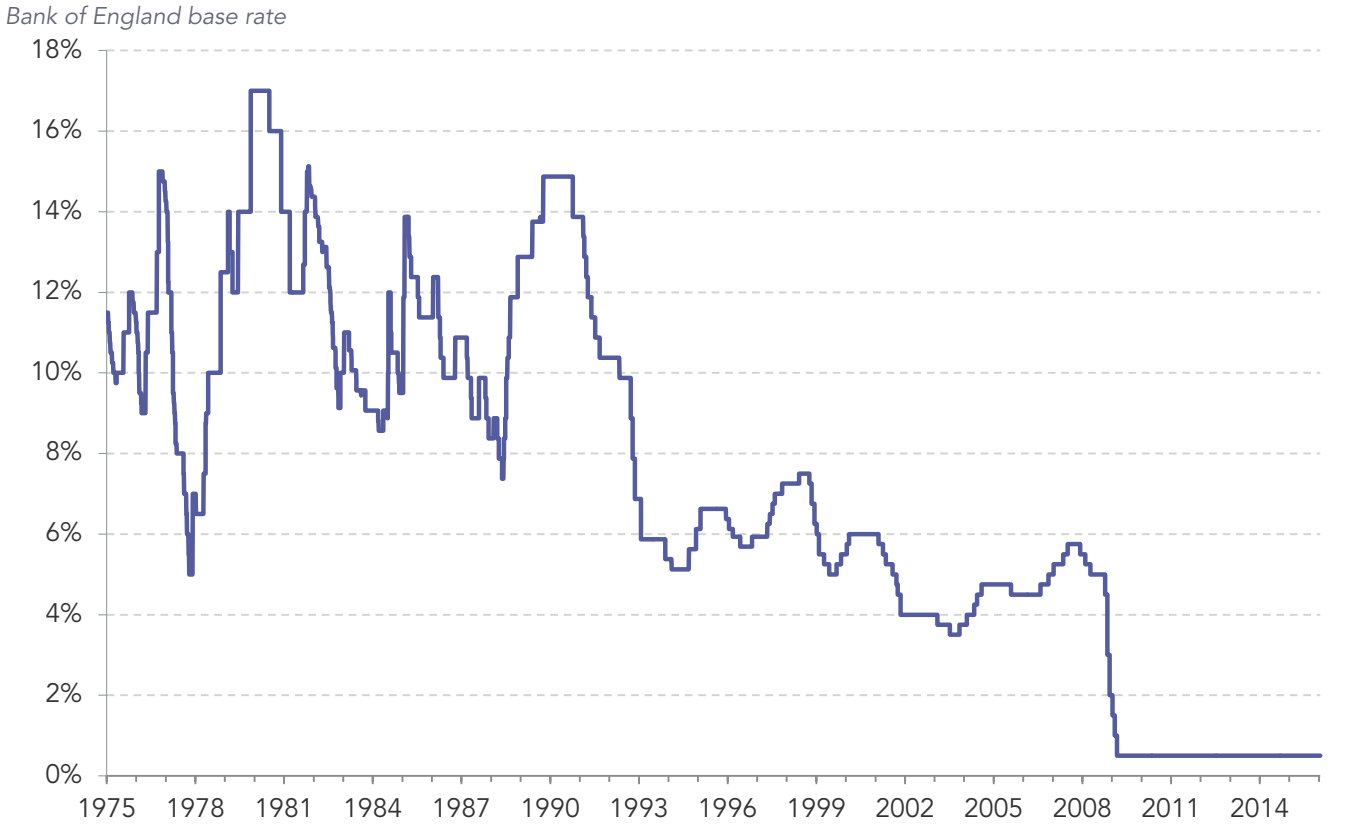
While the mechanism described above and the theoretical magnitude of effects associated with a given change in the base rate is still believed to hold, monetary policy – in the UK and around the world – has entered new territory since the global financial crisis of 2008. The scale of base rate cuts implemented in the UK was rapid, though broadly in line with what had gone before. But the *level* to which rates fell broke new ground. And the introduction of unconventional policy tools – most notably QE – represented a departure into the unknown.

Rate cuts

Figure 3 puts the post-crisis rate movements in context by setting out the path of the Bank of England's base rate from 1975 onwards. In relative terms, the pace and magnitude of the rate cuts taking place from December 2007 – and more especially from October 2008 – appears to be something of an outlier in the recent past (certainly in the period since the Bank was granted independence).

Yet taking a longer view, the 4.5 percentage point cut from October 2008 appears more in line with previous cycles of loosening. Indeed, it almost precisely matches the average 5 percentage point reduction delivered over all loosening cycles between 1970 and 2016. The recent episode is similarly in line with post-1970 cycles in the US (average 5.4 percentage point reduction), Germany (4.5 percentage points) and Japan (5.9 percentage points).[1]

Figure 3: Official bank rate: UK 1975-2016



Source: Bank of England

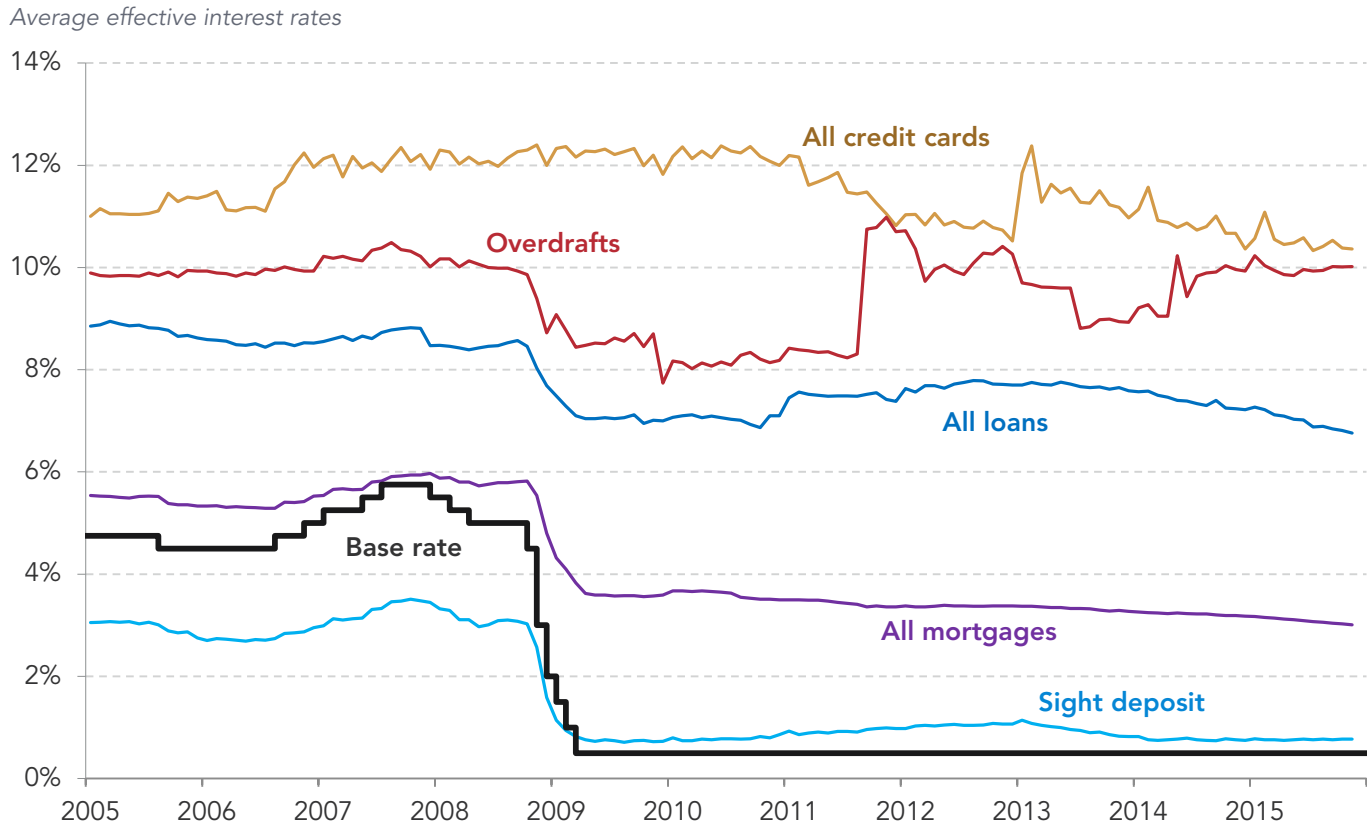
While less remarkable when viewed through this longer lens, the policy loosening of 2008-09 still stands out in terms of both its final destination and duration. Having never fallen below 2 per cent in its history prior to 2009 (stretching back to 1699), the Bank's base rate is now close to completing seven years at just 0.5 per cent.

In terms of the impact on demand, it is of course movements in *market* rates that really matter. Focusing on households, Figure 4 sets out average effective rates on a variety of financial products. It shows that loans, mortgage and sight deposits clearly tracked the direction of travel

[1] A Haldane, "Stuck", Speech given at the Open University, Bank of England, 30 June 2015, Table 1

in the official rate from 2008. However, the recorded falls were much smaller in scale than 4.5 percentage points. The relationship between the base rate and both overdrafts and credit cards appears to have been even weaker still.

Figure 4: Effective interest rates on selected savings and loans products: UK 2005-2015



Notes: 'Effective' rates show the average of rates across different providers' products weighted to reflect the share of outstanding balances accounted for by each product. For example, if there were only two credit cards on the market, one with a rate of 15 per cent and a market share of 90 per cent and another with a rate of 30 per cent and a market share of 10 per cent, then the average 'effective' credit card rate would be 18.5 per cent (0.9*15% + 0.1*30%).

Source: Bank of England, MLAR Table 1.22

In part this reflected inevitable practical delays in passing through cuts and in part it was a product of the precarious position of the financial sector at that time and increases in funding costs post-credit crunch, with many providers looking to restructure, raise margins and consolidate. Yet even seven years on (and following the introduction of a Funding for Lending scheme by the Bank and the Treasury designed to deal with the specific headwind of bank funding costs) the spreads remain elevated relative to the pre-crisis position.

Nevertheless the impact on household finances was sizeable. It had the dual effect of providing a direct boost to existing borrowers (and hit to savers) and changing the future marginal price of borrowing and saving. We explore the scale of the direct effect – specifically in relation to mortgage repayment costs – in Section 4. While it is hard to place a definitive figure on the effect, it certainly helped to support many highly stretched households during a sustained period of economic turmoil, unemployment and falling incomes.

Quantitative easing

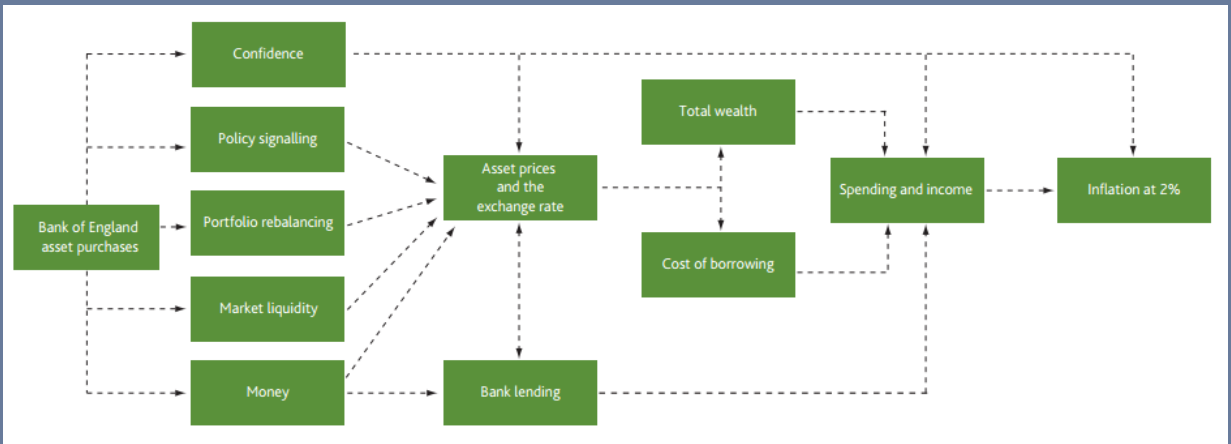
Yet such was the magnitude of the fall in aggregate demand associated with the downturn – amplified by global headwinds – this conventional monetary policy approach was considered insufficient. With the MPC judging that it couldn't push its base rate below 0.5 per cent, it voted in favour of a new programme of QE (see Box 2).

i Box 2: Quantitative easing in the UK

Between March and November 2009, the MPC decided to purchase £200 billion of financial assets, mostly UK Government debt or 'gilts'. Further purchases were made in October 2011 (£75 billion), February 2012 (£50 billion) and February 2012 (£50 billion), bringing the total assets purchased to £375 billion.

By using new (electronic) money to purchase 'safe' assets with relatively low yields from private investors such as pension funds and insurance companies, the process aims to free up private funds for investment in other assets. This is expected to reduce longer-term borrowing costs, thereby encouraging the issuance of new equities and bonds and stimulating spending. A visualisation of the transmission mechanism is provided in Figure 5.

Figure 5:The QE transmission mechanism



Source: M Joyce, M Tong and R Woods, "The United Kingdom's quantitative easing policy: design, operation and impact", *Quarterly Bulletin 2011 Q3*, Bank of England

QE had been used in Japan between 2001 and 2006, but it was far from being a standard part of the monetary toolkit in the pre-crisis era. Trawling through the Governor of the Bank of England's speeches in the decade before the collapse of Northern Rock turns up just one reference to the term 'quantitative easing' (or associated topics), and that was in relation to Japan.[2] And it didn't feature once in any Chancellor of the Exchequer speeches over the same period.

The Bank of England – in keeping with central banks across the globe – was thus placing significant emphasis on a mechanism that had been the subject of relatively little debate and for which only limited empirical evidence existed.

The scale of the challenge facing the Bank in 2008-09 called for swift action. On reflection, there is some consensus that it helped to deal with the worst effects of the financial crisis either in terms

[2] M King, *The Institutions of Monetary Policy – The Ely Lecture 2004*, Speech to the American Economic Association Annual Meeting, 12 January 2004

of stabilising the financial sector or through more direct influences on asset prices and demand.[3] But assessments of the longer-term success or otherwise of QE in the UK are mixed.[4] At the very least, introducing it was something of a gamble.

The hope must be that we enter the next downturn better-prepared for the prospect of having to implement unconventional monetary policy, with a suite of tools that have been more thoroughly discussed, debated and tested. As we explore in the next section, there is a strong likelihood that reliance on interest rate movements won't suffice.

[3] *The Distributional Effects of Asset Purchases*, Bank of England, 12 July 2012

[4] C Martin & C Milas, "Quantitative easing: a sceptical survey", *Oxford Review of Economic Policy,* 28(4), pp. 750-764, 2012

Section 3

Preparing for the next downturn

Exploring just how much headroom might be available to monetary policy makers when the next economic downturn arrives requires making an assessment of two things: the timing of the next recession and the likely future trajectory for interest rates. In this section we consider both, using historic data to establish simple recession probability curves and market data to set out a potential interest rate path.

Combining these approaches, we conclude that there is a two-in-three chance of the base rate being no higher than 1.6 per cent when the next recession hits and a four-in-five chance that it will be no higher than 2.5 per cent.

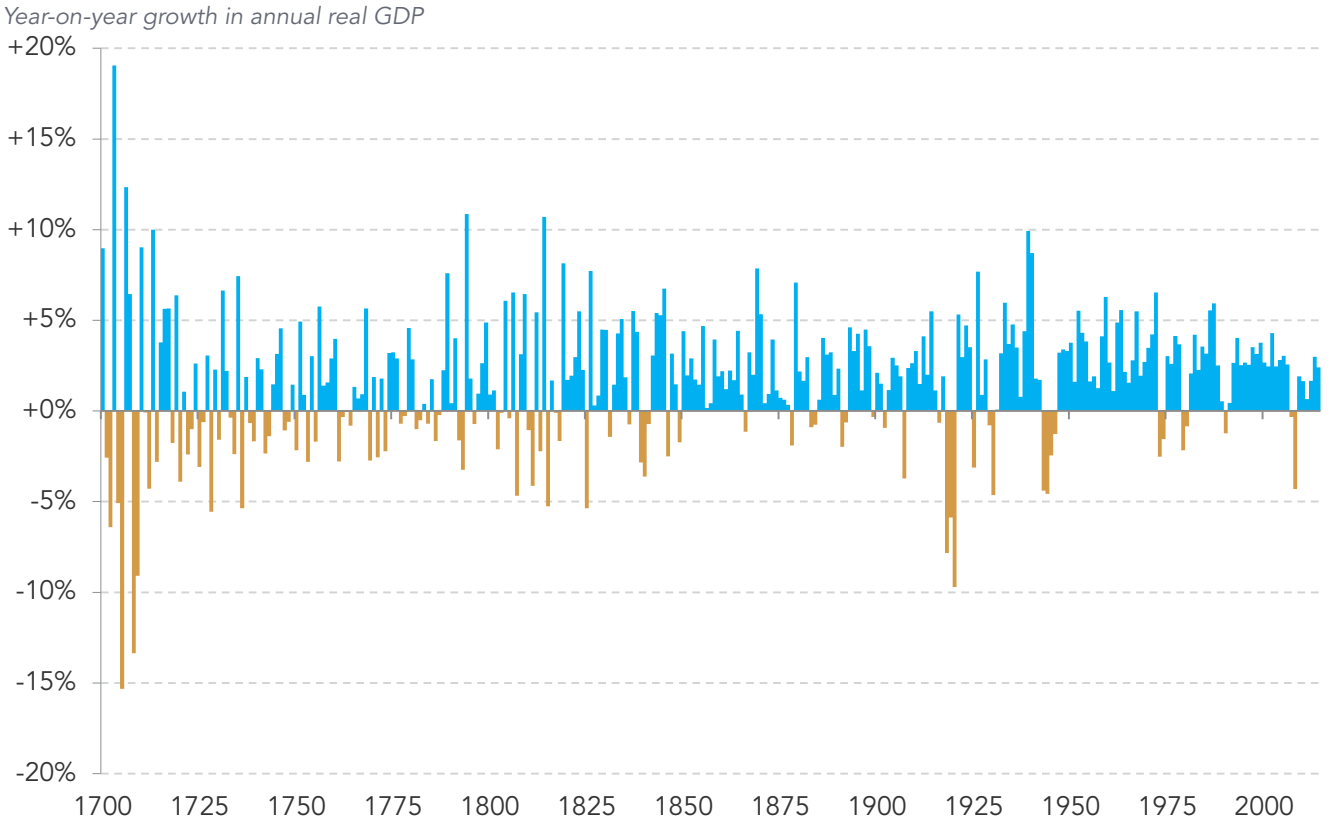
When will the next economic downturn arrive?

By their very nature, economic slowdowns are difficult to predict: any attempt to put a date on the next recession is likely to represent little more than educated guesswork. As such in this section we make no attempt to forecast the next crisis, but instead use historic patterns of growth and contraction to establish basic probability curves in order to form the basis of a simple thought experiment. Our starting point is to take a long view of economic growth in the UK.

Figure 6 details annual growth rates in real GDP in every year from 1700. Clearly there are more years of growth than of contraction, but there are perhaps a surprisingly large number of years in which national output fell. The picture is most volatile in the 18th and 19th centuries – with periods of war playing a key role – with more regular patterns becoming established after the industrial revolution.[5]

[5] For simplification – and owing for the lack of long-run quarterly GDP data – we define 'recessions' throughout most of this section in terms of calendar years in which real GDP contracts relative to the preceding year. This differs from the technical definition of a recession which relates to periods in which there are two successive quarters of annualised output contraction.

Figure 6: Annual growth in real GDP: UK 1700-2015



Source: S Hills, R Thomas & N Dimsdale N "Three Centuries of Data - Version 2.2", Bank of England, 2015

Overall, 91 of the 315 years shown recorded negative growth, implying the independent probability of being in recession over a single-year horizon of around 29 per cent.

Another way of thinking about the relative likelihood of experiencing recession in a given period is to consider the average duration of upswings. Figure 7 provides a frequency distribution of all periods of consecutive years of growth between 1700 and 2007.[6] The volatility of the early part of the period means that more than half (54 per cent) of the 57 upswings set out lasted for just one or two years. As such, the average duration for the period as a whole is just under four years.

Clearly there are good reasons to assume that the UK economy no longer conforms to the patterns of the distant, pre-industrialisation, past. We therefore also pull out some average post-World War Two trends. The 1944-2007 average line covers four upswing periods[7] and might be considered to represent the start of 'modern' Britain, following a range of radical structural changes over the first half of the century. The 1974-2007 average line covers three upswings[8] and may be more relevant still to today's situation because it is the period most closely associated with an acceleration of globalisation.

The 1944 average upswing comes in just under 14 years, while the 1974 average is just under ten. Given that we are already six years into the latest upswing, this might imply that a correction is due sometime between 2020 and 2024.

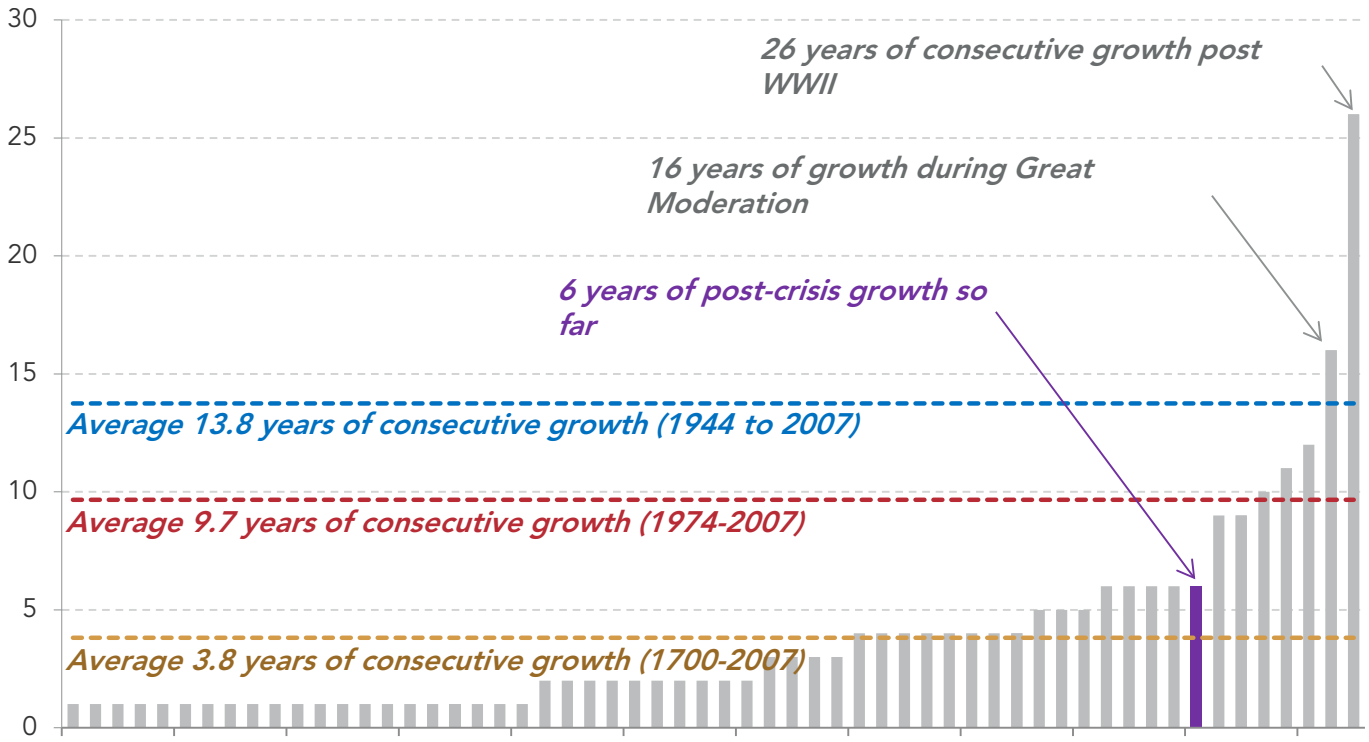
[6] We exclude the post-crisis period from the analysis on the basis that we don't yet know how long this upswing will last.

[7] 1944-1973, 1974-1979, 1980-1990 and 1991-2007.

[8] 1974-1979, 1980-1990 and 1991-2007.

Figure 7: Distribution of real GDP upswing durations: UK 1700-2007

Distribution of years of consecutive growth in GDP, 1700-2007



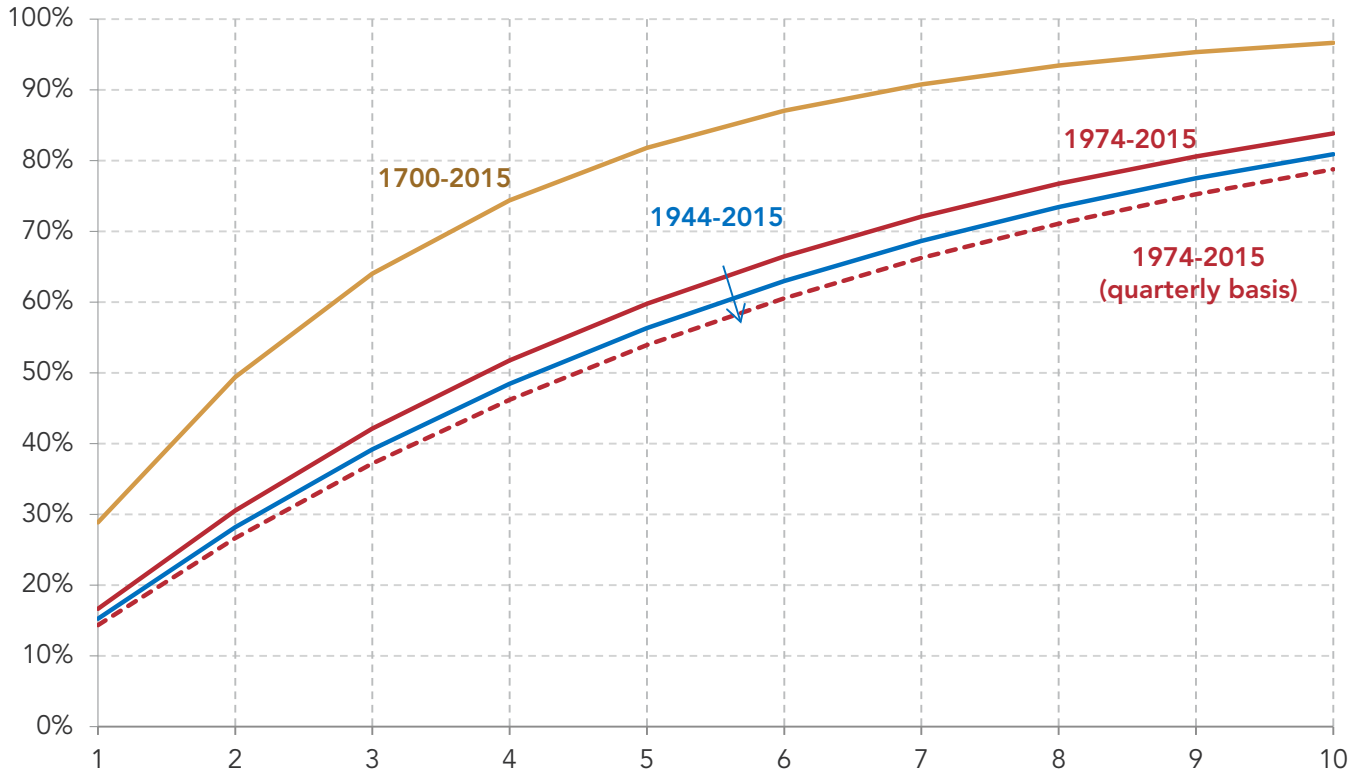
Source: S Hills, R Thomas & N Dimsdale N "Three Centuries of Data - Version 2.2", Bank of England, 2015

Alternatively, we can consider the chance of a recession occurring within the next ten years. The probability is of course affected by which historic years we focus on. Figure 8 sets out cumulative probabilities of entering recession at some point within a ten-year horizon based on reversion to the same three historic business cycle patterns used above.[9] In addition, in this instance we add a version of the 1974-2015 line based on quarterly data which allows us to capture technical recessions. Reassuringly, it matches the annually-derived line relatively closely.

[9] The concept and methodology used here follows that set out by Andy Haldane in his speech, "Stuck", delivered at the Open University in June 2015.

Figure 8 : Cumulative probability of recession over set timeframes: UK

Cumulative probability of at least one recession year within a ten-year horizon based on historic GDP data



Notes: The cumulative probability is defined as the probability of at least one recession within a given horizon. As per the methodology set out previously by Haldane, the probability of a recession in any given year is independent of outcomes in any other year. The solid lines define 'recession' in terms of calendar years in which real GDP contracts relative to the preceding year. The dotted line makes use of quarterly data to instead focus on periods of two successive quarters of contraction, thereby matching the technical definition of recession.

Source: S Hills, R Thomas & N Dimsdale N "Three Centuries of Data - Version 2.2", Bank of England, 2015; A Haldane, "Stuck", Speech given at the Open University, Bank of England, 30 June 2015; ONS, *ABMI*

Taking the long-run of 1700-2015, the single-year horizon probability of 29 per cent converts into cumulative probabilities of 82 per cent over five years and 97 per cent over ten years. Using the period from 1944, a single-year horizon probability of 15 per cent translates into 56 per cent over five years and 81 per cent over ten. These cumulative probabilities are slightly higher when using the historic base that starts in 1974, standing at 17 per cent, 60 per cent and 84 per cent respectively.[10]

So, if the economy conforms to the business cycle patterns of the past 40 years, then there is a three-in-five chance that we'll encounter at least one year of downturn over the next five years, rising to more than four-in-five over the course of the decade.

The results are of course entirely illustrative – it is impossible to determine what pattern the UK might follow in the coming years and there has been significant variation around the average upswing duration since 1944. Nevertheless, we look to be as close to the next economic downturn as we are to the last. At the very least, the exercise highlights the potentially high probability of experiencing at least one year of contraction in the next decade, irrespective of which historic period is used.

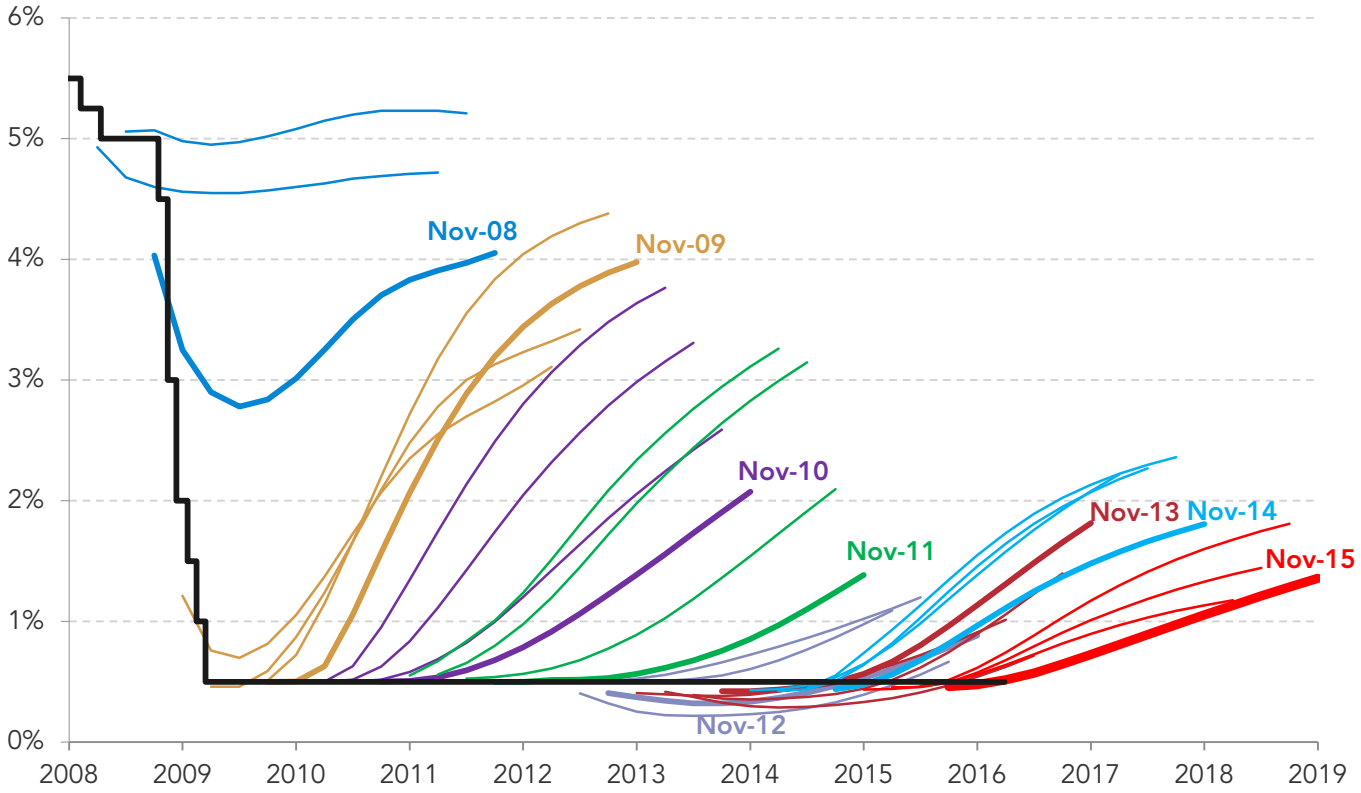
[10] Using the quarterly data the equivalent probabilities are 14 per cent, 54 per cent and 78 per cent.

Where will interest rates be when the downturn arrives?

With this in mind, the next question to resolve is what level we can expect interest rates to be at when this downturn arrives. Again this is far from an exact science. Seven years ago, when the base rate was being slashed to a new low, no one would have predicted that it would still be there today. Indeed, markets have consistently over-estimated the likelihood of a future take-off, as highlighted in Figure 9.

Figure 9: Market-based expectations for interest rates in successive editions of the Bank of England's Inflation Report

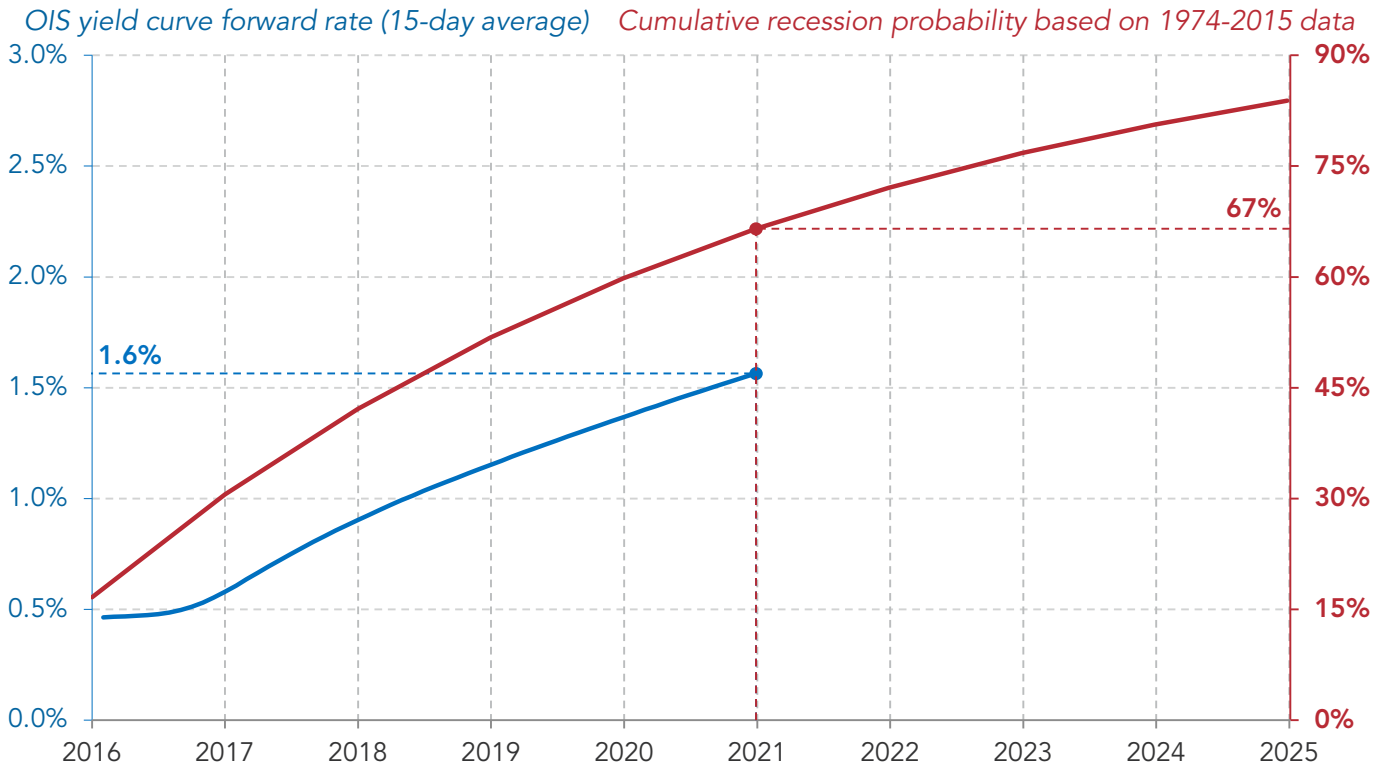
Successive market-based conditioning paths for Bank Rate: May 08 - Nov 15



Source: Bank of England, *Inflation Report*, various

Despite this poor track record, market expectations are still likely to provide the best guide to the future direction of the Bank's base rate. Figure 10 plots the same forward interest rate curve (based on overnight index swap rates) used by the Bank in setting out an implied path for the base rate. By overlaying the chart with a reproduction of the 1974-2015 version of the cumulative recession probability curve from Figure 8 we can draw some – entirely illustrative – conclusions.

Figure 10: Illustrative example of where interest rates might be by the time of the next recession



Notes: The yield curve is drawn from a 15-day average of forward rates. Overnight index swap (OIS) rates are instruments that settle on overnight unsecured interest rates and are the basis of the five-year conditioning path used by the Bank of England in its *Inflation Report*.

Source: Bank of England, *Yield Curves*

Taking the end of the forward horizon shown for interest rates, the implication is that the base rate will be at roughly 1.6 per cent the start of 2021. The recession probability curve suggests that there is a two-in-three (67 per cent) chance of having experienced a downturn by that point. In other words, there is a two-in-three chance that we will enter the next recession with a base rate of 1.6 per cent or lower.

Interest rate predictions become even more uncertain beyond this point, but we can get a sense of the broad expected pace of further rises by considering both the commercial bank liability and the government liability curves.[11] They imply rates of somewhere between 2.4 per cent and 2.6 per cent at the start of 2025 (producing an unweighted average of 2.5 per cent). Again referencing the recession probability curve, this suggests that there is a four-in-five chance of experiencing recession with rates still at or below 2.5 per cent.

While the precise figures set out above are almost certainly likely to be proved wrong in the coming years (on the upside or the downside), they at least point to the potential likelihood of facing a recession with monetary headroom well below the 5 percentage points which have formed the average loosening cycle since 1970. In the next section, we consider just what this might mean for the scale of action that might be achieved through rate movements.

[11] The commercial bank liability curve is based on sterling interbank rates (LIBOR) and on yields on instruments linked to LIBOR, short sterling futures, forward rate agreements and LIBOR-based interest rate swaps. The government liability curve relates to yields on government bonds (gilts).

Section 4

The impact of rate movements on household incomes: past and future

Having established the very real possibility of entering the next economic downturn with a base rate well below historic norms, it is worth considering the extent to which this might dampen the effectiveness of conventional monetary policy. In this section we undertake a simple thought experiment to compare the scale of savings made by households on mortgage repayments following the 2008 crisis with the scale of savings that might be available next time round.

We restrict our analysis to this very specific element of the monetary transmission mechanism – one that is likely to be more important in the UK than it is in other countries – in order to draw a direct comparison over time. We conclude that the 2008-09 rate cuts produced direct annual 'gains' for mortgage holders in the region of £24 billion. In contrast, our illustrative example suggests that a 2021 loosening would only generate £8.5 billion.

The impact of rate cuts on mortgage repayments: 2008-09

As discussed in Section 1, the monetary transmission mechanism works through a range of channels, and trying to quantify the effects of a given change in the base rate is extremely difficult. To provide some sense of the scale of impetus provided by the 4.5 percentage point base rate cut taking place between Autumn 2008 and Spring 2009, we focus below on one very specific aspect of the mechanism – namely the direct mortgage repayment reductions enjoyed by existing borrowers.

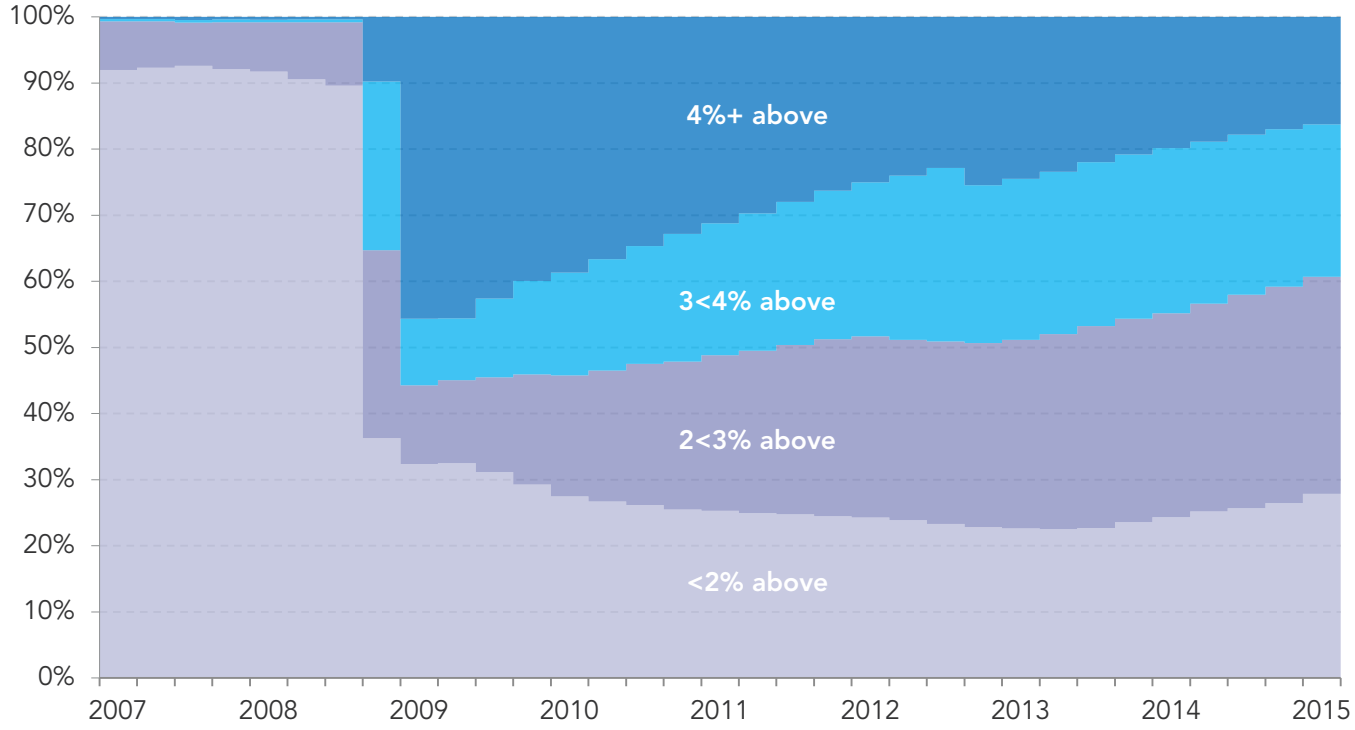
Changes in reported mortgage repayments

Again it is worth remembering that it is not the base rate itself which determines mortgage costs, but the market rates paid by households. Figure 11 provides an alternative picture of the increased spreads between the base rate and effective market rates that arose from late 2008 and which have since persisted.

It sets out the distribution of outstanding mortgage balances by distance from base rate. In 2007 and much of 2008, more than 90 per cent of balances were held on mortgages that were within 2 percentage points of the base rate, with almost all other balances being no more than 3 percentage points away. By the first quarter of 2009 however, just one-third (32 per cent) of balances were within 2 percentage points. Instead, nearly half (46 per cent) were more than 4 percentage points above.

Figure 11: Spreads of mortgage rates on outstanding mortgages above base rate: UK 2007-2015

Distribution of outstanding mortgage balances by distance above Bank base rate

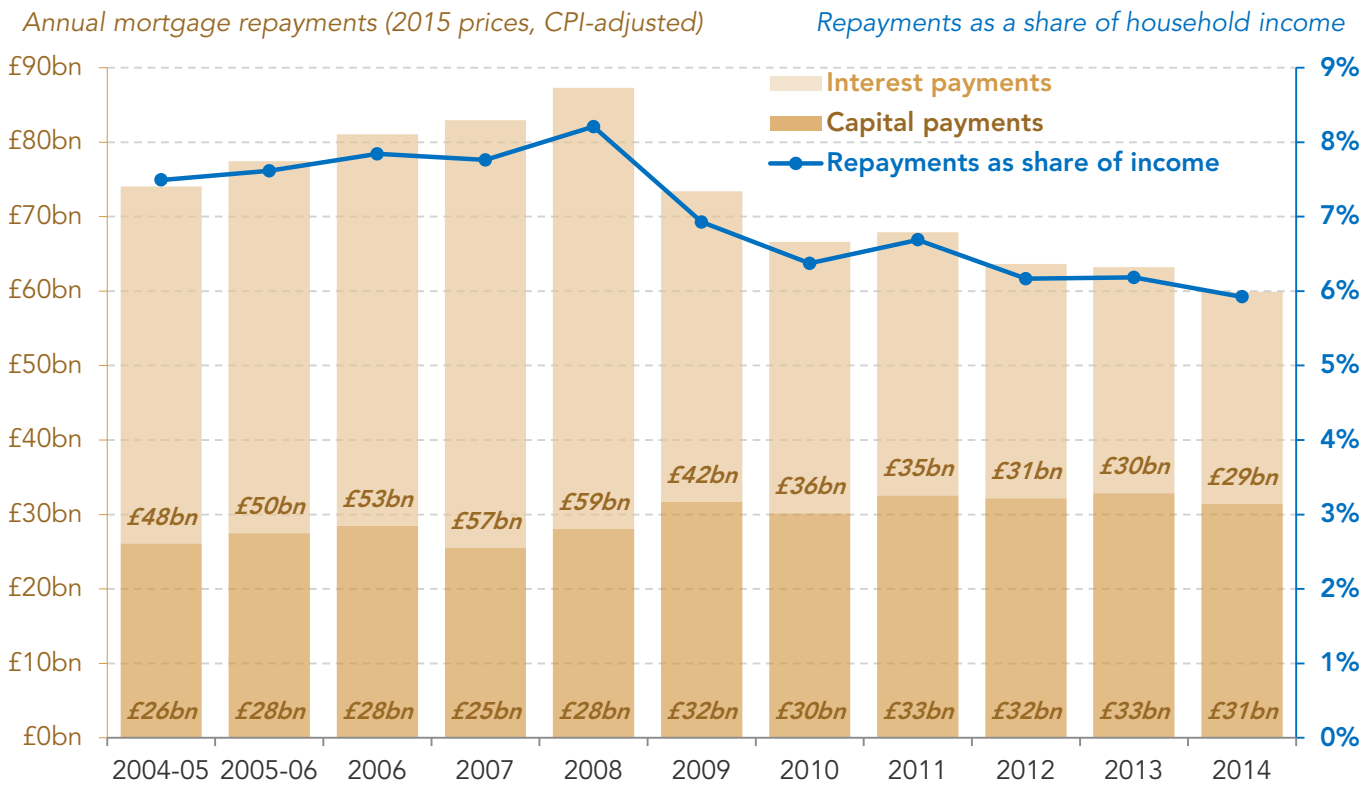


Source: Bank of England, MLAR Table 1.22

In addition to the failure of providers to fully pass through cuts, this of course reflected the fact that a portion of borrowers held fixed rate products and couldn't instantly move to a lower rate without incurring a charge. Since that initial point, the proportion of balances more than 4 percentage points above the base rate has steadily fallen, with old deals ending and credit conditions easing – though it still remains at 16 per cent, much higher than pre-crisis.

Despite this increase in spreads, rates on mortgages have clearly fallen significantly over the period. Figure 12 sets out aggregate mortgage repayments made by UK households from 2004-05 onwards, presenting the data in both money terms and as a share of aggregate household disposable income. Repayments peaked at £74 billion in 2008, equivalent to 8.2 per cent of aggregate household income. They fell sharply in 2009 and 2010, before plateauing. By 2014 total repayments amounted to £60 billion, or 5.9 per cent of income. Measured on a per-mortgagor household basis this amounts to an average reduction in annual costs of roughly £1,500 between 2008 and 2014 (from around £8,900 a year to £7,350).

Figure 12: Aggregate annual mortgage repayments: UK 2004-05 to 2014



Notes: 'Household income' is a variant of the standard National Accounts measure of gross household disposable income. It is an ONS experimental statistic, which removes imputed rents, includes interest received and excludes interest paid ('gross interest' method).

Source: ONS, *Living Costs and Food Survey*; and ONS, *Alternative measures of RHDI and saving ratio*

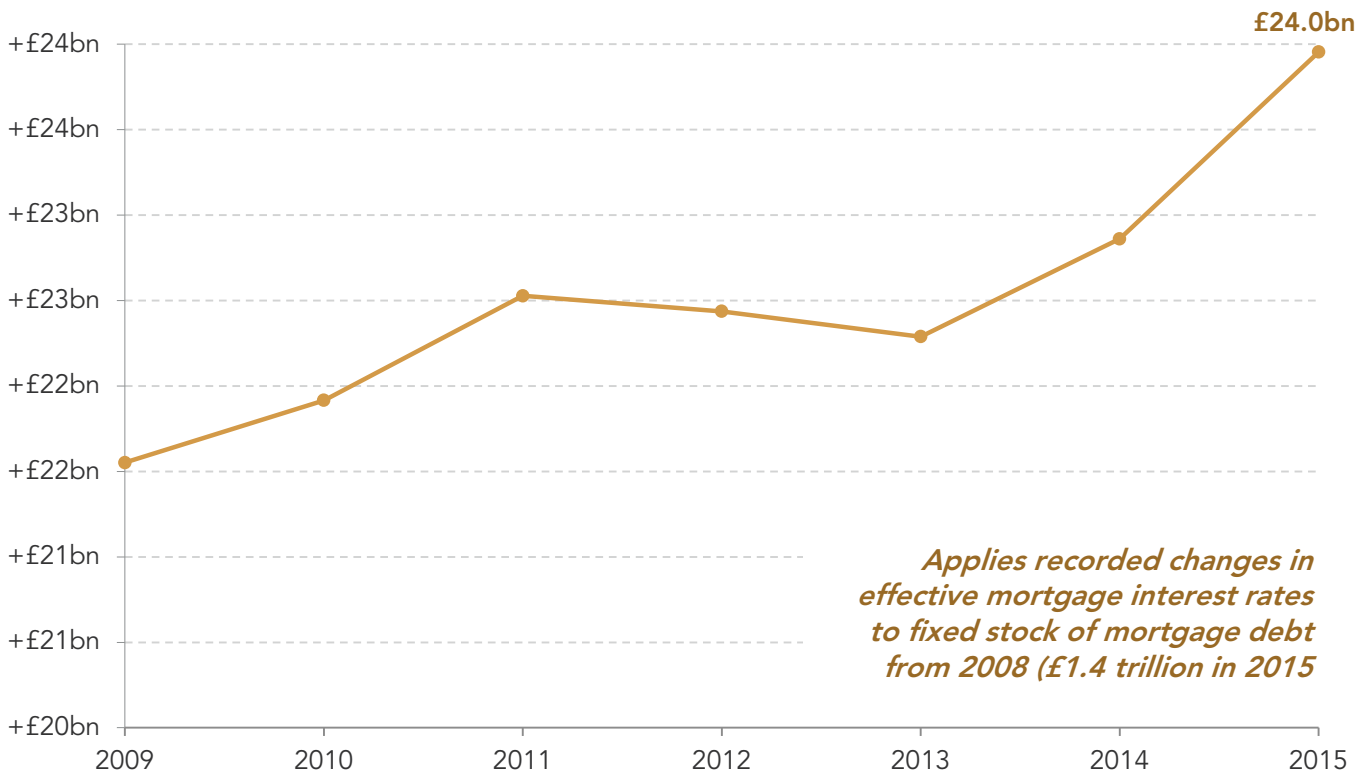
Isolating the interest rate effect

These effects are easy to capture, being directly reported in household surveys and by financial providers. However they combine the effects not just of rate movements on the repayments of existing borrowers, but also new borrowing decisions made in the light of a changed economic environment. There was, for example, a sizeable reduction in the number of mortgagor households over the period (from 9.7 million to 8.2 million) and an increase in the value of the average mortgage held (from £141,000 to £153,000).

In order to better isolate the effects of the base rate cuts, we can construct an alternative schedule of debt repayments on the basis of an unchanged baseline of debt volume. That is, we hold constant the £1.4 trillion mortgage total of 2008, but apply the effective mortgage rates recorded after 2008. This simplified approach means that we are no longer capturing what actually happened to repayments, but are instead producing a figure which reflects the direct impact of rate cuts on the stock of debt that existed at the time of the policy decision. Crucially, this also helps us to make a direct comparison to the thought experiment we set out below on what might happen in the next downturn.

Figure 13 presents the household 'gains' associated with this illustrative approach. As we might have predicted given the gradual decline in mortgage spreads set out in Figure 11, the savings associated with the initial base rate cut grow over time. The overnight 'gain' in 2009 amounts to £22 billion. By 2015, annual repayments applying to the 2008 mortgage total of £1.4 trillion are shown to be some £24 billion lower than they would have been in the absence of any change in mortgage costs.

Figure 13: Direct annual household 'gains' associated with mortgage rate movements: UK 2009 to 2015



Notes: Estimates are based on holding constant aggregate levels of outstanding mortgages and applying the actual pattern of effective interest rates (that is, quoted rates that are weighted to account for the distribution of balances across different mortgage products). Results therefore show the aggregate annual change in repayments relative to a 2008 baseline. For the purposes of illustration, this analysis deliberately ignores the effects of changes in the overall stock of debt from 2009 onwards.

Source: Bank of England, *series VTXK & HSDE*; and ONS, *Living Costs and Food Survey*

Debt, savings and marginal propensities to consume

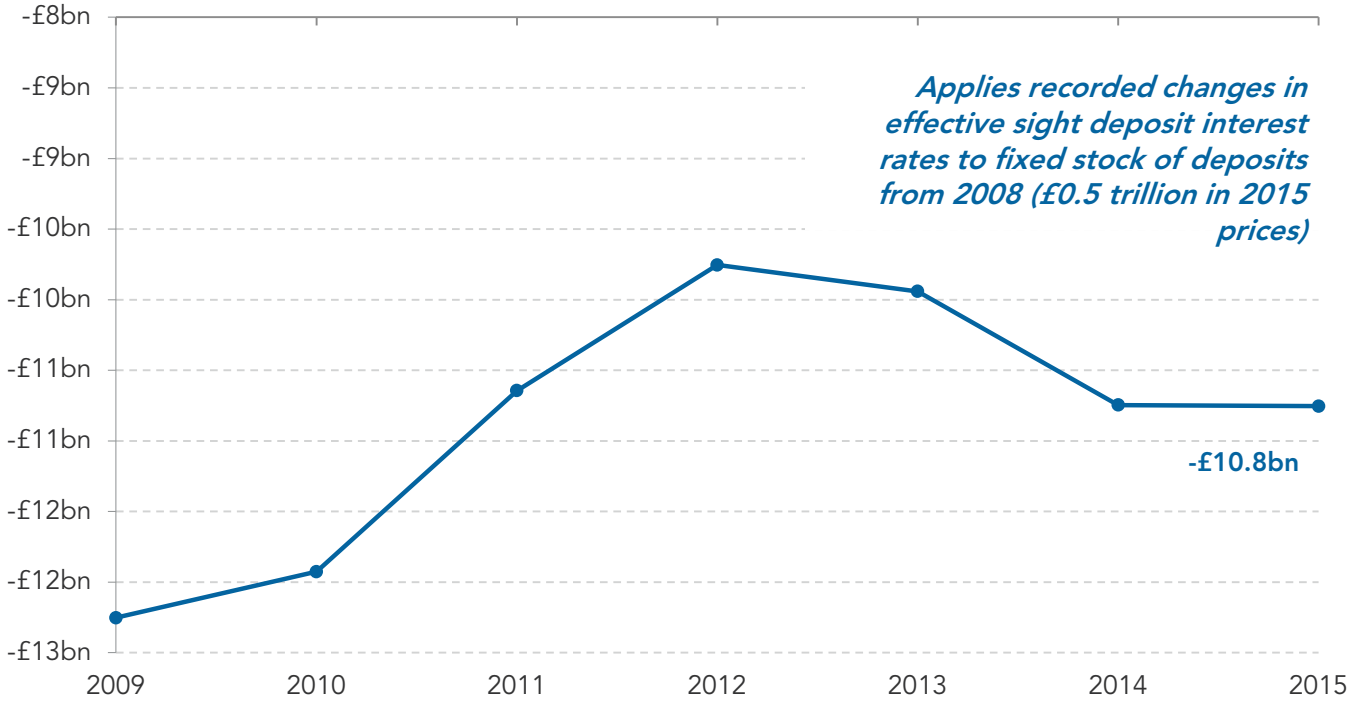
Of course, the analysis above does not imply that UK households were made £24 billion better off as a result of rate movements. As well as excluding the effects of reductions in rates on loans, overdrafts, credit cards and other consumer credit products, it also fails to account for falls in the returns on savings. In general, borrowers will have gained while savers will have lost – with the aggregate balance difficult to pin down.

By way of illustration, we repeat the exercise set out above for savings. Specifically we focus on interest-bearing 'sight deposits', those accounts which generate a return but which provide instant access to their holders. Effective rates on such accounts fell very rapidly from 2.9 per cent in 2008 to just 0.8 per cent in 2009 (though this represented a significant *increase* in spread over the base rate – maintenance of the existing difference would have resulted in negative interest rates). They then rose slightly due to renewed competition for deposits among providers, before falling back to 0.8 per cent in 2014 and 2015.

The pattern of 'losses' on savings set out in Figure 14 reflect these rate movements. By 2015, interest on the £0.5 billion balance of savings that existed in 2008 would have been £10.8 billion higher had rates not moved.

Figure 14: Direct annual household 'gains' associated with saving rate movements: UK 2009 to 2015

Direct annual household 'gains' associated with sight deposit rate changes (2015 prices, CPI-adjusted)



Notes: Estimates are based on holding constant aggregate levels of sight deposits from 2008 onwards and applying the actual pattern of effective interest rates. Results therefore show the aggregate annual change in returns relative to a 2008 baseline. For the purposes of illustration, this analysis deliberately ignores the effects of changes in the overall stock of savings from 2009 onwards.

Source: Bank of England, series Z3TH & HSCV

Of course, these mortgage and savings effects can't simply be added together to produce an overall 'net household gain' figure because of the continued exclusion of many financial products. But the comparison of scale is interesting, particularly when we consider the impact of differing marginal propensities to consume – that is, the proportion of each additional pound of income that an individual chooses to spend rather than save.

While there is obviously much uncertainty surrounding such estimates, recent Bank of England work suggests that borrowers had average marginal propensities to consume in the region of 0.5 in 2015, while savers had average marginal propensities of around 0.1.[12] Clearly then, the boost associated with 'gains' on repayments can be expected to be greater than the drag associated with 'losses' on savings.

While the magnitude of the impact of any rate cut is hard to estimate, it is clear that policy action has the ability to affect economic outcomes in a meaningful way. With millions of UK households holding very large levels of debts heading into the last crisis, the Bank's reaction in 2008-09 and beyond has certainly offered vital support to the household sector and to the economy more widely.[13] Such direct support may not be so readily available next time.

[12] More precisely, the figures quoted for 2015 are 0.48 and 0.09, which are described as being broadly in line with previous estimates. P Bunn, L Draper, J Rowe & S Shah, "The potential impact of higher rates and further fiscal consolidation on households: evidence from the 2015 NMG Consulting survey", *Quarterly Bulletin,* Bank of England, December 2015

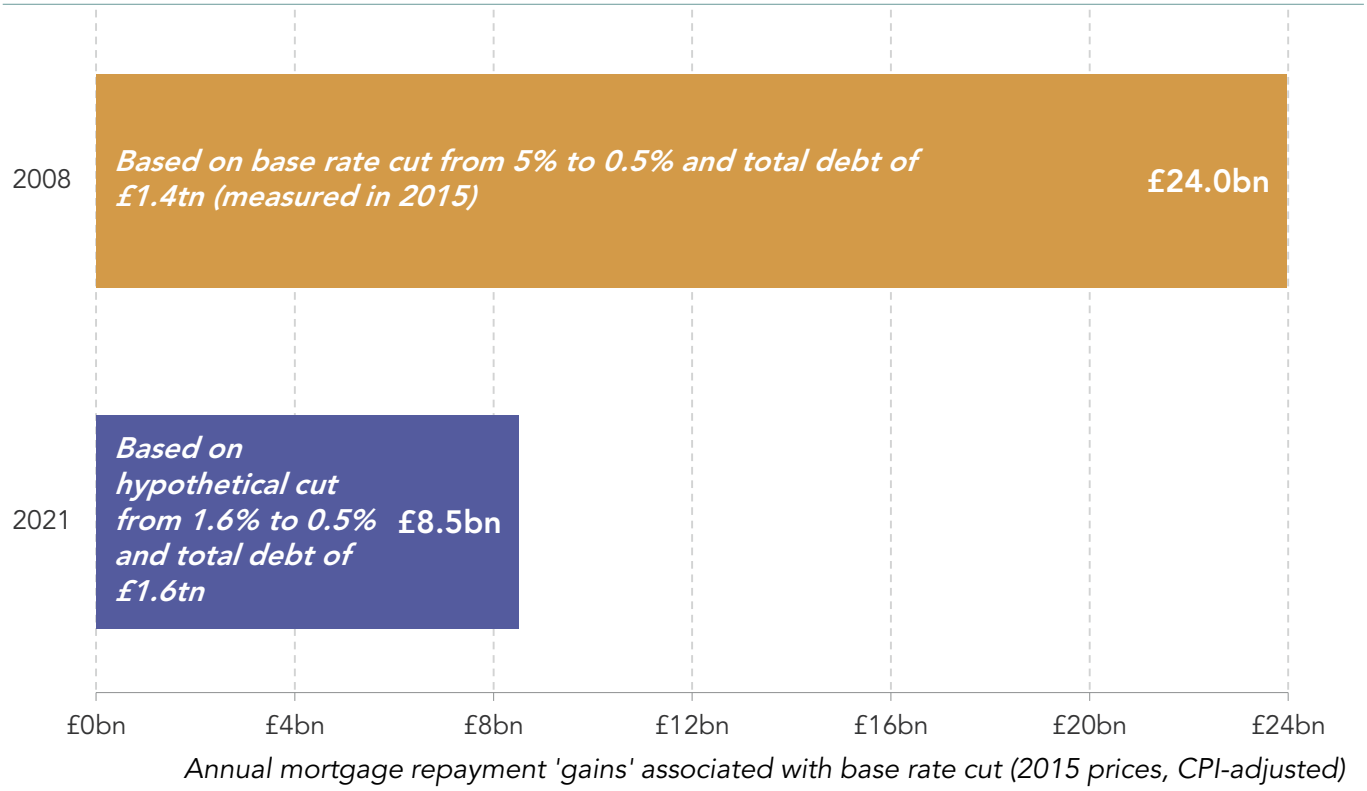
[13] M Whittaker & K Blacklock, *Hangover Cure: Dealing with the household debt overhang as interest rates rise*, Resolution Foundation, July 2014

The impact of rate cuts on mortgage repayments: 2021

By way of trying to understand just how much the effectiveness of base rate cuts might be dampened when the next recession hits, we undertake a very simple thought experiment. Building on the recession probability curves and forward interest rate paths explored in Section 3, we consider the scale of potential savings that might be achieved on mortgage repayments in the specific case of a downturn arriving in 2021 with the base rate standing at 1.6 per cent.

We establish a projection for total mortgage debt in 2021 of around £1.6 trillion in today's prices.[14] We then apply effective mortgage interest rates that have risen in accordance with a higher base rate. In determining just what those rates should be, we assume that their movement relative to the base rate is in keeping with what was observed after 2008. By 2015, effective mortgage rates had fallen by 60 per cent as much as the base rate had relative to a 2008 baseline. Therefore we assume that the 1.1 percentage point increase in the base rate that would be associated with a 1.6 per cent base rate translates into a 0.6 percentage point rise in mortgage rates.[15]

Figure 15: Illustrative comparison of the mortgage 'gains' associated with different base rate scenarios



Source: RF modelling

In the face of an unexpected downturn, we then cut the base rate back to 0.5 per cent (with mortgage rates therefore falling back precisely to their 2015 levels). We take 0.5 per cent as our lower limit on the assumption that the future MPC again pauses at that point. Clearly however, the lower bound may well be below this point (see Section 5).

[14] This is based on OBR projections to 2020 and an assumption that the growth rate is constant in the following year.

[15] That is, 60 per cent of 1.1 percentage points.

Figure 15 sets out the results. The higher stock of debt assumed in 2021 means that there is effectively more bang for a given monetary buck, but this is more than offset by the much reduced headroom available in 2021. Compared with the £24 billion a year mortgage 'gain' identified above, the new base rate of 1.6 per cent provides just £8.5 billion – roughly one-third as much.

The ratio is a little higher again if we measure the gains relative to prevailing household disposable income: the £24 billion figure equates to 2.3 per cent of disposable household income in 2015, while the £8.5 billion corresponds to just 0.7 per cent of projected income in 2021.[16]

It's also worth noting that the effective mortgage rates used for the 2008 simulation relate to 2015 – a point by which spreads had narrowed somewhat from their initial post-2008 spike. The 2021 simulation effectively assumes that this position is achieved overnight. In practice, the £8.5 billion 'gain' might take some time to become established.

Taking this highly illustrative thought experiment at face value, we might conclude that there is a two-in-three probability that an economic downturn will arrive within the next six years at which the direct boost to mortgage holders available via rate cuts will amount to just a third of the size of the one available last time round.

Even if the downturn takes longer to arrive, or rates rise a little quicker than anticipated, similar modelling suggests that a base rate of 2.5 per cent would deliver an equivalent £16 billion 'gain' – still one-third lower than the 2008-09 episode.

As stated several times, the variety of figures set out in this section are no more than illustrative. All are subject to considerable uncertainty and there are any number of reasons why circumstances might pan out differently. They should, however, give both a sense of the potentially much-reduced scope that would be available to monetary policy makers if another economic downturn were to arrive within the next decade and the plausibility of such a scenario unfolding.

It's possible of course that we might enjoy uninterrupted growth for longer than history suggests, reducing the immediacy of the problem. But the low interest rate environment is likely to be around for some considerable time – as explored in the next section.

[16] As in Figure 12, we use the ONS experimental 'household income' statistic as our denominator here. This is a variant of the standard National Accounts measure of gross household disposable income which removes imputed rents, includes interest received and excludes interest paid ('gross interest' method). We use the recorded figure for 2008 and establish a projection for 2021 by applying the OBR's projections for growth in the standard disposable income measure.

Section 5

Low for longer? The new interest rate environment

The contention that interest rates are likely to rise only gradually in the coming years, approaching a 'new normal' that is below the pre-crisis average is one that is not confined to the UK. Nominal rates have been drifting downwards across advanced economies for some time. In part this reflects declines in inflation and inflation expectations. But falling long-term real rates appear to be exerting the most sustained force. And a similar picture exists in emerging markets.

Understanding this apparently secular decline in real rates across the globe is key to determining the likelihood of the UK's base rate settling at a new lower equilibrium in the coming years. In this section we review recent literature in this area in order to reflect on what has driven the steady fall of the world real interest rate and the prospects for these pressures to persist.

The steady fall of global interest rates

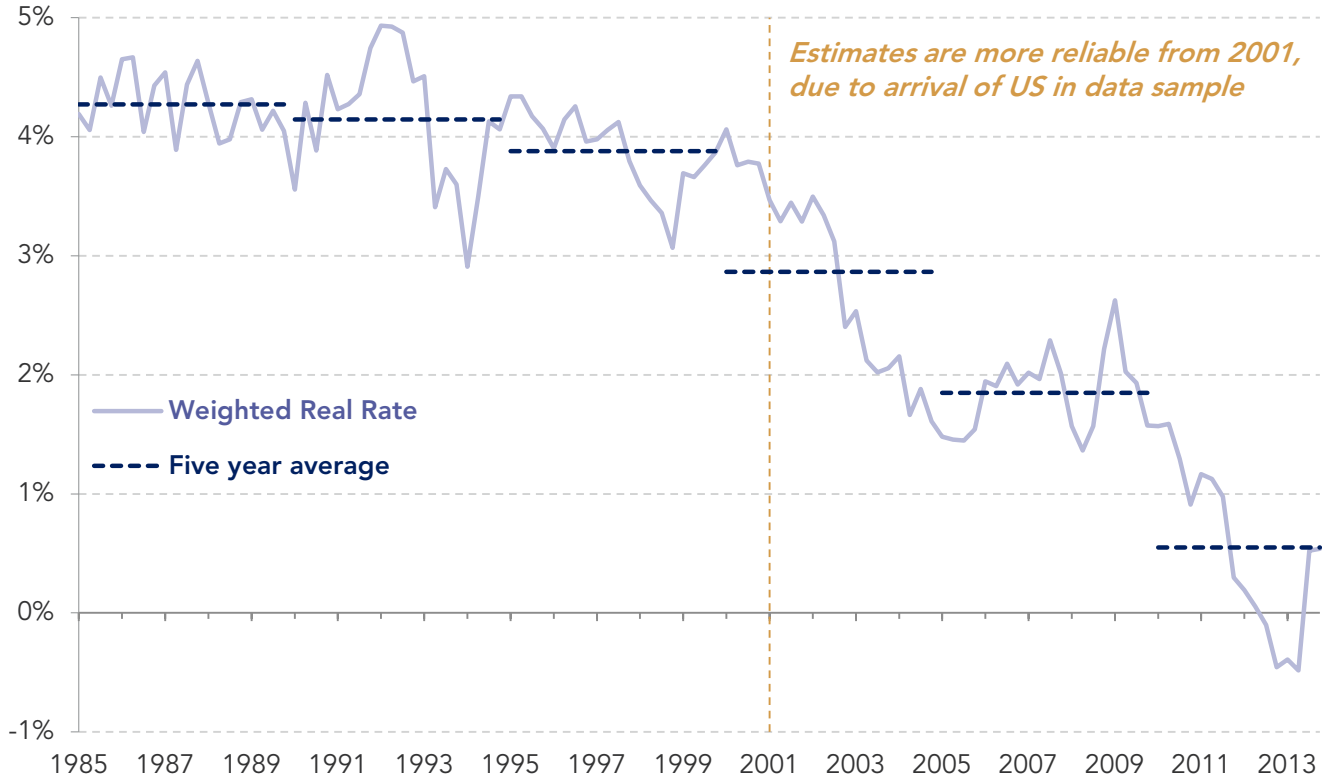
While somewhat difficult to measure, King and Low have created a composite 'world' real interest rate measure, which appears to confirm that rates have been trending downwards (across advanced economies at least) over the last three decades. Figure 16 overleaf reproduces their data showing the weighted rate falling from a five year average of 4.3 per cent between 1985 and 1989 to a five-year average of 1.8 per cent between 2005 and 2009. That is, even before the financial crisis hit, rates had been on a steady downward path.

Clearly there has been a further ratchet down post-2008 (with the average dropping to 0.6 per cent), some of which may be cyclical, but the longer-run evidence is clear. There may be a number of factors driving this downward drift, but the fact that it has occurred simultaneously across a range of advanced economies leads many to conclude that the global neutral real rate[17] may have fallen. But what's driven that secular reduction and how likely is it that these downward pressures will persist over the coming decades?

[17] That is, the rate of interest at which global GDP grows at trend and inflation is stable.

Figure 16: 'World' real interest rate: 1985-2013

Ten-year world 'real' rates, G7 excluding Italy (GDP weighted)



Notes: Series is based on the average ten-year yield of inflation-linked bonds in the G7 countries excluding Italy, weighted based on GDP shares (the unweighted version of the series is little altered). Italy is excluded because post-crisis rate movements in the real rate in Italy were significantly affected by the implicit risk premium associated with the possibility of default. The UK figures are adjusted to account for expectations of the RPI-CPI wedge.

Source: M King & D Low, *Measuring the "world" real interest rate*, NBER Working Paper Series, NBER, February 2014

Explaining the fall: growth, savings and investment

Recent research from the Bank of England provides a comprehensive dissection of the various potential drivers of the falling global rate over the last 30 years, attempting to quantify the relative importance of each explanation. We reproduce the results in Table 1 overleaf and spend a little time discussing the different accounts offered in the paper.

Table 1: Bank of England decomposition of drivers of the declining global neutral rate: 1980-2015

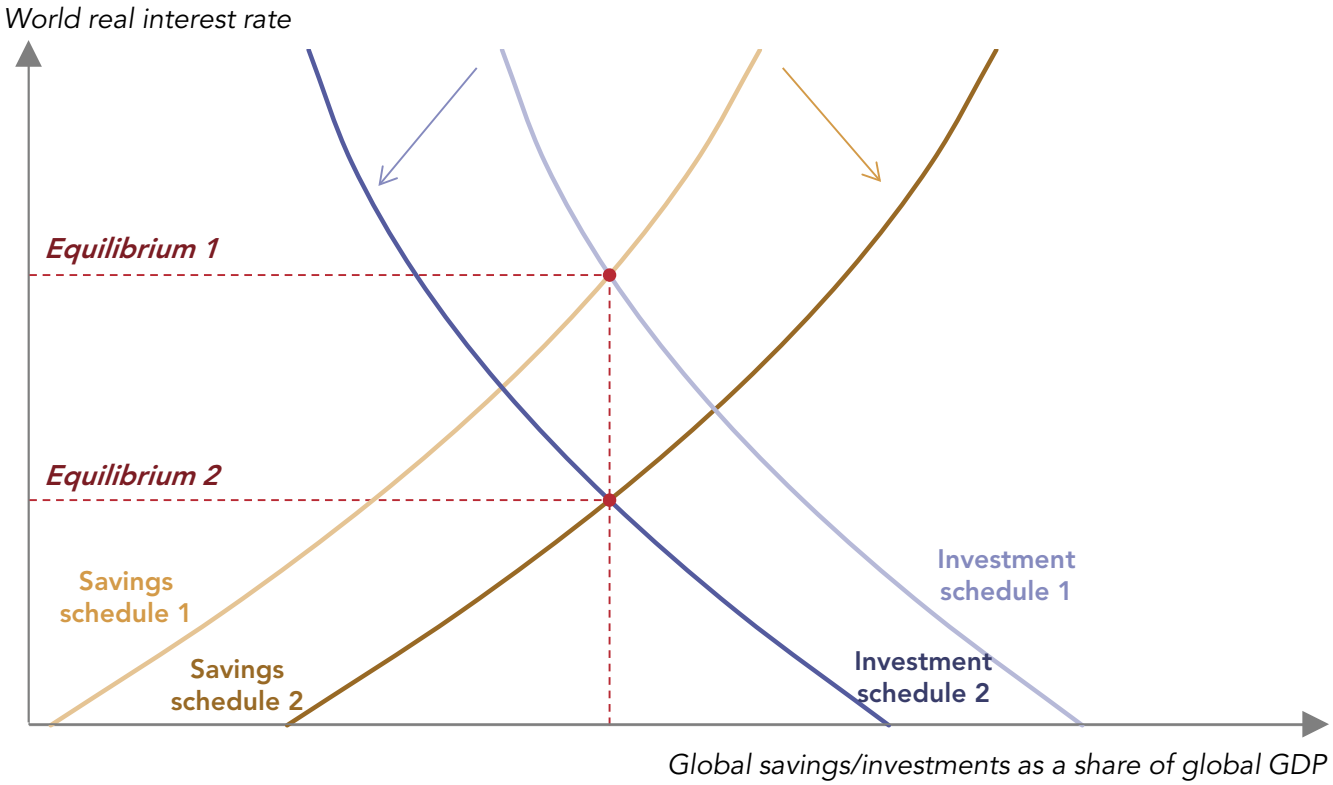
Drivers of global real interest rates	Percentage point reduction *1980-2015*
Weaker global growth prospects	**1.00**
Savings and investment preferences	**3.00**
Higher desired saving	1.60
demographic factors	*0.90*
inequality within countries	*0.45*
global savings glut	*0.25*
Reduced desired investment	1.40
decline in price of capital relative to consumption goods	*0.50*
reduction in public investment	*0.20*
increased spread between risk free rate and return on capital	*0.70*
Unexplained	**0.50**
Total percentage point change in global neutral rate, 1980-2015	**4.50**

Source: L Rachel & T D Smith, *Secular drivers of the global real interest rate*, Staff Working Paper No. 571, Bank of England, December 2015

The researchers explain around 4 percentage points of an overall 4.5 percentage point decline, with weaker global growth prospects explaining just 1 percentage point. Nearly all of this relates to the post-crisis period – in particular to reassessments of growth prospects and general growth gloom connected to concerns over demographic trends (reducing global labour supply) and technological headwinds (such as a plateau in educational attainment).

The bulk of the overall global neutral rate reduction is instead explained by changed savings and investment preferences which have been in evidence for considerably longer. Taken together, an increase in the world's desired savings level and a reduction in investment desires are believed to have reduced the real interest rate associated with an equilibrium level of savings and investments, as illustrated in the stylised Figure 17.

Figure 17: Stylised S-I framework



Savings preferences have been reduced in part by demographics (accounting for 0.9 percentage points of the global neutral rate fall) related to a declining global dependency ratio. While increased longevity has increased the world's older population, falls in fertility and the movement of the baby boomers through the working-age population have more than offset this.

The research assigns a further 0.45 percentage point of the overall global rate reduction to rising inequality within countries. Richer households tend to have lower marginal propensities to consume and, as inequality grows, so an increased share of national income flows such families – and therefore ultimately towards savings preferences rather than spending.

The finalexplanation given for the shift outwards in the savings schedule relates to the emerging markets savings glut. This picks up increases in the holding of foreign exchange reserves by emerging markets seeking to avoid a repeat of the Asian crisis of 1998 and is estimated to account for a 0.25 percentage point reduction in the global rate.

Taken together, these three drivers are believed to have pushed the savings schedule to the right in Figure 17, meaning that any given world interest rate is associated with an increased desired level of savings. Yet despite this shift, global savings rates *haven't* increased over the last 30 years thanks to an offsetting shift to the left in the investment schedule which has resulted in a broadly unchanged equilibrium at a lower level of interest. That is, investment preferences have declined.

The relative price of capital goods is estimated to have fallen by 30 per cent since the 1980s across a selection of advanced economies. This means that any given project can be concluded with less investment, thereby directly reducing desires. Of course, lower capital costs should also incentivise additional investment. But the elasticity of investment appears to have fallen over the period, meaning that it is the direct effect of falling capital costs which dominates. Overall,

the falling relative cost of capital is estimated to account for 0.5 percentage points of the 30-year decline in the global rate. Lower public investment accounts for a further 0.2 percentage points, with higher spreads between the risk free interest rate and the rate of return on capital believed to account for another 0.7 percentage points.

Prospects for the global rate

While the specific figures allocated to each of the drivers set out in the Bank paper are, of course, subject to significant uncertainty, the explanations provided are compelling. And the researchers conclude that most of the forces look set to persist – or even strengthen – in the coming years. This chimes with what appears to be a broad consensus on the future path of interest rates – globally as well as in the UK – that they will remain below historic averages for some time to come.[18]

But clearly there is no guarantee of this, and some economists have pointed to forces which might reverse some of the recent secular trends in the coming years. Most notably, the so-called Goodhart-Nangle[19] hypothesis argues that demographic factors are about to start pushing the neutral rate back up again.

Specifically, the hypothesis argues that the decline in the global rate described above has been driven primarily by demographics. The entrance into work of the baby boomer generation in advanced economies in the 1970s and 1980s and the arrival on the world stage of Chinese and Eastern European labour during the 1990s produced a global glut of labour that helped to constrain wages, hold inflation in check, reduce investment, raise inequality and lift savings preferences.

With the baby boomers now entering retirement, the expectation is that savings preferences will fall (pensioners are less likely to want to save than are those approaching retirement). At the same time, the ageing of China's and Germany's populations is expected to reduce their current account surpluses.

While investment desire is also projected to fall, the hypothesis rests on an assumption that this decline will be smaller than the reduction in savings, helping to push up interest rates. In part this is expected to reflect a need for further investment in real estate, in order to correct the current under-supply of housing. In addition, it is expected to flow from increased investment incentives associated with an increase in the capital-labour ratio (labour costs will be rising as the smaller workforce commands higher pay even as capital costs continue to fall).

Important though the Goodhart-Nangle insight is, it remains unclear as to whether the forces it identifies will be sufficient to shift the global neutral rate in any meaningful way – not least because it omits some potentially strong countervailing forces.[20]

Perhaps most tellingly, the very wave of ageing which Goodhart-Nangle rests on brings with it a potential new drag on economic growth. Indeed, this element is included within the decomposition undertaken by the Bank described above. It is estimated to have dampened global growth by around 1 percentage point since the 1980s and is expected to reduce growth by a further 0.5 percentage point in the coming decade. This underpins the assessment that demographic factors have contributed towards the 1 percentage point reduction in the global neutral rate associated with reduced growth expectations.

[18] See for example, C Giles & E Cadman, "Economists' forecasts: Interest rates to stay low", *Financial Times*, 3 January 2016

[19] Advanced separately by Charles Goodhart and Toby Nangle. See C Goodhart, M Pradhan & P Pardeshi, *Could Demographics Reverse Three Multi-Decade Trends?* Morgan Stanley Research, September 2015; and T Nangle, "Labour power sets the neutral real rate", *VoxEU*, 9 May 2015

[20] Such as the way in which the presence of the politically powerful baby boomer generation among the retired might skew public policy further away from today's workers.

The magnitude of these different and potentially competing effects is clearly impossible to predict. However, even if demographic changes do act to push global – and therefore UK – interest rates up, the effect is unlikely to be felt in the short-term. The reality is that rates are likely to remain low for the foreseeable future at least. And in any event, the risk of rates remaining lower over the medium- to long-term is significant enough to warrant serious consideration of the associated implications and potential policy alternatives. We turn to these in the next section.

Section 6

Living with lower rates

The prospect of rates staying lower for much longer raises a number of consequences. Potential policy headroom is reduced not just in relation to dealing with the next recession, but across the entirety of the business cycle. Stimulating and dampening growth in the economy is likely to require a re-evaluation of the Bank's policy tools. Indeed, there may even be a case for a change in remit or target.

In this section we briefly outline some of the key challenges posed by a sustained period of low rates and explore the options for alternative policy approaches.

The consequences of proximity to the zero lower bound

Economic theory assumes that nominal interest rates cannot fall much below zero. Beyond this point – the zero lower bound – households and firms are likely to start substituting into cash. So, while the Bank of England might have a little more room than implied in our modelling in Section 4 (in which we assume it cuts rates back to 0.5 per cent), the scope for moving much beyond this appears somewhat limited.

A new era of lower rates therefore has significant potential consequences for the Bank's ability to respond to adverse economic shocks via conventional channels. As outlined in the previous section, the impact of this constraint on the effectiveness of monetary policy could be significant.

Lower rates might also pose financial stability problems, both as a result of investors pursuing riskier returns in a 'search for yield' and due to the development of bubbles in certain sectors such as housing. New macro-prudential tools have been introduced in an attempt to combat such issues. But the extent to which such tools will be able to deal with the variety of pressures that could arise over the coming decades remains uncertain. And interconnectedness across countries might blunt the ability of domestic authorities to contain financial stability risks – pointing to an increased need for coordination across borders. The response to being at the zero lower bound is only likely to get more complex.

Policy options in the absence of conventional monetary headroom

Faced with these new challenges, policymakers are exploring a range of alternatives. All have their opponents and carry new risks, but all are worthy of discussion. Below we detail five broad approaches.

Quantitative easing

With rates at or close to the zero lower bound for some time already, many central banks – including the Bank of England – have already developed unconventional policy approaches. As discussed in Section 1, QE has attempted to stimulate demand in the economy without recourse to the base rate.

However, it is still relatively early days for these unconventional measures. Their impact is not yet fully understood[21] and there is concern that QE will be less effective in an environment of low long-term rates.[22] And sustained and extensive use could be argued to take central banks into political territory, blurring the line between monetary and fiscal policy.

That has led some to propose extending QE into the territory of direct monetary financing of state expenditure. Whether that spending is via 'helicopter money' – an approach advocated by Adair Turner among others[23] – or not, it might be considered to represent a permanent, real economy version of QE. It clearly brings with it a host of political economy challenges.

In practice, if another significant downturn were to hit in the near-term, QE might again provide a useful source of short-term stimulus. But it is unclear whether it can form a meaningful part of the solution to the secular decline in interest rates. At the very least it is vital that more evidence of its recent effectiveness in different parts of the globe is shared, studied and debated before it becomes a permanent, automatic part of central banks' toolkit.

Negative interest rates

A number of European central banks – including the ECB – have already breached the zero lower bound. Negative interest rates in Denmark, Sweden and Switzerland have resulted in charges being applied to deposits and returns being paid on loans; yet there is little evidence as yet of any flight to cash hoarding.[24]

Given the storage costs associated with cash and its relative lack of liquidity for certain purposes (suc as paying household bills), it has always been assumed that the lower bound is actually a little below zero, but just where the limit lies is highly uncertain. Aligned with relatively radical moves such as removing physical cash or charging interest on it, it could be that the zero lower bound could be pushed significantly below past expectations.[25]

Nevertheless, there is much uncertainty over the longer-term consequences of this approach – with exchange rate impacts likely to be a particularly important consideration for an open economy like the UK. And of course, even if the bound can be pushed below zero, at some point a limit must be reached.

Higher inflation targets

Raising central banks inflation targets – which have tended to fall over recent decades, converging around 2 per cent in advanced economies – provides an alternative means of generating extra policy headroom. Today's inflation targets mean that historic real interest rate averages of 4 per cent translated into nominal rates of roughly 6 per cent, leaving plenty of room above the zero lower bound. With average real rates having fallen much lower, maintaining such headroom would require a higher inflation wedge.

As the Bank of England's chief economist has argued, the optimal target inflation is likely to be state-dependent, with the proximity of the zero lower bound being one of the factors that should

[21] See for example, G Vlieghe, *Debt, Demographics and the Distribution of Income: New challenges for monetary policy*, Speech at the London School of Economics, 18 January 2016

[22] See for example, C Bean, *Are low rates natural?*, Presentation at Monetary and Financial Policy Conference, 25 September 2015

[23] A Turner, *Between Debt and the Devil: Money, Credit and Fixing Global Finance*, 2015

[24] See for example, J Alsterlind, H Armelius, D Forsman, B Jonsson & A Wretman, *How low can the repo rate be cut?* Sveriges Riksbank, 30 September 2015

[25] See for example W Buiter, *High Time To Get Low: Getting Rid Of The Lower Bound On Nominal Interest Rates*, Citi Research, 9 April 2015

be considered in setting the rate.[26] With the global neutral rate appearing to be much lower today than at the time when the Bank's inflation target was set, there is certainly merit in the government looking at the continued appropriateness of the existing level.

The key risk with a target change relates to the possibility that it might de-anchor inflation expectations. It might be the case that people are accepting of a 2 per cent inflation target on the basis that it's not so different from zero; but a 4 per cent target might have a different psychological effect. There is likely to be at least some mistrust associated with moving the goalposts. However, it is worth balancing this risk against the reputational damage that might accrue if the zero lower bound constrains the Bank's ability to stimulate the economy in line with the existing inflation target.

Of course, with inflation barely above zero in the UK, the prospect of raising the target rate to 3 per cent or 4 per cent may feel somewhat like dealing with the failure to shed a couple of pounds by setting a new weight loss target of one stone.

Relationship with fiscal policy

If monetary policy is more constrained in its ability to stabilise the business cycle in an era of lower neutral rates, then the implication is that fiscal policy may have to become more active.

One argument is that the government's current policy of fiscal tightening is placing too great a burden on monetary policy, weighing down the base rate. Prior to the Autumn Statement, David Miles estimated that fiscal policy represented a headwind on the base rate of around 0.75 percentage points.[27] The slower pace of fiscal tightening subsequently announced at the Autumn Statement is likely to mean that that headwind has eased slightly (and the figure was always framed as indicative rather than definitive), but it is likely to remain non-negligible.

The Chancellor's fiscal consolidation plans are designed to deliver an overall surplus by 2019-20 in accordance with the new 'mandate for fiscal policy'. This approach is designed to make rapid progress on lowering the debt-to-GDP ratio (it's possible to run a modest annual deficit while still reducing debt-to-GDP at a slower pace) as a means of creating fiscal headroom for when the next crisis hits. To the extent that this approach is making it harder for the Bank of England to secure headroom of its own, it is worth posing the question of what the appropriate balance between fiscal and monetary policy should be.

This balance clearly matters: lower rates since 2008 have benefited mortgage holders and penalised savers; QE has supported asset prices; while fiscal consolidation has tended to favour pensioners over working-age households. The distributional consequences of focusing on monetary over fiscal or fiscal over monetary are significant. And overall policy effectiveness will also be affected by the chosen balance.

Structural reform

As with QE, fiscal policy might provide a flexible option for dealing with another downturn in the near-term. But deeper structural reforms are likely to also be needed as part of a more sustainable response from government.

In particular, government policy might play a role in tackling the demographic and technological headwinds to growth prospects identified in Section 5.

In relation to growth-dampening effects of an ageing population for example, new efforts might be made to boost participation levels. Increases in the state pension age are already helping to raise labour supply among older people; but more can be done. Indeed, it is likely that the Chancellor's

[26] A Haldane, *How low can you go?*, Speech at Portadown Chamber of Commerce, 18 September 2015

[27] D Miles, *"Don't just do something stand there"… (and think)*, Speech to the Resolution Foundation, 14 July 2015

pursuit of 'full employment' will only be realised if policies are developed that lift participation among groups such as the disabled.[28]

Importantly, if rates are lower for longer, then there is an even stronger case for government to engage in a new period of public investment – taking advantage of very low borrowing costs and helping to shift the investment schedule to right at the same time (or at least not contributing to a further pull to the left). As the IMF's economic counsellor Maurice Obstfeld has stated: "the case for infrastructure investment seems compelling at a time of very low long-term real interest rates".[29]

Assuming the global real rate remains low by historic standards in the coming years, central banks will find themselves increasingly confronted by the zero lower bound. While many of the options proposed as a means of dealing with that eventuality provoke some discomfort among policy makers, it is important that we have the conversation now about what approaches we can take in the coming years, rather than repeating the experience of implementing a policy with little debate during a crisis.

[28] L Gardiner, *The path to full employment requires a greater focus on inactivity*, Resolution Foundation, 12 January 2016

[29] M Obstfeld, *World Economic Outlook: Adjusting to Lower Commodity Prices*, IMF, October 2015, pxiv

Conclusion

Monetary loosening undoubtedly played a vital role in supporting the UK economy following the onset of the global financial crisis in 2008. Yet it has been a sometimes uncomfortable experience. Having crashed into the zero lower bound, the Bank had to embark on a largely untested programme of QE – with the ultimate effects of that policy still not being fully understood.

In this report we have shown that there is a very real chance that the Bank will face the zero lower bound again in the future – quite possible within the next five years. When it does, it may find that conventional rate movements generate much smaller effects than was the case in 2008-09.

With much clearer sight of the problem this time round, there is an opportunity to prepare by considering just what non-rate based mechanisms central banks can turn to. There are no easy answers – new tools will be, by definition, unconventional – but the question at least needs to be asked.

Resolution Foundation

Resolution Foundation is an independent research and policy organisation. Our goal is to improve the lives of people with low to middle incomes by delivering change in areas where they are currently disadvantaged. We do this by:

- *undertaking research and economic analysis to understand the challenges facing people on a low to middle income;*
- *developing practical and effective policy proposals; and*
- *engaging with policy makers and stakeholders to influence decision-making and bring about change.*

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