



BANK OF ENGLAND

Speech

Umbrellas don't cause rain

Speech given by

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1. The Economic Outlook

Thankfully, the UK economy in Q2 and Q3 has held up better than I had feared. I thought we were seeing early signs of a slowing in growth in the run-up to the referendum in Q2, and I expected uncertainty about the UK's future relationship with the EU to be affecting growth further, from Q3 already.

But the official GDP data suggests that growth has continued at or slightly above trend in those two quarters, and the slight decline in the unemployment rate is also consistent with that.

Note that my expectation of a slowdown did not come out of thin air. There were a number of economic indicators which were suggesting a slowdown: various business activity surveys pointed to a continuation of the weakening of GDP growth already in train since 2014, commercial property transactions were down 50% on a year earlier, and housing market activity was falling markedly, with forward-looking housing surveys pointing to further deterioration to come.

In the event, the business activity surveys turned out to be a less good indicator of GDP growth than usual. The sharp fall in commercial property transactions did not lead to a material slowing in GDP-relevant spending. And the falls in housing market activity came to an abrupt end in the summer, with forward-looking indicators suggesting improving conditions ahead.

While uncertainty about the future relationship with the EU remains, it has not – so far – weighed on aggregate demand with the speed and magnitude I expected¹. Judging by headline GDP at least, the economy has continued in a “business as usual” manner.

Financial markets have not shared this “business as usual” view. Since the referendum, the exchange rate is down 12%, and the share prices of domestically focused UK firms have underperformed the US stock market by 11%, and the European stock market by 7%². That suggests financial markets are expecting some economic underperformance, at least for a period, relative to pre-referendum expectations.

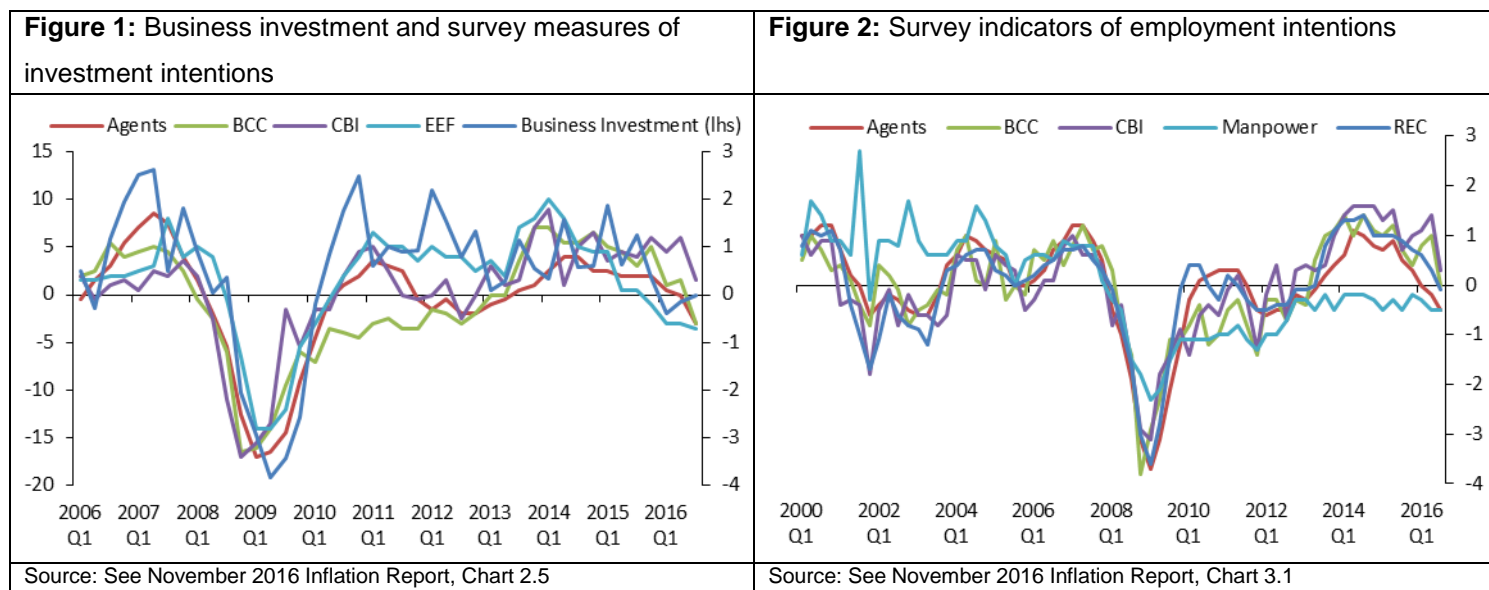
Sentiment in the UK business sector appears somewhat cautious. Various surveys of current activity, of investment intentions, and of employment intentions are generally below their pre-referendum levels (figures 1 and 2). Indicators of economic uncertainty, while lower than at their summer peak, remain elevated relative to historical averages.

I have spoken to several dozen business leaders in the past few months about whether and how their spending plans are changing. On average, the message seems to be that there is indeed uncertainty about

¹ Forbes (2016) discusses the difficulty in estimating the impact of uncertainty on the UK's recent growth performance in more detail.

² Based on the Bank of England staff calculations, constructing an index of FTSE listed firms with more than 70% of their sales generated in the UK.

future relations with the EU, about which there is a desire for clarity. But the uncertainty has not, by and large, caused a material re-evaluation of hiring and spending so far.



Sentiment among UK households, on the other hand, appears rather buoyant. Consumer confidence, retail sales, car purchases, the upturn in housing activity, all point to solid spending growth. That is not too surprising. Household real labour income growth has been buoyant too – close to 3% in the year to Q2, supported by steady employment growth, moderate wage growth and unusually low inflation.

The drop in the exchange rate, however, is likely to lead to a very different inflation picture in the next few years than in the past few years. The MPC’s November forecast has inflation rising to close to 3% next year, before easing back only slowly. Absent an equally sharp rise in wage growth, which is not the MPC’s central projection, household real labour income growth is about to slow materially next year. That, along with *some* projected effect of uncertainty on business investment, is likely to lead to a slowing in growth next year to around 1 ½%. That is not as sharp or as sudden as I expected in August – it is more of a “slowmotion slowdown”.

There is, as always, significant uncertainty around this forecast. Not least because the tension between the fairly pessimistic assessment by financial markets, the cautious assessment by businesses, and the rather optimistic response by households so far, cannot last.

There is much to learn in the coming quarters and years about the nature of the UK’s new trading arrangements with the EU, and therefore the likely impact on the economy. What really matters here is not what the MPC thinks will be the new trading arrangements, but what everyone else thinks.

And the expectations that matter are expectations in the broadest sense, i.e. the full distribution of outcomes. Changes in people's central expectation for the path of future trade arrangements are always a key determinant of consumption demand, investment demand, export demand and financial markets' desire to hold UK assets. But one might also conceive of a central expectation that is favourable, yet risks of a worse outcome could still dampen demand in the intervening period, until the uncertainty is resolved. For the economy to continue to grow healthily, we need both a favourable central expectation as well as limited uncertainty surrounding it.

How and when the tension between the differing expectations of financial markets, businesses and households will be resolved will determine how the UK economy evolves in the next few years. It might turn out that financial markets are too pessimistic and the economy continues to grow in a "business as usual" way, in which case I would expect the exchange rate to move higher over time. Or it might mean that households are too optimistic, in which case I would expect households to reduce spending growth over time, possibly by more than the income-related slowing that is currently the MPC's central projection. As always, a good forecast is one that has risks on either side, not just on one side.

2. The trade-off, and implications for monetary policy

Let me now turn to what this economic outlook implies for the appropriate stance of monetary policy. The MPC's central forecast is for inflation to reach $2\frac{3}{4}\%$ next year, before easing back slowly, still at $2\frac{1}{2}\%$ by the end of the forecast period. Having an inflation projection that is $\frac{1}{2}$ of a percentage point above the target at the end of the forecast period is uncomfortable for an inflation-targeting MPC. The reason we are willing to tolerate this particular inflation path, is that if we tried to bring inflation down faster, with tighter monetary policy, we would create more slack in the economy – lower real income growth, and higher unemployment. We therefore prefer to let most of the exchange rate effect on inflation run its course, which will allow inflation to return to the target eventually, just outside the forecast horizon.

We are making a decision about the trade-off between temporary slack in the economy and a temporary deviation of inflation from the target. Such a trade-off is entirely in line with the MPC's remit, as specified by Her Majesty's Government.

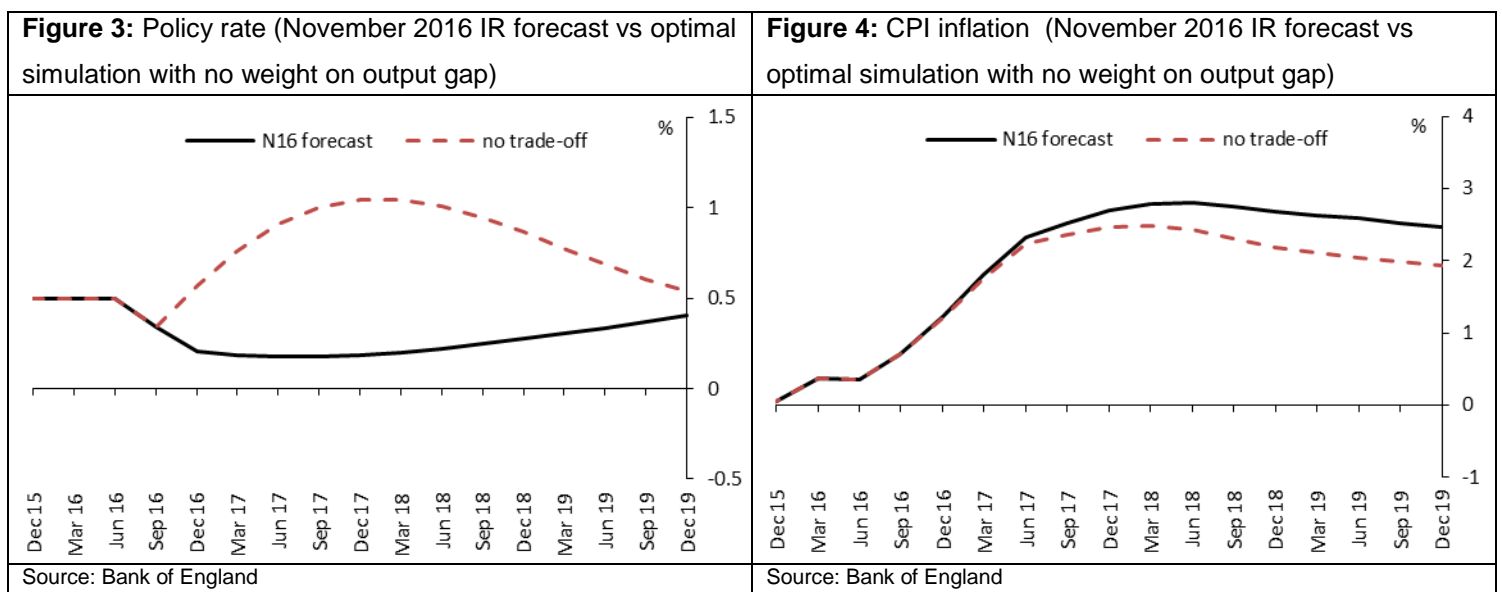
The remit acknowledges that "In exceptional circumstances, shocks to the economy may be particularly large or the effect of shocks may persist over an extended time, or both. In such circumstances, the Monetary Policy Committee is likely to be faced with more significant trade-offs between the speed with which it aims to bring inflation back to the target and the consideration that should be placed on the variability of output."

The fall in the exchange rate is a prime example of a factor that has a persistent, but ultimately temporary, effect on inflation – various estimates suggest the full pass-through of changes in the exchange rate to the level of the CPI can take as long as three to five years. The lags with which monetary policy works are

shorter than that.³ So the MPC could, if it decided to, try and bring inflation back to target more rapidly. But, collectively, we decided not to.

Using the Bank of England’s forecasting model, I would like to put some numbers on the trade-off decisions that the MPC is faced with.⁴

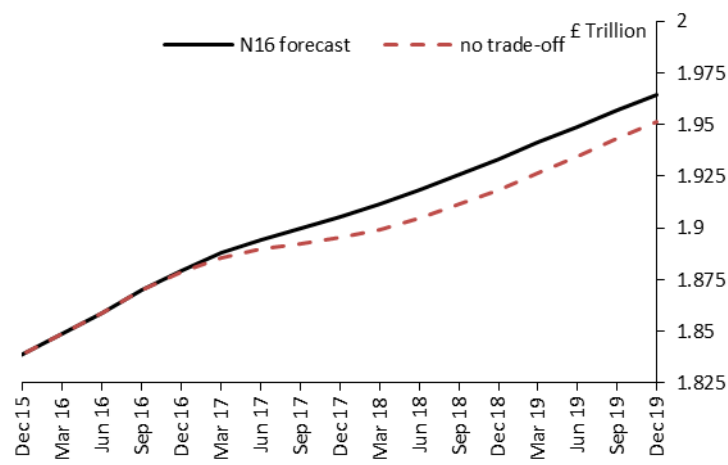
If the MPC placed no weight on output deviations from potential, there would be no trade-off for the MPC to consider. The MPC would only care about inflation itself. If these were the hypothetical preferences of the current MPC, we might have started to raise the policy rate immediately to bring inflation back to the 2% target by the end of the forecast period, i.e. sooner than in our November forecast. The economy would be £15bn smaller, with around 200,000 more people unemployed at the end of 2018. This would have been the price to pay to avoid having inflation still at ½ percentage point above the target in three years’ time.



³ For example, Cloyne and Huertgen (2016) find that the peak effect of monetary policy on inflation comes after 5-6 quarters.

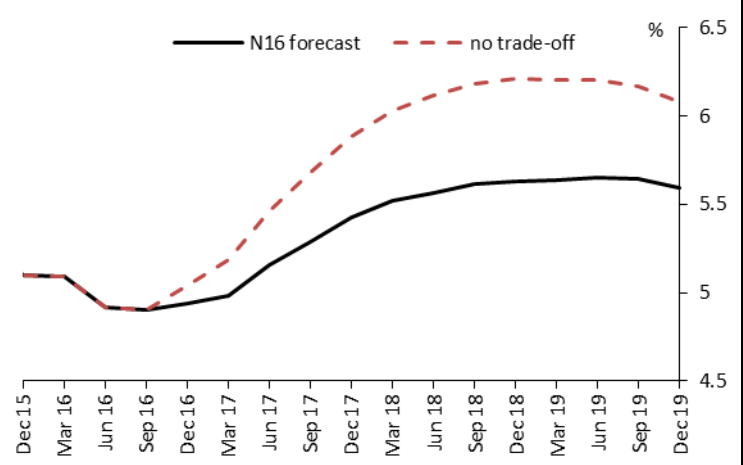
⁴ The model used for the simulation is a version of the Bank’s forecasting model, COMPASS. In this version of the model, expectations for all variables apart from asset prices are formed according to the forecasts from a small VAR. It also assumes a linear relationship between the deviation of unemployment from its equilibrium rate and the deviation of GDP from its potential. We ask what would be the optimal policy path and evolution of output, inflation and unemployment if the MPC placed no weight on output gaps when making policy decisions. In the optimal policy simulation the policymaker commits to an interest rate plan that minimises a loss function defined in terms of deviations of annual CPI inflation from target, the output gap and the quarterly change in Bank Rate. The output gap is given a weight of 0, while the quarterly change in Bank Rate is given a high weight of 25 in order to constrain the extent to which the policymaker can ‘fine-tune’ outcomes via changes in interest-rate expectations.

Figure 5: Annual GDP £trn (November 2016 IR forecast vs optimal simulation with no weight on output gap)



Source: Bank of England

Figure 6: Unemployment rate (November 2016 IR forecast vs optimal simulation with no weight on output gap)



Source: Bank of England

Instead, the MPC placed *some* weight on output deviations from potential, in addition to inflation deviations from target, in line with its remit. The MPC decided unanimously that keeping interest rates unchanged in November was therefore the appropriate course of action.

We would only be able to tolerate even higher inflation by the end of the forecast period if we also thought the economy would slow down even more and therefore have greater slack than we currently project, and if medium-term inflation expectations remain anchored. This is why we specified in the November MPC Minutes that “there are limits to the extent to which above-target inflation can be tolerated”.

But it would be wrong to think that therefore any positive surprises on the economy would automatically require tighter monetary policy. After all, as I just mentioned, it is quite possible that persistent positive news on the economy would be accompanied by a stronger exchange rate. In that case, we might actually be revising down the inflation forecast, for example if the reduced impact via import prices dominates the upward pressure from domestically generated inflation. And in turn, that would mean we are more able to support economic growth by keeping rates low.

Conversely, it is not necessarily the case that any downside surprises to the economy would automatically require looser monetary policy. All would depend on what is also happening to the exchange rate, to inflation expectations, and to projected economic slack.

For now, given our current economic outlook, and given the level of the exchange rate and other asset prices that prevailed in early November, the best contribution that monetary policy can make to returning inflation to target while avoiding undesirable volatility in output growth is to keep interest rates where they are now.

3. Are low interest rates the problem?

And where interest rates are right now is of course very low, at just 0.25%. I have argued before that very low interest rates and asset purchases, in the UK as well as in many other advanced economies, are the appropriate monetary policy response to persistent global disinflationary forces. Factors such as demographics, debt, the distribution of income, falls in the price of capital goods, lower productivity growth,⁵ have pushed down the so-called neutral rate of interest⁶, the interest rate that is consistent with meeting the 2% inflation target once temporary shocks have died down. The economy requires lower rates than it has in previous decades, despite the fact that the depth of the financial crisis is long behind us.

Not everyone agrees with this. Some argue that low rates themselves are the problem, rather than the appropriate response to non-monetary forces. In the next few sections, I will examine various arguments that have been used to support the idea that low interest rates are the cause of the problem, rather than the effect.

Before I do that, I want to restate one fundamental point: while I do not think that the current level of interest rates is damaging to the economy or counterproductive to the goals of monetary policy, I do firmly believe that such a counterproductive level of interest rates exists. There is an effective lower bound on the policy rate, below which interest rates do indeed damage the economy as a whole.⁷ The main mechanism by which this happens is by damaging the health of the financial system to such an extent it can no longer support credit growth to the real economy. This effective lower bound on the policy rate is close to zero. Whether it is just above or just below zero depends on the specifics of each country's financial system, and in the UK the MPC has concluded that the effective lower bound is "close to, but a little above, zero".⁸

I will now turn to the arguments that have been used to say that the *current* low level of interest rates is already problematic and counterproductive.⁹

4. Umbrellas cause rain?

Charts 7 and 8 show that, since the global financial crisis, we have seen broad-based and deep cuts to policy rates, and a broad-based drop in core inflation, even for those countries that were not constrained by the lower bound on interest rates. I believe that the explanation for this co-existence of low interest rates and low inflation is that persistent disinflationary forces have required cuts in policy rates, in order to support growth and keep inflation expectations anchored. It has been raining, so we have all opened our umbrellas.

⁵ See Vlieghe (2016a), Bean *et al* (2012), Summers (2014), Thwaites (2015), Hamilton *et al* (2016) and Rachel & Smith (2015).

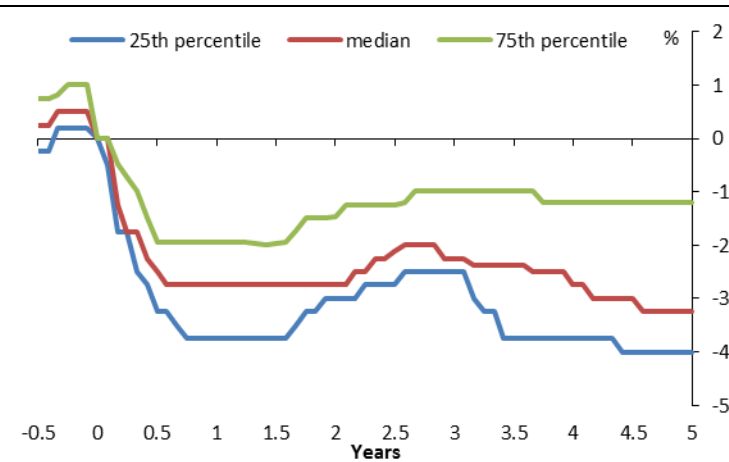
⁶ Also referred to as the trend rate of interest, e.g. Cunliffe (2016)

⁷ See Bank of England (2009) for a discussion specific to the UK and Brunnermeier & Kolby (2016) for a general model.

⁸ Bank of England (2016)

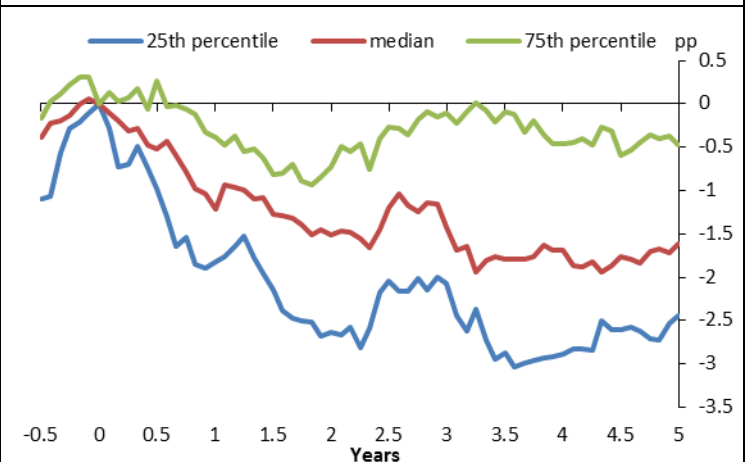
⁹ Some of these themes have also been discussed by my MPC colleagues recently, e.g. Forbes (2015), Shafik (2016), Broadbent (2016).

Figure 7: G20¹ Policy rate change relative to October 2008



Source: Reuters DataStream, Bank calculations. ¹: EA, US, UK, Japan, Canada, Sweden, Norway, Australia, New Zealand, Switzerland, Germany, France, Mexico, Brazil, Russia, China, South Africa, Korea, India

Figure 8: G20¹ Core CPI inflation (yoy pp) change relative to October 2008



Source: Reuters DataStream, Bank calculations. ¹: EA, US, UK, Japan, Canada, Sweden, Norway, Australia, New Zealand, Switzerland, Germany, France, Mexico, Brazil, Russia, Turkey, South Africa, Korea

But some commentators, and a small minority of academics, argue that the longer a central bank keeps interest rates at very low levels, the more likely it is that the economy gets stuck in a low inflation trap.

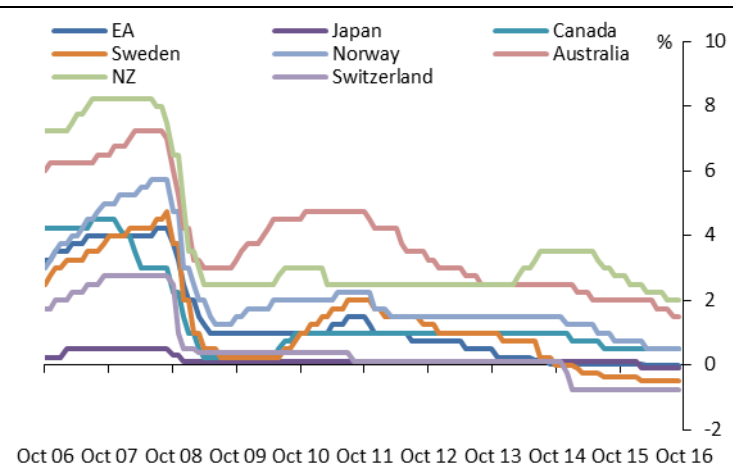
I believe this is just a case of erroneously reversing the causality. Low interest rates together with low inflation have indeed been observed in many economies, so commentators wonder whether low interest rates might actually *cause* low inflation. Umbrellas together with rainfall are also observed in many countries. Nobody actually believes that umbrellas cause rainfall.

No clear mechanism is specified via which umbrellas could cause rainfall, or via which low nominal interest rates could cause low inflation. Instead, commentators rely on vague notions of a “confidence trap”. The argument goes something like this: if only central banks would put up interest rates, that would be seen as a sign of confidence that everything is returning to normal, expectations of a rosier future would magically appear, and strong growth and higher inflation would follow.

The academic version of the argument is even less intuitive, and relies on a quirk of a particular set of mathematical equations, which allow for some scenarios where low nominal rates and low inflation co-exist permanently. The appendix contains a discussion of the academic version of the umbrellas causing rain argument, and how it has been challenged quite effectively.

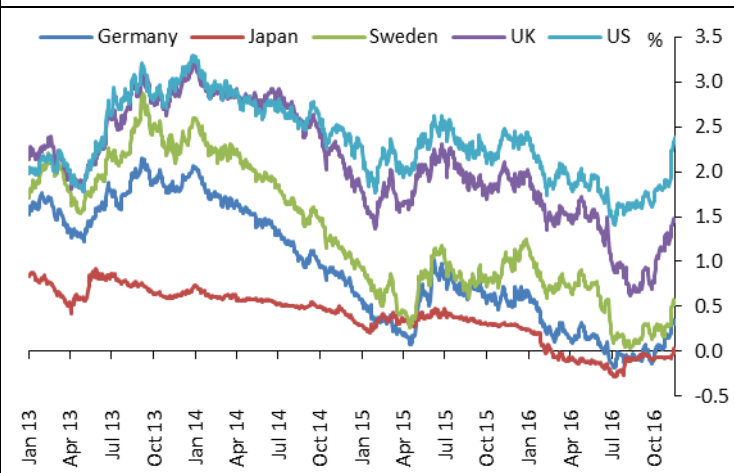
The logic of the argument that low rates are the *problem*, is that higher rates must be the *solution*.

Figure 9: Early rate rises have been reversed in G10 countries



Source: Reuters DataStream

Figure 10: 10 year yields of ELB countries that raised rates prematurely are lower than UK and US



Source: Bloomberg

But we have had several low interest rate, low inflation countries that have raised interest rates over the past decade. This was not followed by an escape from the alleged confidence trap. Instead, all of early rate hikers have since lowered interest rates again, in most cases to levels even lower than before they raised them (figure 9). Higher interest rates, far from boosting demand and inflation, have caused growth to slow and inflation to fall. Some of these countries now have even lower short term *and* long term interest rates than the UK (figure 10), as inflation expectations have drifted lower. For example, areas such as the Eurozone and Japan that initially carried out less monetary stimulus have had lower inflation and ended up having to resort to even more extreme policy loosening later, including negative rates and larger asset purchases.

A comparison of the experience in Japan in the 1990s with the UK and US more recently illustrates the point starkly. Japan was the subject of much criticism by leading macroeconomists for not doing enough to avoid a deflationary trap.¹⁰ Yet the path of nominal rates, both short-term and long-term, was incredibly similar (figure 11),¹¹ despite the fact the US and UK resorted to asset purchases early on, while Japan only pursued similar policies more than a decade later, having raised policy rates briefly in the intervening period. The difference was the path of inflation, and more importantly, inflation expectations.¹² While inflation expectations remained anchored in the US and UK, they drifted lower in Japan early on, and remained stuck at low levels thereafter (figure 12). This meant that real rates were much higher in Japan, i.e. policy was less stimulative. A similar picture emerges in the Eurozone following the interest rate hikes in 2011, when domestic demand and underlying price pressures were still weak.¹³

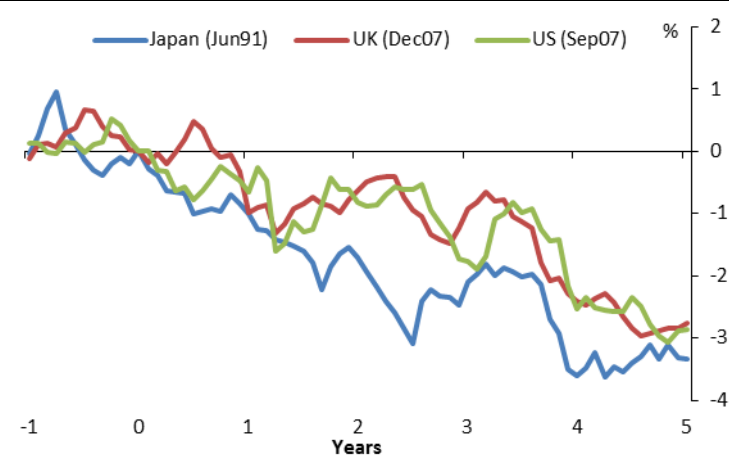
¹⁰ See Ueda (2012), Kuttner (2014) and Bernanke (2000) for a discussion of the timid response of the BoJ in the 1990s.

¹¹ A very similar picture emerges across the maturity spectrum. The alignment is even more striking if instead of using the beginning of the policy easing cycle we used the collapse in the stock market (just a couple of months earlier for US and US in 2007, but 1 year earlier for in the case of Japan in 1990 stock market collapse).

¹² See Carvalho *et al* (2012) and Boneva *et al* (2016) for evidence that asset purchases increased inflation expectations.

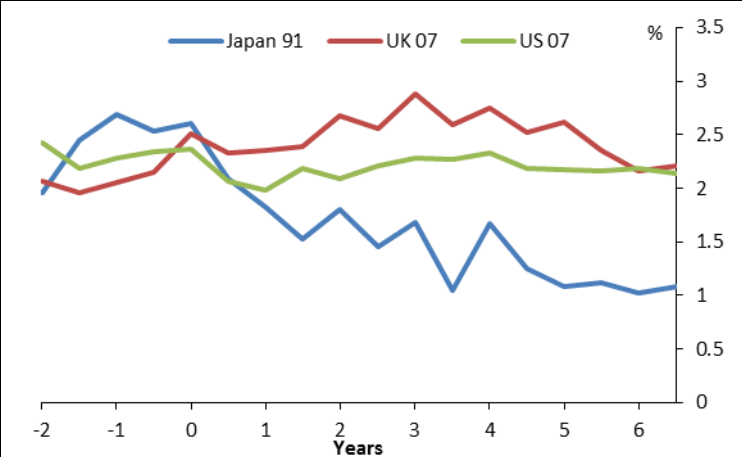
¹³ See Andrade *et al* (2016) for the role of QE in re-anchoring inflation expectations in the Euro Zone. See also Conti *et al* (2015) for the role of monetary policy shocks in the undershooting of inflation in the EZ.

Figure 11: 10 year yields since start of easing cycle that led to ELB



Source: Reuters DataStream, Bloomberg, Bank calculations

Figure 12: 10 year inflation expectations from survey of professional forecasters



Source: Consensus Forecasts, Bank calculations

Such clear evidence that early and aggressive policy stimulus leads to higher growth and higher inflation is available not just from episodes in the past few decades, but also strikingly from the inter-war period. In the late 1920s and early 1930s, many countries experienced very weak growth and inflation as monetary policy was kept too tight because central banks tried to adhere to the gold standard. There is very clear evidence that those countries that abandoned the gold standard the earliest, allowing interest rates and exchange rates to fall, experienced the strongest recovery.¹⁴ The sharp contraction in activity in response to Volcker's policy tightening in the US is another clear historical example of higher rates lowering inflation (and output), not the other way around.¹⁵

I conclude that the "umbrellas cause rainfall" argument just does not stack up, neither in theory nor in the data.

5. Savers

Some argue that low rates are a problem because they hurt savers. As far as I understand it, the argument is not that lower interest rates are always worse for the economy than higher interest rates. Instead, the argument is that there is a level of interest rates low enough that it hurts savers to such an extent that it hurts the economy overall.

First, let me reiterate that it is always the case that monetary policy redistributes.¹⁶ That is to say, monetary policy does not affect all groups in the same way.

¹⁴ See Bernanke and James (2000). Bernanke (2014) describes in great detail his concerns in 2010, as the US economy showed signs of recovery, of not repeating the mistake of premature policy tightening in the US in the mid-1930s.

¹⁵ Ramey (2016) reviews the literature on the effects of monetary policy and summarizes the current consensus. See also Ellis *et al* (2014) for the UK evidence.

¹⁶ See Auclert (2016), Bank of England (2012).

But to say that some groups are affected differently by monetary policy than others is quite different from arguing that some groups suffer outright from monetary stimulus. Once the effect of an improved economy on savers is taken into account, it seems to me that most savers benefit from monetary stimulus.

First, savers hold assets other than deposits. They usually do not have all their money in a bank account. UK households hold a total of GBP 10 trillion in net wealth. Half of that is housing, the other half is financial wealth. Only 1.5 trillion, ie around one seventh, is in the form of deposits.¹⁷ According the latest Wealth & Assets Survey (2012- 2014), only 2% of households have significant deposit holdings (>£5k), *and* few financial assets (<£5k, including pension wealth) *and* are not homeowners.

Low interest rates and asset purchases boost the value of both the GBP 5 trillion in housing assets and the GBP 3.5 trillion in non-deposit financial assets. That is likely to benefit the vast majority of savers by far more than the loss of interest income on the 1.5 trillion of deposits.

Second, many savers also work. Low interest rates and asset purchases, by boosting nominal aggregate demand, have helped lower the unemployment rate in the post-crisis recovery from a peak of 8.5% to now 4.8%, and have boosted wage inflation relative to what would have prevailed if we had stimulated the economy less. Jobs and wage growth have benefited savers as well as borrowers.

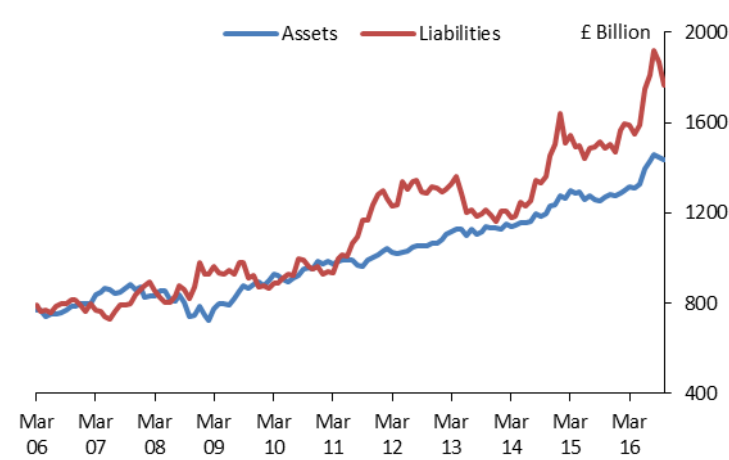
Recent research by Cloyne, Ferreira and Surico (2016) illustrates this mechanism, namely that savers benefit from the improvement in the economy as a whole. The authors compare the response of income and spending to monetary policy across mortgagors, outright owners, and renters. They find that all three groups increase spending in response to lower interest rates, and mortgagors increase their spending most, as lower interest rates create the strongest spending incentives for them. But, crucially, the authors find that all three groups experience similar increases in post-tax income. It is the improvement in the economy that generates income increases for all three groups, and this effect is much larger than the direct income effect of lower interest rates on savers.

6. DB Pensions

Another argument that low rates are the problem says that low rates are causing the deficits of defined benefit (DB) pension funds to balloon, to an extent that it restrains firms' ability or willingness to invest. I am not arguing here that the deficit widening is not happening (figure 13). Clearly, the global low interest rate environment has been painful for DB pension funds.

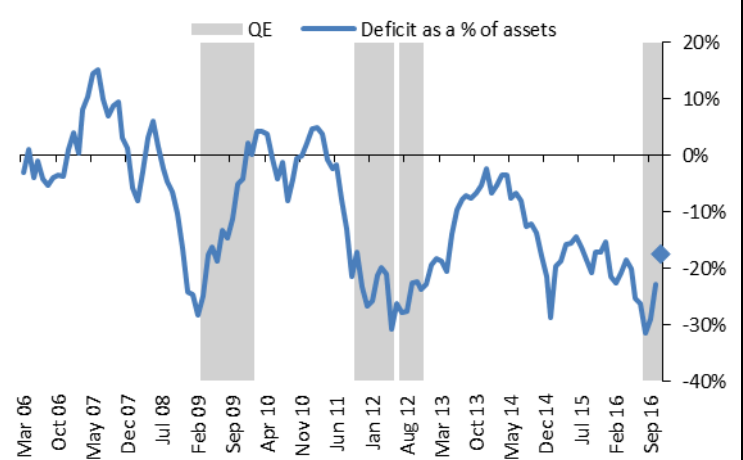
¹⁷ <https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/bulletins/nationalbalancesheet/2016estimates#analysis-by-institutional-sector>

Figure 13: Assets and liabilities of the DB pension schemes insured by the PPF (7800 basis)



Source: PFF

Figure 14: Aggregate balance of DB pension schemes insured by the PPF (calculation: net balance/assets)



Source: PFF, Bank of England calculations (see footnote 18)

I do note, however, that the rise in long-term interest rates since early August has eased the scale of the problem somewhat, as shown in figure 14.¹⁸ Incidentally, that rise in long-term interest rates has taken place after the MPC re-started its QE programme, contributing to lifting inflation expectations back up to levels more in line with historical averages. This supports a point which I have made before (Vlieghe, 2016b), namely that QE itself is not the primary cause of low long-term rates.

Is it the case that pension deficits are holding back investment?

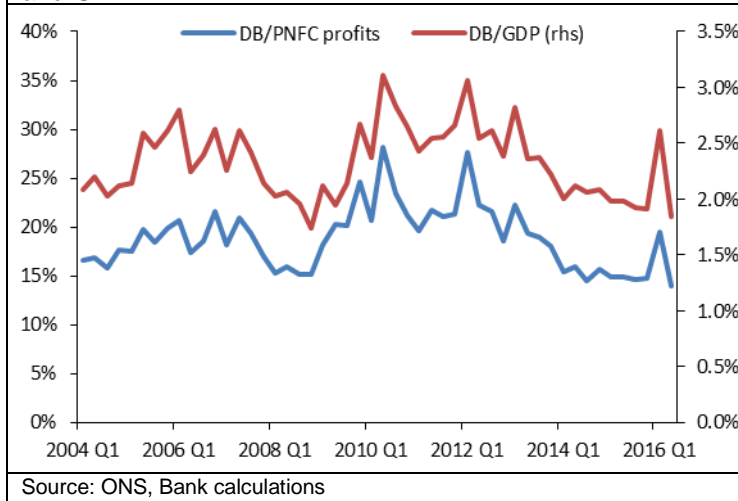
Figure 15 shows the total contributions made by employers into DB pension funds as percent of PNFC profits and GDP. I want to highlight two points here: first, the contributions are remarkably stable; second, they are less than 2% of GDP.

The stability of contributions is likely related to the fact that the Pensions Regulator allows significant flexibility concerning the time horizon over which the deficit has to be closed. When the deficit rises, the margin of adjustment is usually time, not the size of contributions.

¹⁸ Data from PFF through October 2016. The November 2016 point uses the PFF_7800 November 2016 guideline for estimating the impact of changes in market conditions on assets and liabilities: "We have developed a number of 'rules of thumb' to estimate the impact of changes in asset prices on scheme assets and s179 liabilities. A 7.5 per cent rise in equity markets boosts s179 assets by 2.5 per cent while a 0.3 per cent rise in gilt yields reduces scheme assets by 1.6 per cent. Meanwhile, a 0.3 per cent rise in gilt yields reduces scheme liabilities by 5.9 per cent." Applying the 0.3 pp increase in 15 yr yield in November (change in average 15yr nominal spot yield through 24 November relative to average in October) implies a fall in the deficit as percent of assets of roughly 5%.

Previous research, carried out in the Bank and elsewhere,¹⁹ shows that when contributions do go up, they rise mostly at the expense of dividends, not investment. There is no theoretical consensus that suggests this should always be the case. These are merely the patterns that have been observed in the past. The research dates from the pre-crisis period, and circumstances may have changed. Work is underway to update it.

Figure 15: Pension contributions as percent of PNFC profits and GDP



Meanwhile, two bits of evidence suggest that the situation has not changed much. A recent survey by the Bank's Agents²⁰ confirms that firms' stronger balance sheet, their improved access to finance and their ability to close the deficit over a longer period means deficits are still not significantly weighing on investment. Examining the investment and dividend behaviour of companies ranked by the size of their pension deficit also suggests there is no clear tendency for companies with higher pension deficits to have lower investment growth (figure 16), though there is a clear tendency for them to have lower dividends (figure 17).

There is no robust evidence yet that pension deficits are weighing down on aggregate business investment, and therefore on aggregate demand. But we will continue to monitor this to check whether there has been a change in these patterns relative to the past.

Figure 16: Capex growth by size of pension deficit

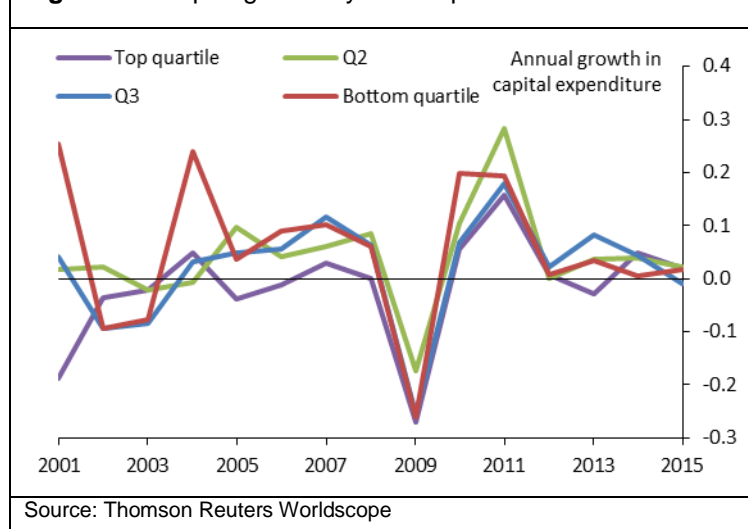
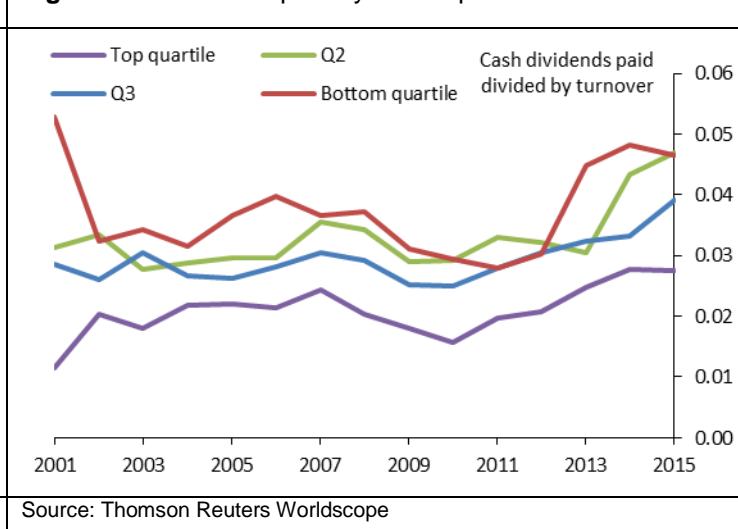


Figure 17: Dividends paid by size of pension deficit



¹⁹ Bunn & Trivedi (2005) and Lui & Tonks (2013).
²⁰ November 2016 Inflation Report, p15.

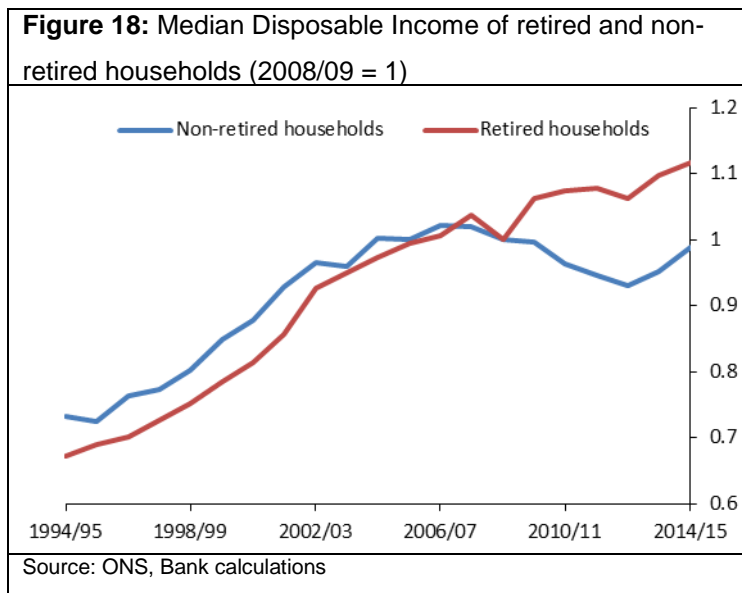
Some commentators go as far as to argue that, since low interest rates make life difficult for DB pension schemes, tighter monetary policy will improve the situation. This seems a dangerous assertion, one that is likely to be wrong. Tighter monetary policy, as I have argued in section 4, does not necessarily lead to higher long-term interest rates. In fact, it might end up leading to lower long-term interest rates as growth and inflation are likely to be weaker. So pension liabilities might not even fall. Given lower consumption demand and lower export demand, tighter monetary policy is also likely to lead to lower corporate profits. That will hurt on two fronts. First, the equities that pension funds hold would likely fall in value. Second, there would be fewer corporate profits available to pay for pensions contributions.

So the conclusion is not to deny that lower long term rates make life more difficult for pension funds. But, first to acknowledge low long term interest rates are not primarily caused by monetary policy, they are caused by other factors that monetary policy is reacting to. Second, that there is no evidence yet that large pension deficits are weighing on business investment. Third, that arguing for tighter monetary policy to help pension funds ignores the big offsetting effect accommodative policy has on corporate profitability through higher demand and lower cost of investment, and ultimately higher long-term interest rates.

7. Pensioners

In the previous section I discussed the impact of low interest rates on company pension schemes. I now want to turn briefly to the pensioners themselves.

Since the financial crisis, retired households have experienced faster income growth than non-retired households, as shown in figure 18. Median incomes for retired households are lower than for non-retired households, but the fact that retiree income has grown faster means that the UK has experienced a reduction in the inequality between retired and non-retired households. And this improvement in the relative income of retirees has occurred despite very low interest rates.



Further support for this generally improving situation can be gleaned from the ONS's Asset and Wealth Survey. In answer to the question "How confident are you that your income in retirement will give you the standard of living you hope for", a growing share of respondents are answering that they are either "fairly confident" or "very confident".

On the basis of this evidence, it is difficult to argue that during the period of very low interest rates, the plight of retirees has got worse. On the contrary, the evidence suggests it has got better.²¹

8. Inequality generally

Based on the evidence I have presented so far, it is not clear that any group has been significantly hurt by low interest rates, once you also take into account the beneficial effect of low interest rates on employment, wages, profits and the prices of widely held assets.

It is instructive to look at both the recent and longer-run evolution of income inequality in the UK. The 1980s saw a large rise in inequality, whether measured by the Gini-coefficient, or the more intuitive 80-20 ratio (the ratio of the income of the top 20 percent relative to the income of the bottom 20 percent). But since the mid-1990s, there has been no further rise in either measure. And since the financial crisis, inequality has actually fallen back slightly, precisely during the period when interest rates fell to record lows.²²

So far, there is no evidence that the period of very low interest rates has worsened income inequality. Even if, in further research, we were to find a hypothetical group of households that had unambiguously suffered from low interest rates, what would be the right policy prescription? Should monetary policy really take this into account?

Imagine we tightened monetary policy to benefit a particular group. We would experience a reduction in spending by other groups, a reduction in investment and employment, and lower inflation. The suffering group would get a larger share of a shrinking pie. As monetary policy makers, we are trying to meet the inflation target by growing the pie in line with potential, and letting the government decide how to divide it up. We are not in the business of setting monetary policy to benefit one group over another.

A related point can be made about wealth inequality.²³ If low rates and asset purchases raise the price of certain assets, it stands to reason that the largest wealth increases are experienced by those who hold these particular assets, even though, as I have argued in section 7, the income benefits of looser monetary policy are distributed rather more evenly. In wealth terms, a home-owner benefits more than a renter, for example. But, again, consider the thought experiment of having higher interest rates to reverse this effect. Should we accept lower growth, higher unemployment and lower inflation to create lower but more equal wealth? That, surely, would violate our mandate of meeting the inflation target. Moreover, if the aim is to make housing more affordable, raising interest rates and causing higher unemployment and lower wage growth is likely to be counterproductive even to this narrow aim, with lower income growth and higher mortgage costs reducing, rather than increasing affordability.

²¹ See also Haldane (2016).

²² Broadbent (2016) made the same argument.

²³ See Bundesbank (2016), Casiraghi *et al* (2016) and Broadbent (2016) for analysis that shows the change in wealth inequality due to monetary policy is very small.

The wealth and income distribution are firmly the government's business: both because democratic principles require it, and because only the government has the appropriate fiscal policy and structural policy tools. Trying to use monetary policy to achieve distributional aims would fail miserably. Monetary policy cannot solve distributional issues, and should not be asked to try.

9. Summary

I have explained why I believe the current level of interest rates remains appropriate for the UK economy despite a significant, but ultimately temporary, rise in inflation due to the impact of a lower exchange rate. I have also argued – again – that low interest rates globally are a necessary monetary policy response to persistent global disinflationary forces. Umbrellas are out because it has been raining.

I have examined several arguments that say instead that low interest rates are themselves the problem.

Some have argued that low interest rates cause a confidence trap or a low inflation trap. This does not stack up, either in theory or in the data. Umbrellas don't cause rain. The countries that have got stuck in a low inflation trap were those that provided too little monetary stimulus, not too much.

Others have argued that particular groups are hurt by monetary stimulus, perhaps to such an extent that it damages the economy as a whole. I have presented data and analysis on the plight of savers, pension funds, and pensioners. I argue that there is no evidence that monetary stimulus has hurt them, once the broader effects of monetary policy on employment, wages, profits and the prices of widely held assets are also taken into account.

Even if, in further research, we were to find a specific group that had unambiguously suffered from very low interest rates, what would be the right policy prescription? Should monetary policy try to help them by tightening?

The suffering group would get a larger share of a shrinking pie. As monetary policy makers, we are trying to meet the inflation target by growing the pie in line with potential, and letting the government decide how to divide it up, using its fiscal and structural policy tools. Monetary policy cannot solve distributional issues, and should not be asked to try.

Appendix

The academic debate about whether there might be a causal link from low interest rates to low inflation, rather than the other way around, is known as the neo-Fisherian view.²⁴ As I mentioned in the body of the speech, I argue that the data on inflation expectations and the experience of economies that have cut and hiked interest rates, even when close to the zero bound, strongly contradicts the neo-Fisherian view.

In this appendix I want to elaborate on two further arguments against the neo-Fisherian view.

First, neo-Fisherians start from a thought experiment that is fundamentally at odds with what central banks have actually been doing. Neo-Fisherians ask what would happen if interest rates were pegged indefinitely at a very low level, regardless of economic conditions. What central banks have actually done is to communicate (in words and with research/models to support their actions) that they have lowered interest rates in response to large disinflationary forces, to try to bring inflation back to target and close the output gap. Any guidance on interest rates has been conditional guidance, explaining that interest rates would only remain low for as long as economic conditions required it. Throughout the period where interest rates have been close to their effective lower bound, markets have been expecting a rising path of future interest rates for most of the time, i.e. clearly not expecting an indefinitely pegged interest rate.

Second, neo-Fisherians reach their conclusion by using models and techniques that are ill-fitted for the application. Every model is incorrect, at least along some dimensions. Simple models are used to guide thinking in a particular area, no model is suitable for answering all questions. The important thing is not to use a model's predictions for applications for which the assumptions are inappropriate or the model is particularly unreliable. In the case of neo-Fisherians, they conduct thought experiments about new, unprecedented policies, but using a solution method that was designed for an environment where nothing unprecedented ever happens. This is the point made so elegantly by Garcia & Woodford (2015) (see also Angeletos & Lian (2016), Farhi & Werning (2016)), namely that perfect foresight rational expectations solutions, which assume full information not just about the model but about equilibrium coordination, is a convenient method to solve models in general, but it bypasses actual modelling of expectations. Similar points made by Barrdear (2016), and of course Cochrane (2014) himself, a key advocate of the neo-Fisherian view. Once the solution techniques are expanded to include an explicit mechanism expectations formation and for equilibrium coordination (intuitively, what do I know about what other people know), the solution where low interest rates cause low inflation turns out not to be a solution anymore.

A very narrow interpretation of the debate is that neo-Fisherians have correctly pointed out that standard models of monetary policy have some counter-intuitive properties when used to analyse extreme thought

²⁴ For example, Cochrane (2015), Schmitt-Grohe and Uribe (2014).

experiments. The lesson, for me, is to find better models for such thought experiments, rather than to take the counter-intuitive properties seriously and base real world monetary policy decisions on them.

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