



BANK OF ENGLAND

Speech

Changing times, changing norms

Speech given by

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This is my last scheduled public speech before standing down from the Monetary Policy Committee (MPC) at the end of two terms, in late August. The six year maximum permitted to an external member of the MPC under the Bank of England Act is a reasonable period, as it allows a regular turnover of experience and expertise. But it also entails some risk of loss of institutional memory, so as I approach the end of my final term, I would like to set out some reflections of the changes in monetary policy that I have seen during my time on the Committee, and what I see as some of the critical policy challenges that my successors are likely to face in coming years. I must also confess to some regret at having to stand down, not only as I shall be leaving some good friends and colleagues, but also as it is a particularly interesting time for policymakers.

The global economy is now emerging from the long shadow of the financial crisis. After a decade of widespread sub-par growth and productivity, the long process of healing following the financial crisis – the repair of bank balance sheets, the restoration of risk appetite amongst businesses and households and the diminution of financial market spreads towards pre-crisis levels – has been sufficient to allow world activity and trade to return to growth rates more akin to those seen prior to the crisis. Global annual GDP growth has picked up since 2016, reaching around 4% at the turn of the year, and is now only a little below the 2001-2007 average of 4.3%. That has gone hand-in-hand with a pickup of global trade growth over the past 18 months, with annual growth of 5% on average since the summer of 2017, compared with average growth of 5.9% over 2001-2007. This has reflected stronger activity in both advanced and emerging market economies.

As a result, what some have called the “normalisation” of monetary policy is slowly getting underway. Around the world, central banks have either begun the process of removing the exceptional monetary stimulus provided during the crisis, or, at least, have signalled their intention to do so. The Federal Reserve was the first to tighten monetary policy in December 2015, and has since raised the Federal Funds Rate by 1¾ percentage points, with the median of the FOMC dot-plots suggesting a further 1¼ percentage-point increase over the coming 18 months.

And the ECB recently began to talk about its expected rate path, even as it continues its asset purchase programme. President Mario Draghi said in March that, although the ECB would not raise interest rates until “well past” the end of asset purchases, interest rate rises would then take place “at a measured pace”.¹ And, at its June policy meeting, the ECB’s Governing Council specified that the asset purchases would end in December, while interest rates would remain at their current level “at least through the summer of 2019”.²

Here in the United Kingdom, the MPC started what we expect to be a series of modest and gradual rate rises last November, when we increased Bank Rate from its historic low of 0.25% to 0.5%. More recently, after a run of softish data in the first quarter of the year, expectations around the precise timing of that series of modest and gradual rises have been brought into question. However, as was illustrated by my vote at the last MPC meeting, I believe that much of that softness – in retail sales and consumer services,

¹ Draghi (2018).

² ECB press release (2018)

in construction and consumer credit – can be attributed to the poor weather of the early spring, and we are now starting to see the evidence of an economy that continues to evolve broadly in line with our May *Inflation Report* forecast.

In my view, that outlook not only points to the need for a modest tightening of policy over the course of the next three years, with the rate curve on which the forecast was predicated suggesting three rate rises over that horizon. That outlook, combined with the risks around it, also suggests that we should not dally in making the next move. Under the central forecast, the economy is projected to move into excess demand within two years, while the labour market is already hitting effective full employment. This, combined with the recovery in job turnover across the economy, is now starting to drive wages higher, and the latest settlement news in both private and public sectors suggests that there are now some upside risks to the wage trajectory in the May central forecast. With energy prices also rising, it is likely that the recent downtrend in CPI inflation will slow over the course of the rest of this year, in spite of the gradual diminution of the impact of the Brexit-induced fall of sterling, and this may also have some effect on wage expectations. As a result, there is, for me at least, a significant risk that inflation will still be above our 2% target at the two-year horizon. As a result, continuing with the slow reduction in monetary stimulus without undue delay could well prevent the need for a more aggressive tightening later on.

But, beyond the immediate policy decisions and the interpretation of the short-term data, there are important questions for monetary policy makers about what “normalisation” will look like. A dictionary definition is of little help – “normalisation” literally means “going back to normal”. But the world has moved on. So, ten years after the global financial crisis, what is “normal”, and how should monetary policy respond?

It would be easy, but wrong, to assume as some have done, that “everything has changed”. As others have pointed out, “this time it is different” are five of the most expensive words in the English language.³ In my view, some of the economic issues of the past decade will prove to have been a reflection of the very long and difficult healing process following the financial crisis, and will fade in coming years. In other respects, the economy will have changed more fundamentally. The real challenge for the MPC, and other policy makers, is to distinguish between the two.

So today, I’d like to offer some thoughts about a set of challenges for monetary policy that, in my view, normalisation will pose. They fall under four headings:

- changes to the underlying functioning of the economy
- the calibration of policy
- the limits to communication, and
- shifts in the social and political pressures on central banks

³ Carney, M (2015).

Model uncertainty and the economy's "new normal"

Clearly, the performance of the UK economy since the financial crisis has been dramatically different than during the "Great Moderation"⁴ or "NICE" decade⁵ that preceded it. Rather than heeding the lesson of Reinhart and Rogoff⁶ – that the damage from the financial crisis would be deep-seated and would therefore take a long time to heal, and in their work ten years is not an unusual length of time for such convalescence – many have taken the experience of the last decade as confirmation of permanent change – that the crisis comprehensively and irrevocably changed the way in which economies work – in most cases for the worst.

I take a somewhat more nuanced view – that at least some of the disappointing experience of the past decade will prove temporary, and that we are now beginning to see some previous relationships beginning to re-establish themselves.

The most significant "model uncertainties" of recent years have been located in the supply side of the economy – the labour market, wage determination, productivity and potential growth. These are areas in which structural change is difficult to identify in real time, and then only inferentially. Prior to the crisis, they were assumed to be stable, allowing policy makers to concentrate on trends in demand when setting policy. But, during my time on the Committee, they have become more central to MPC thinking, and the MPC now undertakes annual "supply stocktakes", examining the equilibrium levels for unemployment, labour participation and average hours, for productivity and hence for supply potential and the output gap are changing.

Together, these supply side issues are critical in that they determine both the economic "speed limit" – the pace at which the economy can grow without generating inflationary pressure, and the degree to which inflation will emerge once it is exceeded. In recent years, MPC thinking on both of these issues has shifted. As the disappointing evidence on wage growth and productivity persisted, we have had to question our estimates of both the shape and position of the Phillips curve and the pace of potential GDP growth. But the factors that have driven these significant shifts are, in my view, a combination of cyclical and structural – some are a product of the long period of adjustment and healing required following the crisis, while others appear more permanent. So as the legacies of the crisis finally fade, it is likely that at least some of these supply side parameters will shift again, continuing to pose challenges for my successors on the MPC.

The labour market: equilibrium unemployment and wage determination

Two of the trickiest questions faced by the MPC during my tenure have been what is the equilibrium rate of unemployment, and why has growth in wages remained so low? Post-crisis unemployment peaked at a rate of 8.6% in November 2011, a few months before I joined the Committee. Since then, it has fallen sharply to

⁴ Bernanke (2004).

⁵ King (2003).

⁶ Reinhart and Rogoff (2009).

4.2% in the latest data, its lowest level since 1975. But in spite of that sharp fall in unemployment, wage growth has remained relatively subdued. Clearly, the functioning of the UK labour market has changed, but to what extent are these permanent, structural changes?

As regards labour market quantities and the equilibrium unemployment rate, it does appear that the changes are long-term, and essentially structural.

- Following the crisis, the degree of labour hysteresis was much lower than in the aftermath of previous recessions. The recent fall in unemployment has been broad-based across both the short-term (less than six months) and longer-term (more than twelve months) unemployed (**Chart 1**). The recession did not trigger a persistent rise in structural unemployment, with workers remaining unemployed for a relatively long period of time, making them less employable.

Put differently, the ease of matching potential workers with vacant jobs was not permanently impaired by the financial crisis. The headline unemployment rate has fallen as the job vacancy rate has increased over the past five years (**Chart 2**). That suggests that the mismatch between potential workers and job vacancies, which rose during and after the recession, has fallen back to pre-recession levels. This matching efficiency is very different from that during previous recessionary episodes in the United Kingdom, for example when in the 1980s manufacturing job losses resulted in persistent structural unemployment as factory workers found it hard to find jobs in the services industry.

One explanation for this has been the rise in the level of educational attainment (**Chart 3**). The share of those aged 25 to 64 years with at least secondary education rose from roughly 50% in 1992 to more than 80% in 2017, while over the same period, the share with tertiary (university-level) education rose from 20% to more than 40%. Workers with a higher level of educational attainment experience lower rates of unemployment (**Chart 4**). For example, over 2000-2016, the unemployment rate of those who did not finish secondary education was three times that of those who completed tertiary education. Greater educational attainment, by providing people with more transferable skills and making them more employable across a range of industries, permits a lower rate of equilibrium unemployment.

- Changes to the tax and benefit regime have also altered incentives to return to the labour force.⁷ The share of the unemployed claiming benefits has been on a clear downward trend over the past 30 years, notwithstanding the uptick that followed the financial crisis (**Chart 5**). For 2017 as a whole, the number of people claiming unemployment benefits stood at about 55% of the number of unemployed, compared with about 80% some 20 years ago.

⁷ Browne and Elming (2015).

These are long-term structural shifts, only distantly related to the crisis, and seem likely to endure, justifying the assessment that the equilibrium rate of unemployment is now permanently lower than pre-crisis. The MPC lowered its estimate of the equilibrium unemployment rate from a pre-crisis estimate of just over 5% to 4½% in the February 2017 *IR*, and then again to 4¼% in the February 2018 forecast.

But the explanation for the second labour market puzzle – why has wage growth remained so subdued – is more mixed. The Phillips curve has certainly shifted in recent years; for any given level of unemployment, wage growth over 2013-2017 was markedly lower than over 2001-2012 (**Chart 6**), and it appears to have shifted down rather than become flatter.⁸ This can partly be explained by a lower equilibrium unemployment rate and by the disappointing productivity performance of recent years (**Chart 7**). But a number of other factors are also at work.

- The fall of unionisation seen over the past 30 years is likely to have reduced workers' bargaining power. Both the share of union members in total employees, and collective pay agreement coverage have fallen from roughly one third in the mid-1990s to about one quarter in 2016 (**Charts 8 and 9**). In addition, the atomisation of the labour market associated with technological change is likely to have exacerbated the erosion of workers' pay in some sectors of the economy. The emergence of the so-called "gig economy" means that in some industries, workers engage in temporary, short-term and oftentimes "one-off" contracts that make it more difficult for them to negotiate working conditions, including pay.⁹
- The loss of the notion of "pay norm". For as long as I can remember, employers have negotiated pay increases with reference to the current or expected rate of inflation. As inflation has stabilised at low levels, norms have moved down, and as the degree of unionisation in the private sector has fallen, the number of formal links to inflation has declined.¹⁰ But more recently, following the period of ultra-low inflation of 2015, it seems that the notion of an inflation-linked pay norm has itself fallen from favour. The Bank Agents report that across-the-board increases have given way to targeted awards, with inflation now considered secondary to other factors, such as company profitability, employee performance, availability of skills or industry benchmarking. In addition, firms seek to differentiate their offer more through in-kind benefits, such as flexible working and health care, as a way of limiting pay increases.¹¹
- The financial crisis appears to have "scarred" employees, encouraging them to place a greater weight on job security. The share of people resigning from their jobs fell sharply during the financial crisis and remained depressed for some years, although it is now recovering, with both the voluntary

⁸ Broadbent (2017) and Vlieghe (2018).

⁹ Johnson (2018) and Brainard (2016).

¹⁰ Blanchflower and Machin (2016).

¹¹ Agents' summary of business conditions 2018 Q1.

resignation rate and the proportion of people moving from one job to another recently returning to levels close to those of 2007 (**Chart 10**).

- The nature of the post-crisis recovery also acted to depress average wage growth, as employment growth was initially concentrated in jobs and industries with lower productivity (**Chart 11**).

Whether all of these changes are structural and permanent remains to be seen. Unemployment is now the lowest since the early 1970s, measures of labour market tightness are at high levels and inflation is projected to remain above 2% for the next year or more, so setting pay with reference to inflation may pick up again, even if only cyclically. Moreover, as perceptions of job security have increased, and the “scarring” from the crisis has started to fade, turnover in the labour market has returned to pre-crisis levels. This not only puts upward pressure on average pay through a batting average effect – those changing jobs receive significantly higher pay rises than those staying in a job (**Chart 12**) – it also is starting to put pressure on firms to increase wages both to retain existing staff and attract new staff. As this cycle continues, these factors may not only move us leftwards along the Phillips curve, it may lead to a rise in the curve itself, as in previous cycles.

Potential supply growth

The second big model uncertainty facing policy makers concerns lower potential supply growth. Again, this used to be thought of as stable, such that the role of monetary policy was to balance fluctuations in demand against this unchanging rate of supply growth. But, here too, MPC thinking has evolved, and our latest estimate is that current annual growth in potential supply has fallen to 1½%, down from 2¼% prior to the crisis.

To understand this decline, and how potential supply growth might change further in coming years, we need to consider trends in both labour productivity and labour supply.

The fall in potential supply growth of recent years results from the disappointing performance of productivity. On average, since 2010, annual productivity growth has fallen to 0.5% (output per hour) or 0.7% (output per worker), down markedly from the 2.2% (hour) and 1.8% (worker) of pre-crisis.

Bank staff analysis suggests that about half of this weakness of UK labour productivity growth can be accounted for by the slow accumulation of the capital stock relative to the workforce – what we call a slowdown in capital deepening – as firms cut back on investment in the face of demand uncertainty and the higher cost, and lesser accessibility, of credit. In addition, the relative resilience of employment following the financial crisis compared to previous downturns (what I have previously referred to as ‘labour hoarding’),¹² also have weighed on capital deepening and measured productivity in the early years following the crisis.

¹² McCafferty (2013).

The other half of the weakness of labour productivity growth can be accounted for by slower Total Factor Productivity, that is, the efficiency with which labour and capital are combined in the production process. TFP is notoriously difficult to measure and is typically estimated as a residual. But sectoral analysis suggests that that part of the productivity growth slowdown has been concentrated in financial and insurance services and in the manufacturing sector (**Chart 13**).¹³

For financial services, the productivity slowdown reflects the unwinding, following the financial crisis, of unsustainably high levels of balance sheet growth, as well as a degree of mismeasurement. My own sectoral analysis back in 2014 suggested that factors such as changing regulation, changes in business mix and a tough trading environment, all contributed to explaining the productivity slowdown in financial service activities.¹⁴

In the manufacturing sector, productivity growth is likely to have been affected by world trade flows. Following the financial crisis, world trade growth slowed markedly, decreasing the market size available to manufacturing firms, reducing opportunities for economies of scale and lessening competitive pressures.¹⁵

By contrast, over the past decade, labour supply has supported potential supply growth. In spite of the aging of the population, labour force participation (the share of the working-age population that participates in the labour market) has been broadly stable over the past ten years. This has reflected two offsetting influences (**Chart 14**). On the one hand, the ageing of the population has meant a declining share of those age groups with the highest participation rates (35-49 years old). But on the other, rates of participation amongst older workers (50-64 years old), including older women, has increased, in part reflecting reforms to the welfare system.^{16,17} These changes in patterns of participation have been supplemented by inward migration, such that the total workforce grew by 243,000 a year on average between 2008 and 2017.

But looking forward, there are likely to be further shifts in potential supply growth that will be critical for monetary policy. The outlook for productivity and labour supply growth remains highly uncertain, but both are likely to be heavily influenced by the outcome of the Brexit negotiations.

The degree of migration that will be allowed under the new arrangements will affect the size of the UK labour force. Net migration stood at 244,000 in the year to 2017 Q3, roughly 90,000 below its level in the year to 2016 Q2 when the EU referendum took place. There is still a lot of uncertainty regarding the level of net migration that will prevail after Brexit, but indications are that it is likely to fall. In its central scenario, the ONS projects net migration to fall to 210,000 by mid-2020. But there is a risk that the fall could be more pronounced. Bank staff analysis suggests that in coming years, relatively weaker per-capita growth in the

¹³ Teneyro (2018).

¹⁴ McCafferty (2014).

¹⁵ February 2018 *Inflation Report*.

¹⁶ Berry et al (2015).

¹⁷ Coile et al (2018).

United Kingdom compared to other countries would reduce net migration by slightly more than implied by the ONS projection over the next three years.¹⁸

Productivity is also likely to be affected. Uncertainty about the final terms of Brexit has encouraged companies to put investment plans on hold, consistent with estimates derived from the Bank's Decision Maker Panel (DMP) survey.¹⁹ This will have weighed on capital deepening. And once the final arrangements are agreed upon and the UK economy starts to transition to new trading relationships, the changing nature and destination of our trade will require a reallocation of both capital and labour across the economy, which is likely to reduce productivity growth until the new trading and production patterns are in place.

So while I think that some of the factors that have weighed on productivity growth since the financial crisis are now dissipating, it seems to me that another set of factors is likely to hold back productivity growth in coming years – the transition to Brexit and, were they to materialise, less open trade and investment arrangements after Brexit.

Policy calibration and normalisation

These reflections on model uncertainty, and the likely changes in the way the economy functions, are more than mere academic interest. They are each critical in determining the inflation outlook, and are therefore central to the setting of monetary policy. But they are not the only areas of uncertainty currently facing policy makers. In addition are two challenges concerning the normalisation of policy itself. The first is a question of calibration - what is the new normal for the equilibrium interest rate, and what does this imply for the likely rate path as normalisation unfolds? And second, given that the MPC tool kit now consists of both Bank Rate and asset purchases, or Quantitative Easing (QE), how should each be deployed in normalising the stance of policy?

The equilibrium interest rate

The first challenge involves the level of r^* – the equilibrium real interest rate. This is an oft not well understood, but critical concept for monetary policy makers. Janet Yellen defined it well:

“The equilibrium real interest rate is the level of the short term interest rate, less inflation, estimated to be consistent with maximum employment and stable inflation in the long run.”²⁰

It can be considered at a global level, or, with certain adjustments reflecting the imperfections of global capital flows, at a national level. It is the benchmark for policy setting; for the monetary policy maker, the

¹⁸ Box 5 of the February 2018 *Inflation Report*.

¹⁹ Box 3 of the February 2018 *Inflation Report*.

²⁰ Yellen (2015).

stance of monetary policy can be said to be neutral – neither stimulative nor contractionary – when the policy rate less inflation is equal to the equilibrium real rate.

In the early days of inflation targeting, it was generally assumed that the equilibrium rate was relatively stable, such that movements in the policy rate in themselves were seen as loosening or tightening policy. More recently, there has been a greater recognition that not only is the equilibrium rate cyclically state-dependent – it moves up and down through the economic cycle, depending on household and business confidence, fiscal policy and the functioning of credit markets – but it has also seen significant structural shifts in recent years.

Long-term nominal interest rates, both real and nominal, and both here and abroad, have been on a downward trend since the 1980s (**Chart 15**), pointing to a secular fall in equilibrium interest rates.

A number of studies have documented the structural factors behind the fall in the global real equilibrium interest rate over the past thirty years, and a Bank of England Staff Working Paper ²¹ provides a helpful summary of the contribution of these factors, as well as estimates for coming years (**Chart 16**). These factors include shifts in global saving and investment preferences, as well as lower potential supply growth, including lower productivity growth.

The increase in global savings has been driven by demographics, with baby-boomers saving more ahead of retirement, but also by an increase in precautionary savings by emerging markets scarred by the 1998 Asian financial crisis (what Ben Bernanke called the ‘global savings glut’).²² At the same time, weaker investment across countries, reflecting a change in the relative price of capital goods, lower public investment and the rise in the spread between the risk-free rate and the rate of return on capital, has also have weighed on the global equilibrium real rate.

According to the Bank study, the downward pressure from these long-term factors is now slowly starting to reverse. The structural upward pressure on the equilibrium rate in coming years is only modest, with an estimate of an increase of only about 4bp a year through to 2030, so that the equilibrium rate is likely to remain well below the level deemed normal before the financial crisis for some time to come. It is this that underlies our thinking about “limited and gradual”.

But, in coming years, these small shifts in the equilibrium rate are likely to be supplemented by more marked shifts in the cyclical component.

At the height of the financial crisis, the dislocation of financial markets, the lack of confidence and elevated risk aversion amongst consumers, firms and investors caused the equilibrium rate to fall sharply, probably to a level substantially below zero. Tight credit conditions, bank and household deleveraging, fiscal

²¹ Rachel and Smith (2015).

²² Bernanke (2005).

consolidation and weak global demand acted to keep the equilibrium rate at a historically low level for some time thereafter. But recently, in my view, the cyclical factors depressing the equilibrium rate are starting to diminish. Both here and abroad, the economic recovery has taken hold, households and banks have repaired their balance sheets, and the effects of fiscal consolidation have abated, while fiscal spending is expected to increase in some countries. So it would be reasonable to expect the cyclical component of the equilibrium interest rate to rise significantly in coming years. The difficulty for policy makers is that the equilibrium rate is not directly observable, and can only be inferred, mostly in hindsight, through the behaviour of the wider economy.

This, then, is the challenge for policy makers in coming years. How to set and calibrate monetary policy in a world in which r^* is unstable, probably moving upwards but difficult to observe and measure? From a policy perspective, as the equilibrium rate recovers, Bank Rate will need to rise simply to leave the level of effective stimulus unchanged, and calibrating that, as well as judging the timing, will not be easy. For me the bigger policy error currently would be to underestimate that rise, allowing policy to fall “behind the curve” and then be faced with the need to raise rates aggressively so as both to catch up with the rise in r^* and deliver effective tightening all at once, which would represent a significant shock. The MPC is currently considering the outlook for global equilibrium rates, and more cyclical shifts due to domestic factors, and our latest thinking is due to be published in the August *Inflation Report*.

The two levers: Bank Rate and QE

One result of the fall in the equilibrium rate, in the aftermath of the crisis to below zero, was of course the development of unconventional policy tools, to supplement Bank Rate as it approached the zero lower bound. The second policy challenge that will face my successors, therefore, will be how best to steer the economy using the two main levers at its disposal – Bank Rate and changes in the stock of purchased assets – Quantitative Easing (QE) or Quantitative Tightening (QT).

Bank Rate remains our primary policy instrument, for two reasons. Firstly, we know more about how changes in Bank Rate are transmitted through to the rest of the economy, based on our experience with previous interest-rate cycles. Second, Bank Rate can be adjusted quickly, and by large amounts, with less market disruption than asset purchases or sales.

If Bank Rate is to be our primary instrument, it would help to have it return to a level from which it could be materially cut, before starting any asset sell-off. So, at our latest meeting, we restated our intention of not considering asset sales until a threshold for Bank Rate has been reached.²³ Recently, that threshold has changed slightly, as our understanding of what represents the zero lower bound has advanced.

Originally it was thought that the effective lower bound for Bank Rate was close to 50bp, but the cut to

²³ Monetary Policy Summary and minutes of the Monetary Policy Committee meeting ending on 20 June 2018.

Bank Rate in 2016 to 25bp, the introduction of the Term Funding Scheme (TFS) to make the transmission of that cut more effective, and some changes to funding structures in financial markets now suggest that it is somewhat lower. As a result, the threshold has also been lowered, from “around 2%” cited in the November 2015 *Inflation Report*,²⁴ to 1.5% now.

But once any eventual sale of assets begins, there will be an additional issue for the MPC – how to assess the economic impact of such asset sales. It would be easy to assume that the multiplier for asset sales is equivalent to that estimated for the original purchases, but there are good reasons for doubting this. To me, it is likely that the impact of such purchases and sales on the economy will prove state-contingent, with the multiplier for eventual sales different to that estimated for the original purchases.

It is possible that the multiplier will be greater. While zero provided a lower bound to yields on the way down, no such constraint exists as yields rise. In that respect, it is possible that yields may be more sensitive to the withdrawal of QE than to its introduction.

However, this does not appear to have been the experience in the United States, when the Federal Reserve began its unwind last autumn, with the impact on the yield curve relatively small. There are several potential reasons why this is more likely. Markets are far less stressed and dysfunctional than when QE was first introduced, reducing the impact through the liquidity channel. Changes to Bank Rate and the level of purchased assets may be seen less as complementary moves, as they were with QE, and more as substitutes, limiting the impact on yields. Finally regulatory change has increased the demand for safe assets from banks and other financial institutions, such that asset sales by the Bank may be more readily taken up by the financial sector, reducing the effects on yields.

This uncertainty supports a policy in which a reduction in the stock of assets, when it becomes justified, would be carried out at a modest and relatively predictable pace, so as to be able to gauge the impact on the economy in real time, and minimise this uncertainty.

Effective communication in an uncertain world

The third area that has evolved significantly over my time on the Committee is communications. But here too, challenges remain.

It is not that long ago that central banks were known for their reliance on constructive obfuscation, captured well by Alan Greenspan, when he said, speaking to a Senate Committee in 1987, “*Since becoming a central banker, I have learned to mumble with great incoherence. If I seem unduly clear to you, you must have misunderstood what I said.*”²⁵

²⁴ Box on page 34 of the November 2015 *Inflation Report*.

²⁵ As quoted in the *Wall Street Journal*, September 22, 1987.

More recently, central banks have developed more open and more transparent methods of communication, although when I first joined the MPC, communication about the future path of policy was still relatively limited and inferential. Conclusions could be drawn about the likely path of policy from the different paths for inflation contained in the *Inflation Report*, conditioned on the prevailing market path and on unchanged rates. If inflation was above target on unchanged rates, but at, or close to, target on the prevailing market curve, one could infer that policy rates were likely to move roughly in line with market expectations. But beyond that, the Committee largely refrained from commenting on the rates outlook explicitly.

Over the course of my membership, central banks around the world have responded to the pressure for more open and active communication with more explicit indications of likely rate paths. The Reserve Bank of New Zealand began publishing a rate path as early as 1997, and was followed by the Norges Bank in 2005, the Swedish Riksbank in 2007, and the Czech National Bank in 2008. The Fed began publishing its “dot-plots”, showing the individual expectations of Board members in 2012. More recently, in 2013, the MPC took a slightly different approach, unveiling Forward Guidance.

There is good evidence that clear and active communication can deliver more effective policy. The literature suggests that communication can be an important and powerful part of central banks’ toolkit, since it can make monetary-policy decisions more predictable and help to achieve central banks’ macroeconomic objectives.²⁶

Since 2013, the MPC has adopted three phases of guidance, which the Governor recently reviewed, covering the Committee’s reaction to the changes in supply capacity as a result of the post-crisis recession, its assessment of the likely falls in the equilibrium interest rate, and most recently how it would respond to the policy trade-off resulting from the Brexit vote. I agree with the Governor in his assessment that these guidance episodes were effective in helping to set the expectations of consumers and businesses about the broad future path of rates – first in sending the message that the Committee was in no hurry to raise rates in 2013 and 2014, in contrast to the experience of previous economic cycles, second in emphasising the limited and gradual nature of the coming rate cycle, and third in demonstrating the flexibility in the policy framework in dealing with exceptional circumstances and difficult policy trade-offs.

But more open and transparent communication has not come without some difficulties, and in an environment in which there is always pressure for more openness, more transparency, more clarity, it is worth reflecting on the pitfalls as well as the advantages of such a course, and how far central banks can realistically go.

The difficulty lies with the difference between the “inherent uncertainty” embodied in the economy, and in particular the future performance of that economy, and the absolute precision with which our

²⁶ Blinder et al (2008).

pronouncements are mostly understood and reported. Our forecasts, and what we say about our intentions of how we are likely to set policy as a result, are often treated as cast-iron promises, rather than our “best guess” amongst a range of likely outcomes. And, when those promises are not fulfilled, as is inevitably the case, problems arise.

This “inherent uncertainty” comes in three forms – complexity, measurement uncertainty and unpredictability.

First, complexity. Tracking the UK economy effectively involves understanding, measuring and predicting the outcome of the 38.8 billion domestic financial transactions annually,²⁷ as well as the millions more with other countries. Each of these requires a human decision, which is not automatic, but behavioural, and in economic terms, unlikely to be rational. Add in the imperfection of information available to each decision-maker, the existence of behavioural heuristics and dynamic feedback loops, and you have a truly complex system.

This complexity is compounded by measurement uncertainty – tracking and measuring such a system can only be done on a sampling basis. Economic data are not available in real time, and are oftentimes revised, sometimes dramatically so. For example, the average absolute revision to quarterly UK GDP growth after three years is 0.25pp and the average absolute revision over the following three years (between an estimate’s third and sixth birthday) is 0.28pp.²⁸ So when the ONS says that that the economy grew by 0.1% in Q1 2018, what is really the case is that it probably grew by somewhere between -0.2% and +0.5% - somewhere between the potential onset of a recession and pretty solid growth.

And even if past data were certain and the system fully and accurately modelled, we would still have to deal with the third uncertainty, that inherent in forecasting the future.

But since the time of William Jevons, in the mid-19th century,²⁹ economists have tried to use mathematical means to generate precision and certainty in economics, and make it more akin to physics, or engineering. Keynes referred to the economy as a “machine”. To be fair, Jevons himself recognised the limits of this endeavour, but as the mathematics have become more rigorous, the fundamental limits of this mechanistic approach have often been dismissed or overlooked, in the search for greater precision. The economy’s properties are very different from those of, for example, the solar system, in which the laws of gravity and the three laws of motion combine to make a system in which the movement of the planets and comets, once begun, is pre-determined and which can be closely predicted for any given moment of the future.

I have always thought economics more akin to biology or medicine than physics – we are dealing with highly complex, adaptive systems with dynamic feedback loops and the occasional shift into chaotic behaviour.

²⁷ UK Finance (2018).

²⁸ Robinson (2016).

²⁹ Jevons (1866) and Keynes (1931).

Measuring the actions of each agent in the system is difficult, and each agent's behaviour is state-contingent. Altogether, the system is describable only and at best in imprecise and probabilistic ways.

At one level, we all know this. But at another, we still crave certainty and precision, especially about the future, and MPC economic pronouncements are too often treated as both certain and arithmetically exact. For years, the Bank has tried to reflect the inherent imprecision in economics by presenting its forecasts as fan charts, showing a colour-coded range of likely outcomes, and the shape of the fan indicating the balance of risk.³⁰ More recently, following the Stockton Review of the Bank's forecasting activities in 2012, the forecast coverage in the *Inflation Report* was extended beyond just GDP and inflation projections, and is published as fractions, rather than decimals, in order to better portray the level of accuracy intended. But 20 years after the fan charts' appearance, it seems that few understand and appreciate their message, and what they are trying to represent. The *Inflation Report* forecasts are mostly reported only in terms of the midpoint, or mode, and in a manner that places great emphasis on accuracy at the level of a tenth of one percent. And when the outturns, almost inevitably, turn out different, criticism ensues.

Now, those who serve on public bodies such as the MPC need to be thick-skinned enough to operate within the rough world of politics and journalism. And if bruised egos were the only consequence, so be it. But I believe that there is a deeper problem here. It is that of credibility. Each time the Bank is criticised for an incorrect forecast, or a policy decision that departs from previous expectations, the criticism it receives acts to erode slightly its credibility with the general public. And because credibility is a key element in the effective operation of monetary policy – credibility about the inflation target and the Bank's ability to meet it drive expectations and behaviour in a way that makes achieving that inflation target more likely – the way in which economics is discussed and reported is important.

But, somewhat ironically, I do not believe that the level of precision that journalists report, and financial markets crave, is actually necessary for what is really our primary audience. For me, our guidance is designed less for financial markets, and more to allow businesses and consumers to improve their decision-making through some knowledge of the trend in interest rates over the foreseeable future. And for that audience, a message such as that we have been giving recently – that as long as the economy continues to evolve broadly in line with our expectation as set out in the *Inflation Report*, Bank Rate is likely to rise modestly – say by around three times, to somewhere between 1 and 1½% over the next three years – is sufficient for their purposes.

So, I am cautious about how far the MPC can and should respond to the inevitable and growing demands for further precision. I am wary of overpromising and under-delivering when it comes to sending guidance about future rate moves. As a result, I am wary about moves to individual dot- plots, collective forward curves, or other precise indicators. Clearly the MPC needs to do more to inform about the economy's "inherent

³⁰ *Inflation Report* May 2002, box on pages 48-49.

uncertainty”, but until that is better understood, I believe our guidance to be most helpful when, to paraphrase, it is “limited and occasional”.

Delivering the mandate in a changing environment

Let me finish with a couple of brief reflections on some wider challenges that I think will emerge in coming years. During my time on the MPC, the political and social climate within which central banks operate has shifted markedly. Trust in established institutions has declined, while the responsibilities delegated to central banks have increased. At the same time, some of the original reasons behind the decision to create an inflation-targeting, operationally independent Bank of England are fading into the mists of history, leading increasing calls for changes to the regime. How should the MPC respond to these?

There are two issues that concern me.

- the prevailing distrust and dislike of QE
- issues concerning independence

Distrust of QE

When I am travelling around the country on behalf of the MPC, talking to businesses and consumer groups, I am often struck by the tone of the questions about QE. It seems there is a surprisingly widespread belief that QE was ineffective in a macro-economic sense, while introducing serious distortions into the economy in terms of asset bubbles and inequality. I have to say I find both of these criticisms to be misperceptions, as the series of speeches made by my colleagues Charlie Bean, Ben Broadbent and others have sought to demonstrate.³¹ At a macro level, QE was instrumental, at a time when interest rates were already close to the zero lower bound, in providing material stimulus to the economy. In 2009, it prevented a serious recession from turning into a slump, and more recently offset the uncertainty-driven weakness caused by both the euro-area crisis and the Brexit referendum.

Today, I have no time to provide another detailed defence of the efficacy and benefits of QE as a policy tool. Rather, I want to highlight my concern that, if left unaddressed, that distrust of QE could well limit the MPC’s scope for policy action during the next downturn. Following the MPC statement in its most recent Minutes on the Bank Rate threshold to be reached before asset sales will be considered, thoughts are turning to the process of how QE might be unwound. But even after the start of any eventual QE unwind, which will depend on returning Bank Rate to a level at which it can be cut materially, QE may still need to be used as an additional stimulative tool in the event of any serious downturn. As such, I think it will be important for the Bank to continue its analyses of the impact of QE, to further demonstrate its benefits as a monetary tool, so as to reduce the risk of the MPC facing the next downturn with one hand tied behind its back.

³¹ Bean (2012), Broadbent (2014), Miles (2012), Vlieghe (2016) and Weale (2016).

Central bank independence

That distrust of QE has combined with other political concerns that central banks around the world have become too powerful and unaccountable, and a debate about independence is underway.

This has been most active in the United States, where the Senate only narrowly rejected Rand Paul's "Audit the Fed" proposal, which would have required the Federal Reserve to set interest rates according to a predefined rule and set monetary policy subject to Congressional review.³²

In the United Kingdom, the debate is less vocal, and the independence of the Bank of England more protected by legislation and institutions than in the United States. But it is often the case that what is topical in the United States today becomes an issue in the United Kingdom soon after. And after 20 years of operational independence, some of the powerful arguments made in 1997 are no longer uppermost in the memory. As Don Kohn,³³ amongst others, has shown, inflation tends to be lower and more stable under independent central banks, largely as a result of their enhanced credibility. I would go somewhat further. On two occasions in recent years – during the euro-area crisis and in the immediate aftermath of the Brexit referendum, that credibility in my view allowed the MPC to respond by easing policy more decisively than would have been the case if it had not been operationally independent.

So, all in all, I feel I am leaving the MPC at a moment when, in the words of that old Chinese curse, we are living in "interesting times".

- There are plenty of economic conundrums for the MPC to get its teeth into
- There are some complex policy issues, as monetary policy becomes more active than it has been for some time
- And there is a changing social and political climate, in which much is expected from central banks, but in a world that, following the crisis, is sceptical about "experts" and the scope of their powers

Clearly, the MPC has a strong responsibility to remain sensitive to the needs of society and the economy, as well as respecting the limits of its operational independence, and being transparent and accountable in its activities and decisions. But overall, I would say the system originally designed in 1997 has stood the test of time and works well. This implies a high bar for dramatic change. Such regimes need to evolve, but we always need to be wary of throwing out the baby with the bathwater.

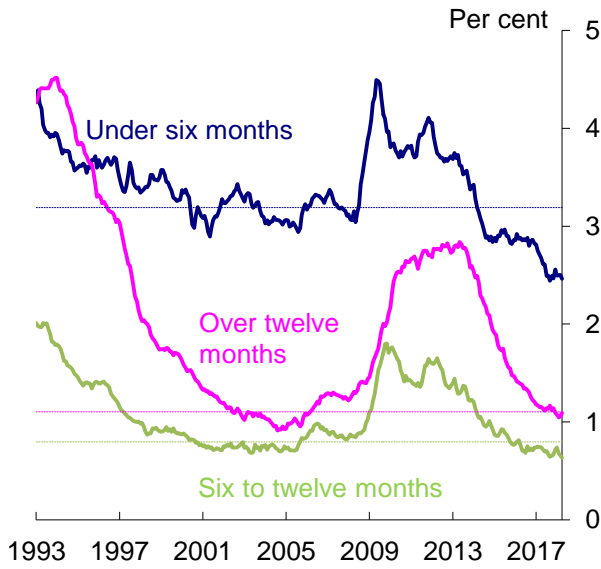
So these challenges represent a heady cocktail for my successor, Jonathan Haskel. I wish him well in his appointment, and hope that he finds his time on the MPC as rewarding as I have. And in my new position as an outsider, I shall watch the MPC's deliberations with great interest.

³² Balls et al (2016).

³³ Kohn (2014).

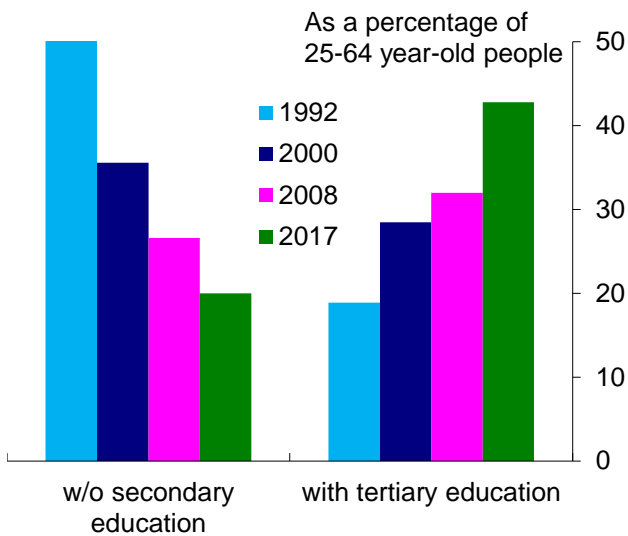
Thank you.

Chart 1: UK unemployment rates by duration



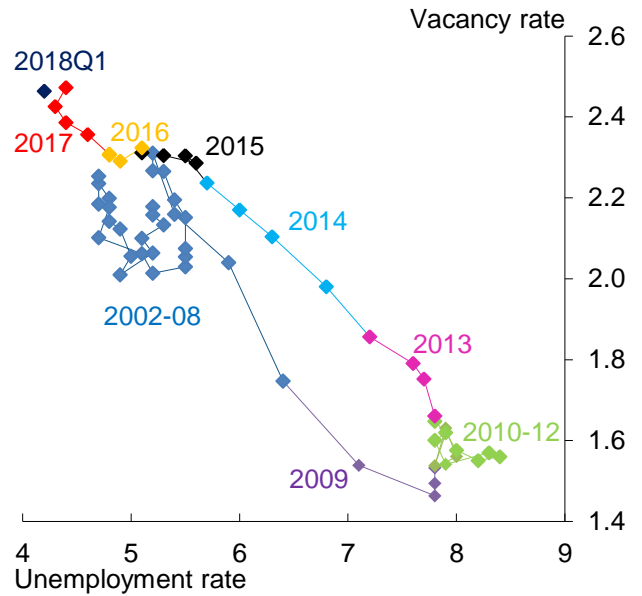
Source: ONS and Bank calculations.

Chart 3: UK educational attainment



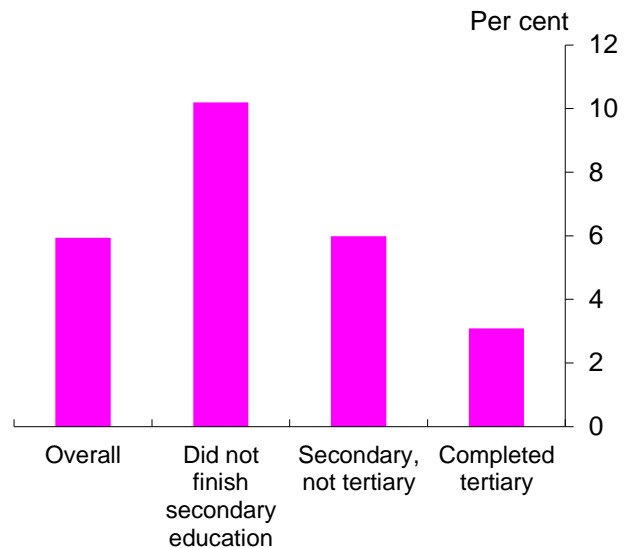
Source: OECD and Bank calculations.

Chart 2: The UK Beveridge curve



Source: LFS and Bank calculations.

Chart 4: UK unemployment rate by education over 2000-2016



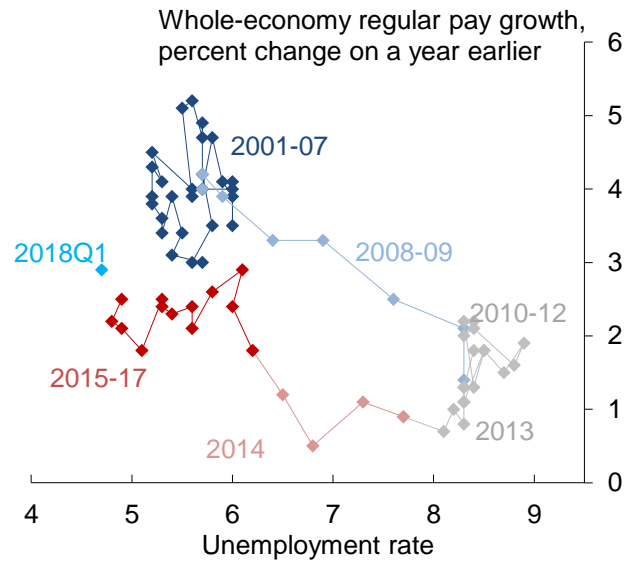
Source: OECD and Bank calculations.

Chart 5: UK claimant count



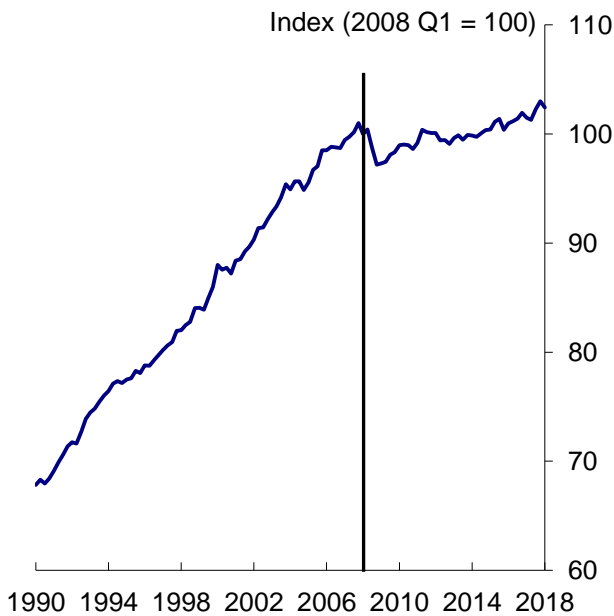
Source: ONS, LFS and Bank calculations.

Chart 6: The UK wage Phillips Curve



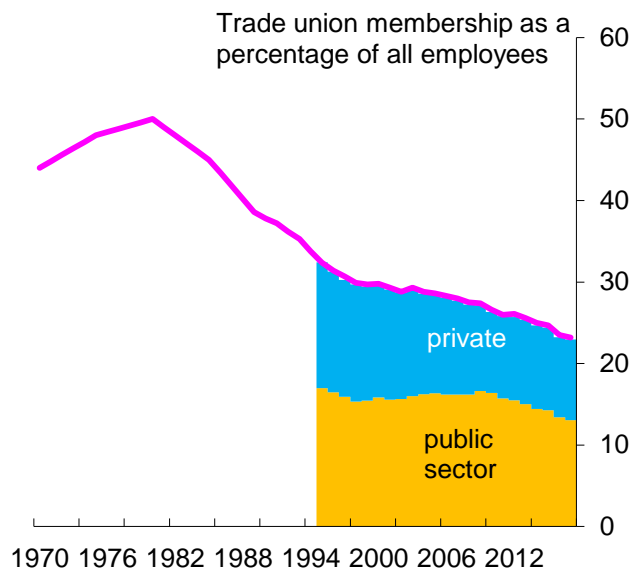
Source: ONS and Bank calculations.

Chart 7: Whole-economy hourly labour productivity



Source: ONS and Bank calculations.

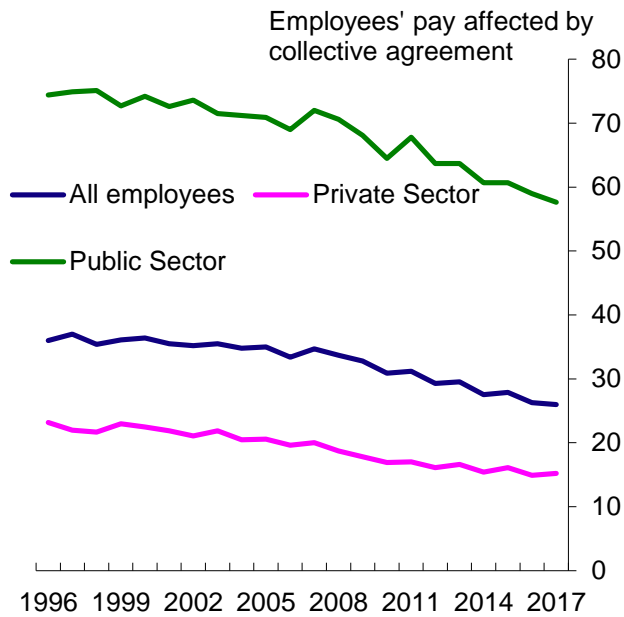
Chart 8: Trade union density in the UK



Source: Department for Business, Energy & Industrial Strategy and Bank calculations

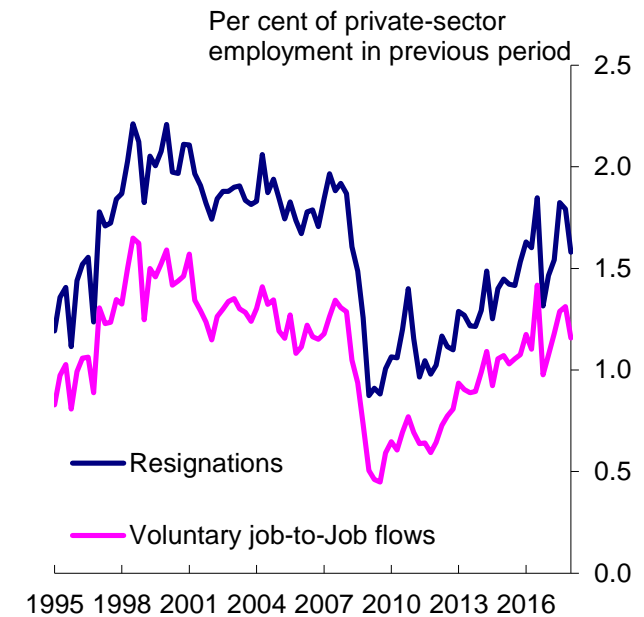
Note: Great Britain data from 1970 to 1994; UK data from 1995 onwards. Data before 1989 are interpolated using annual data from Table 2 of ["The Recent Performance of the UK Labour Market"](#) by Nickell and Quintini, Bank of England, August 2001.

Chart 9: Collective agreement coverage



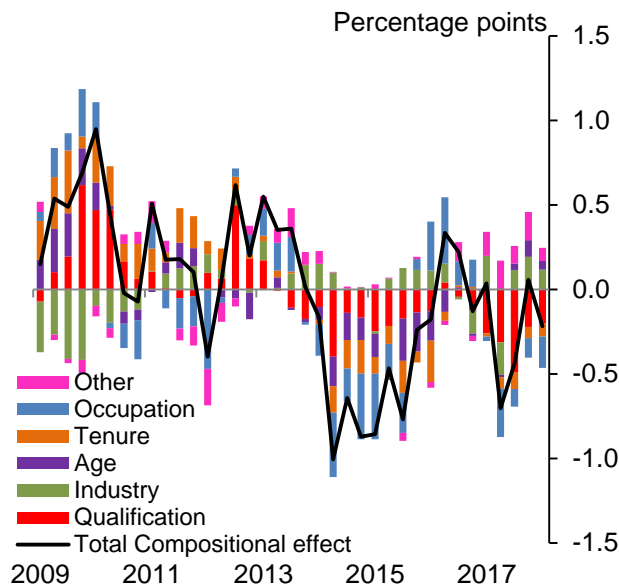
Source: Department for Business, Energy & Industrial Strategy and Bank calculations.

Chart 10: UK resignation rates and job-to-job flows



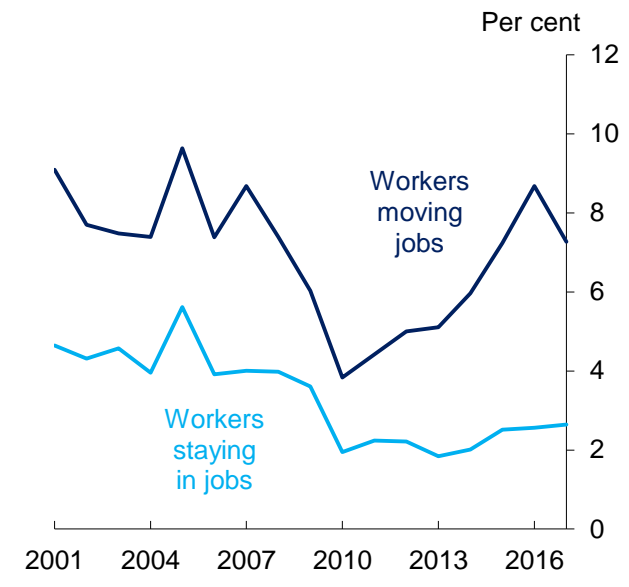
Source: Labour Force Survey and Bank calculations.

Chart 11: Contribution of employment characteristics to four-quarter wage growth



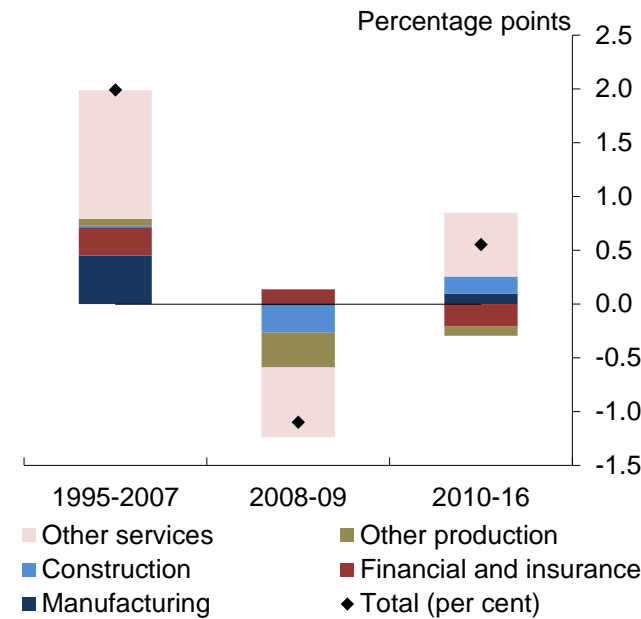
Source: Labour Force Survey and Bank calculations.

Chart 12: Median growth rates of pay for switchers and movers



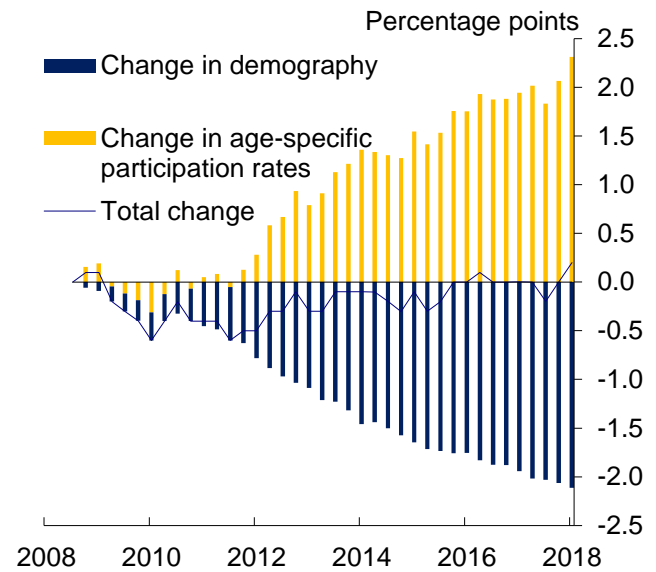
Source: Annual Survey of Hours and Earnings and Bank calculations.

Chart 13: Contributions to hourly productivity growth



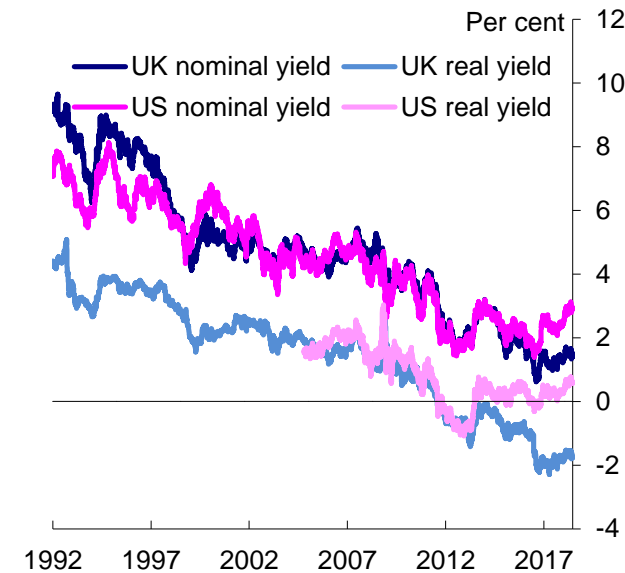
Source: ONS and Bank calculations. Annual averages. Sectoral output per hour is calculated as gross value added (GVA) divided by hours worked.

Chart 14: Contributions to the change in participation since 2008 Q3



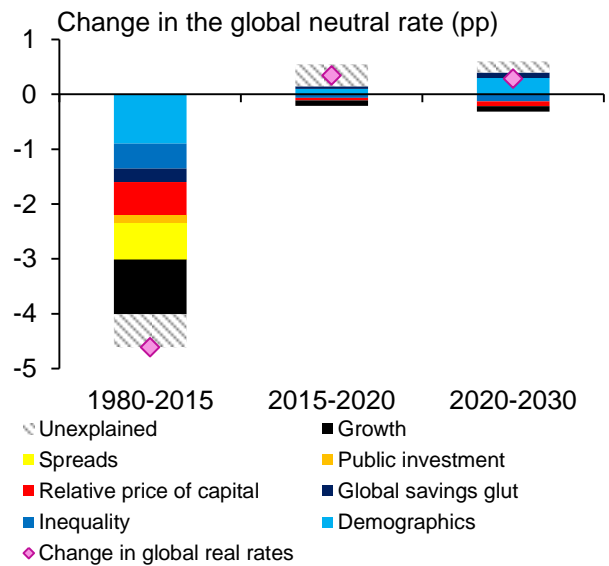
Source: Labour Force Survey and Bank calculations. Percentage of 16+ population. Decomposition calculated using published ONS age groupings. The small cross-product term, reflecting the interaction between changing demographics and age-specific participation rates, has been allocated to the contribution of the change in age-specific participation.

Chart 15: International 10-year sovereign bond yields



Source: Bloomberg Finance L.P., TradeWeb and Bank calculations.

Chart 16: Factors behind the decline of global real interest rates



Source: [Rachel and Smith \(2015\)](#)

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