



BANK OF ENGLAND

# Speech

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## What are government bond yields telling us about the economic outlook?

Speech given by

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## **1. Introduction and summary**

Long term interest rates have risen significantly over the past year. The yield on 10-year UK government bonds has risen by 75bp (0.75 percentage points) since last summer. Of that increase, 65bp took place just since the start of this year.

These moves have not just taken place in the UK. The yield on 10-year US government bonds has risen by 110bp since last summer, of which 70bp since the start of this year.

At the same time, there have been reported concerns about high levels of government debt, as well as rising inflationary risks.

Are bond markets sending ominous warning signs, or just reflecting an improved economic outlook?

Almost entirely the latter, I will argue. And the more significant change in the inflation outlook has been in the US, where – relative to the UK – inflation expectations rose from more depressed levels; there has been a change in the central banks' inflation objective; and fiscal stimulus has been larger.

I will show that while market inflation compensation measures have increased substantially in the past year, particularly in the US, the increase in large part reflects the unwind of recent weakness. While a temporary rise in inflation is expected as part of the recovery from the Covid recession, the medium term outlook remains consistent with US and UK central bank inflation targets. I will show that expectations from surveys of professional forecasters remain well anchored at target, and that there are no signs of significant increases in perceived tail risks of higher inflation, either from surveys or from inflation options.

I will also reflect on the impact that QE has had on government bond yields over the past year, and I will discuss the interaction between QE and the interest cost on government borrowing.

Lastly, I will discuss the economic outlook and the implication for monetary policy. Monetary policy will focus on the medium-term outlook for inflation rather than transient factors. What will ultimately tell to what extent inflation pressures need a monetary policy response is the passage of time. I suspect that upward medium-term inflation pressure will only emerge once economic slack has been fully eroded. Despite an improved economic outlook and a likely temporary rise in inflation in the near term, a major challenge for the economy remains to integrate the large numbers of currently furloughed workers smoothly back into the labour market. Only once the furlough scheme has ended will we have a better idea of how much persistent slack there is in the labour market.

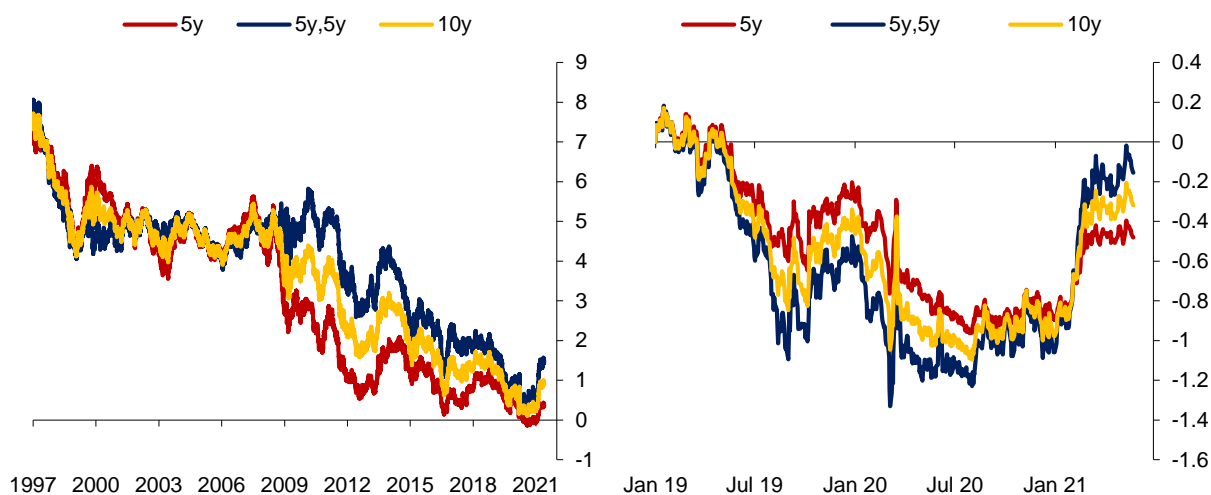
## **2. Analysing recent changes in bond yields**

To gain a better understanding of the moves in government bond yields, I will decompose them into various components. I will focus on the moves since August of last year (which marked the low point in 10y yields), and will briefly discuss the large swings in the early Covid crisis months of March and April 2020.

First, I will decompose nominal yields into different forward curve segments. Intuitively, you can think of any long term rate, say the 10y rate, as consisting of a rate that applies between now and year 5, called the 5 year spot rate, and the rate that applies between year 5 and year 10, called the 5 year rate 5 years forward, usually abbreviated as the 5y5y rate. The 10y rate, which is the annual rate applying for each year over the next 10 years, is simply the average of the 5y rate and the 5y5y rate.<sup>1,2</sup>

Chart 1 shows that the rise in long-term yields has been driven relatively more by the 5y5y rate than by the 5y rate. While the 5y5y rose by 105bps, the 5y rate increased by just under 50bps. Since the 10y is the average of the two, 70% of the increase in the 10y since August of last year is due to rates that apply to the second half of the next 10y horizon.

**Chart 1: UK Nominal Interest Rates<sup>1</sup>; since BoE independence (left) and cumulative changes from January 2019 (right)**



Source: Bloomberg Finance L.P, Tradeweb and Bank of England calculations. Last observation 25 May 2021.

<sup>1</sup> Nominal spot rates extracted from government gilts. Data and calculation details available [here](#).

What happened is that, at the depth of the Covid crisis last year, not only were short-term rate expectations very low (and included expectations of negative policy rates at some stage), but forward rates far into the future were very low as well. With high uncertainty and low inflation expectations, investors were willing to pay very high prices for safe nominal assets – or tolerate very low expected returns, which is the same thing.

When vaccines were shown to be effective late last year, and started to be rolled out this year, the outlook for the economy improved significantly. While longer term interest rates started rising last summer with the initial improvement in the economy, most of the increase happened earlier this year, after the successful

<sup>1</sup> To avoid constantly referring to spot and forward rates I will use the convention with ‘*S*y rate’ as the spot rate for *S* years (the rate that applies from present to *S* years ahead), and ‘*F*y*S*y rate’ as the *S* year rate starting *F* years from now.

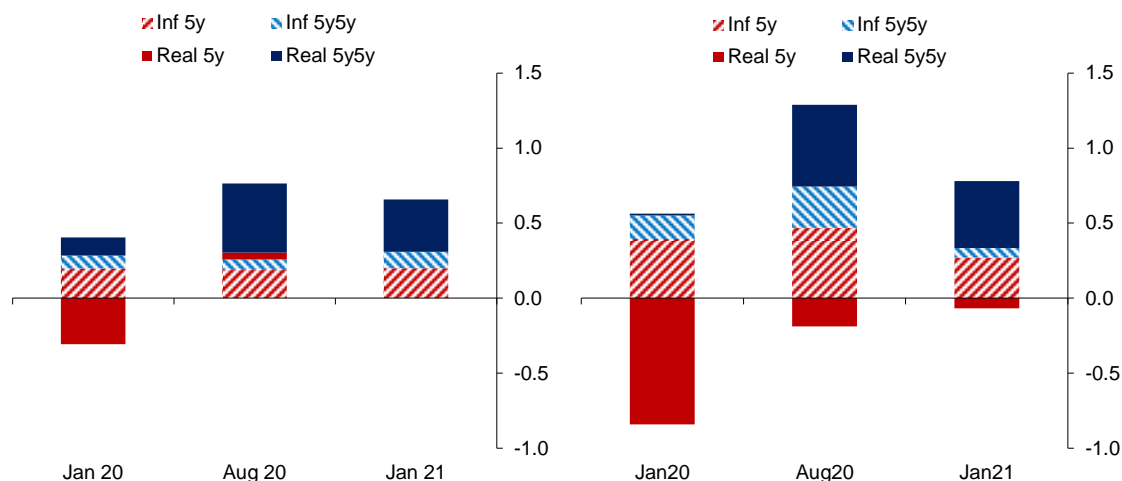
<sup>2</sup> Of course there is no reason to focus just on the 10y rate, or the breakdown into 5 years periods. There are three reasons for this choice: 1) the 10y is a very important benchmark, and the 5y5y is typically the choice when we want to “look beyond the current cycle”, and as such both are very liquid; 2) this significantly simplifies the analysis and largest swings were observed in the 5 to 10 year maturities; and 3) when we further decompose this into inflation compensation and real rate components we wish to avoid the uncertainty beyond 10 years created by the expectation of phasing out RPI (to CPI) in approximately 10 years’ time.

rollout of vaccines began. The risk of short-term interest rates being stuck near the lower bound far into the distant future receded significantly, and distant interest rate forwards therefore rose back to levels that prevailed in early 2019. The fact that shorter term rates remain below those levels reflects expectations that it will take some time for the MPC to raise rates to the distant forward levels, when averaging across many different possible paths.

Next, it is useful to decompose yields into real and inflation components.

Chart 2 (left for the UK) shows the contribution from real and inflation components, at the 5y and 5y5y horizon, from different starting dates until today.<sup>3</sup> This shows that most of the moves in 10y yields since August last year were driven by 5y5y real rates. After the onset of the Covid pandemic, 5y5y real rates had fallen almost as low as 5y real rates. Again, the significant uncertainty at the time led to investors being willing to pay a high price for safe assets, i.e. tolerate a very low expected return, even at longer horizons.

**Chart 2: Decomposition of Changes in Nominal 10y Rates<sup>1</sup> for UK (RPI, left) and US (CPI, right)**



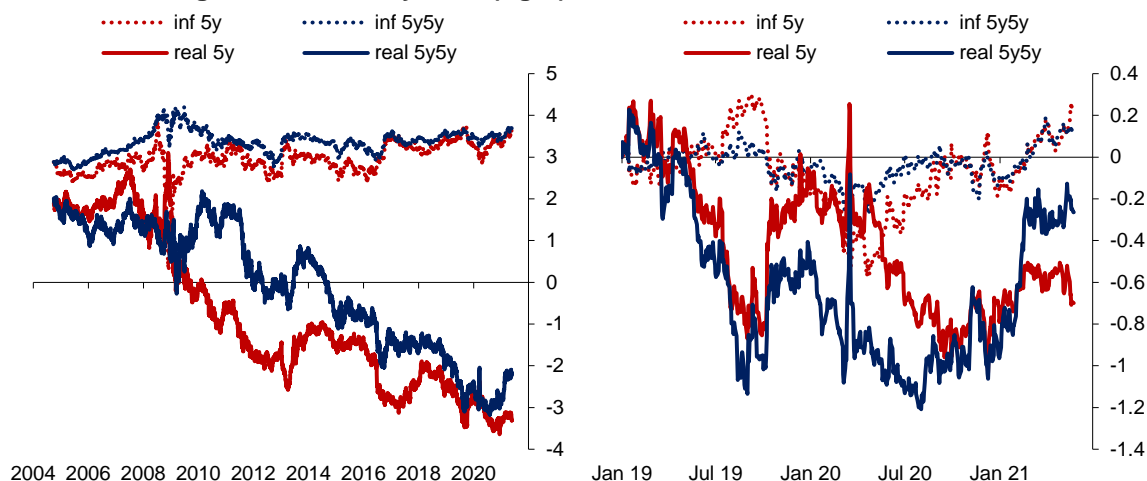
Source: Bloomberg Finance L.P., Tradeweb and Bank of England calculations.  
 1: Changes between date specified and 25 May 2021. Nominal spot rates extracted from government bonds, inflation measures from inflation swaps. UK data and calculation details available [here](#).

As uncertainty receded late last year and earlier this year, real 5y5y forward rates rose back to levels seen in early 2019, while real rates at shorter horizons remained very low. Zooming out to gain a longer term perspective, it is clear from Chart 3, which shows a longer history of real and inflation components, that real rates in the UK, both the 5y and the more distant forwards, remain very low historically, even after the recent increase. That is a story about longer term forces driving the neutral rate of interest lower, a topic that I have discussed on several previous occasions.<sup>4</sup>

<sup>3</sup> Since the 10y is the average of the 5y and 5y5y, the contribution to the change in 10y of each component is half their change. The chart shows the decomposition using inflation rates from inflation swaps. Using inflation breakeven rates results in a very similar picture (not shown). We focus on inflation swaps in the main text because in the US inflation linked bonds suffer from significant liquidity issues and because they are the underlying asset for inflation options, which we discuss later.

<sup>4</sup> See [Vlieghe \(2016\) "Debt, Demographics and the Distribution of Income: New challenges for monetary policy"](#) and [Vlieghe \(2019\) "Monetary policy: adapting to a changed world"](#)

**Chart 3: Evolution of UK Real and Inflation Rates<sup>1</sup>; available time series (left) and cumulative changes from January 2019 (right)**



Source: Bloomberg Finance L.P., Tradeweb and Bank of England calculations. Last observation 25 May 2021.  
 1: 5 year spot rates (5y) and 5-year rate 5-years forward (5y5y) extracted from inflation swaps and government Gilts.  
 Data and calculation details available [here](#).

Looking at the pattern in the inflation compensation component, as opposed to the real component, we see that the moves here have been somewhat different. Shorter-term inflation expectations and risks fell sharply in the early phases of the Covid crisis, with 5y inflation compensation falling around 50bp. But the large falls unwound quickly following the policy response to the pandemic, even as nominal rates remained low through the summer months, meaning real yields were still falling as inflation compensation recovered initially. Further out, 5y5y inflation compensation did not fall nearly as much in the downturn, by roughly 30bp, but also unwound those smaller falls subsequently.

While real rates remain historically low, and account for the low level in nominal yields, inflation compensation rates are now near their highs of the past decade, though just 10 to 20 bps above their levels in 2019 (Chart 3, right) and still below the 2008-2010 period (Chart 3, left). They are not flashing warning signs yet, but I would be increasingly uncomfortable if they increased materially further from these levels, especially the 5y5y rates.<sup>5</sup> A further rise in near-term inflation compensation rates would be less worrying, since the MPC itself expects a temporary overshoot in CPI inflation relative to its target, and on top of that the wedge between RPI and CPI is influenced by Bank Rate and house price dynamics.

Summarising the UK yield curve developments, initially both real rates and inflation rates fell sharply, so that nominal rates reached all-time lows last summer across the whole maturity spectrum.<sup>6</sup> Since then, both real rates and inflation rates have risen as the economic outlook has improved and uncertainty has receded, particularly since the start of the year. Increases in 5y rates were predominantly driven by a rise in inflation

<sup>5</sup> When monitoring longer-term measures of inflation compensation, it is important to remind ourselves that these markets are not as liquid as nominal rates markets, especially at longer horizons. These markets are used for hedging large pension liabilities, and hedging flows can cause significant shifts in inflation compensation over and above those driven by changes in inflation expectation and perceived inflation risks. Moreover, the levels of inflation compensation more than 10 years into the future are also affected by expectations of future RPI reform, which makes them more difficult to interpret.

<sup>6</sup> Decomposing the 30y rate into the 30 consecutive 1y forward rates, every 1y nominal forward rate reached their lowest level on record in 2020.

compensation back to the top end of its 2019 range, with real 5y rates remaining relatively subdued.

Movements in 5y5y rates, i.e. more distant forward rates, were predominantly driven by a rise in 5y5y real rates as the risk of the economy remaining stuck in a low growth and subdued inflation state receded, with a smaller contribution from a rise 5y5y inflation compensation.

Even though my main focus is clearly the developments in UK rates, I will also look at developments in the US to illustrate the differences.<sup>7</sup>

The nominal yield moves in the US were larger in both directions. The US had a higher policy rate at the start of the Covid crisis, so could cut the policy rate by more. Since the trough, US rates have risen more, and, as in the UK, 5y5y forward rates are back to levels seen in early to mid-2019.

Where the US differs more markedly is in the relative contributions of real rates and inflation compensation to these nominal yield patterns (Chart 2, right). Since last summer, 70% of the rise in nominal rates is due to inflation, as opposed to 30% in the UK. 5y inflation compensation in the US is *well* above the levels that prevailed pre-Covid, while 5y5y inflation compensation rates are *slightly* above their pre-Covid levels. Compared with the UK's 50bp fall and subsequent 70bp rise in 5y inflation rates, the US fell 110bp and rose 210bp. The sharper US increase was likely driven by three factors: first, unlike in the UK, US inflation compensation rates before the Covid crisis were at levels below those consistent with the Fed's inflation target. Second, the Federal Reserve modified its inflation objective in the intervening period,<sup>8</sup> so that a period of above-2% post-Covid inflation expectations became a desired outcome. Third, the US has added a larger fiscal stimulus than the UK into an economy that suffered a smaller Covid set-back than the UK.

### 3. Inflation expectations and risks

To gauge the risks to inflation expectations, we can go somewhat further than merely analysing the levels of inflation compensation in financial markets. Next, I will look at the entire distribution of inflation expectations, both in financial markets and in surveys. This allows us to see whether there is any sign of changes in the perceived risks to inflation beyond the changes in mean inflation rates.

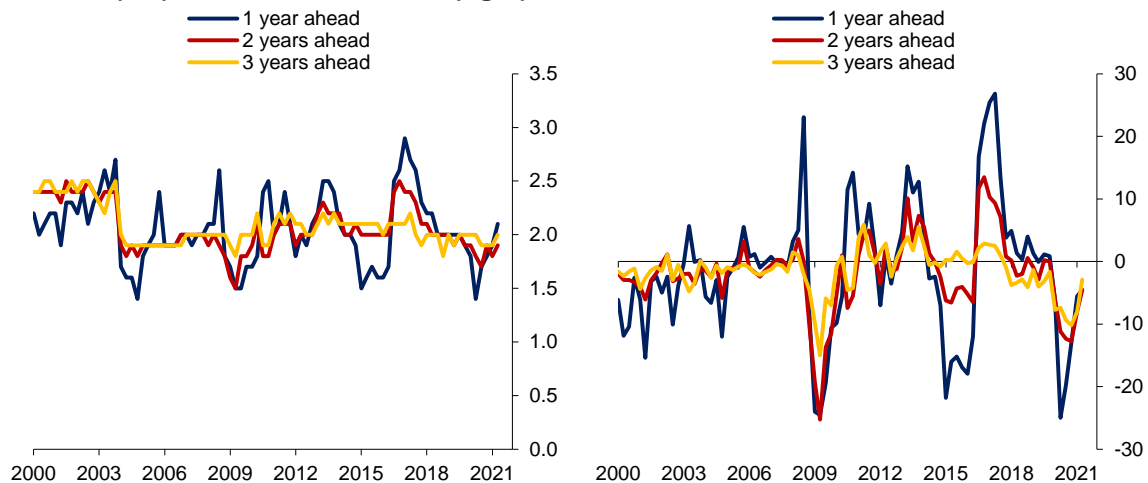
In the UK, inflation expectations measured from surveys of professional forecasters remain well anchored, as can be seen in Chart 4 (left). Inflation expectations fell during the Covid crisis, and have subsequently increased during the recovery. They are back to levels consistent with the MPC's target, with risks around the target now roughly balanced (Chart 4, right), having been skewed to the downside over the past year.

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<sup>7</sup> In the Eurozone, where inflation has been further below target for longer, government bond yields have risen much less, by only 40bp since last August on the 10Y swap measure. The level of 10Y swap yields has just barely become positive again, at 0.15%.

<sup>8</sup> In its "[Statement on Longer-Run Goals and Monetary Policy Strategy](#)", updated on 27 August 2020, the FOMC amended the formulation of its inflation targeting strategy to say: "In order to anchor longer-term inflation expectations at this level, the Committee seeks to achieve inflation that averages 2 percent over time, and therefore judges that, following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time."

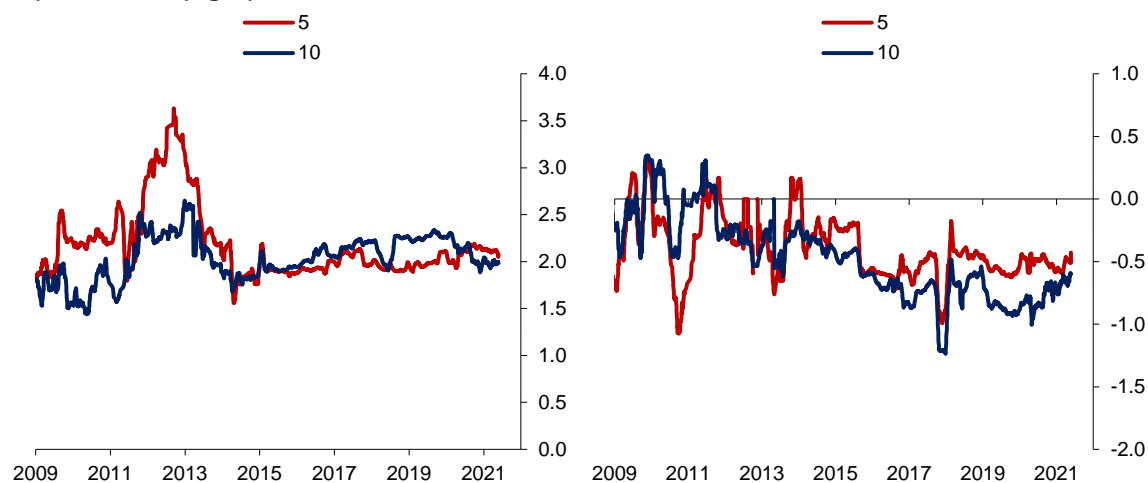
**Chart 4: Bank of England Survey of External Forecasters (SEF) Inflation Forecasts: average forecasts (left) and balance of risks<sup>1</sup> (right)**



Source: Bank of England and author calculations. Latest observation May 2021.

1: Balance of risks is the probability that inflation will be above 3% minus the probability it will be below 1%.

**Chart 5: UK Option-Implied Inflation Risk-Neutral Distribution Moments<sup>1</sup>: standard deviation (left) and skew (right)**



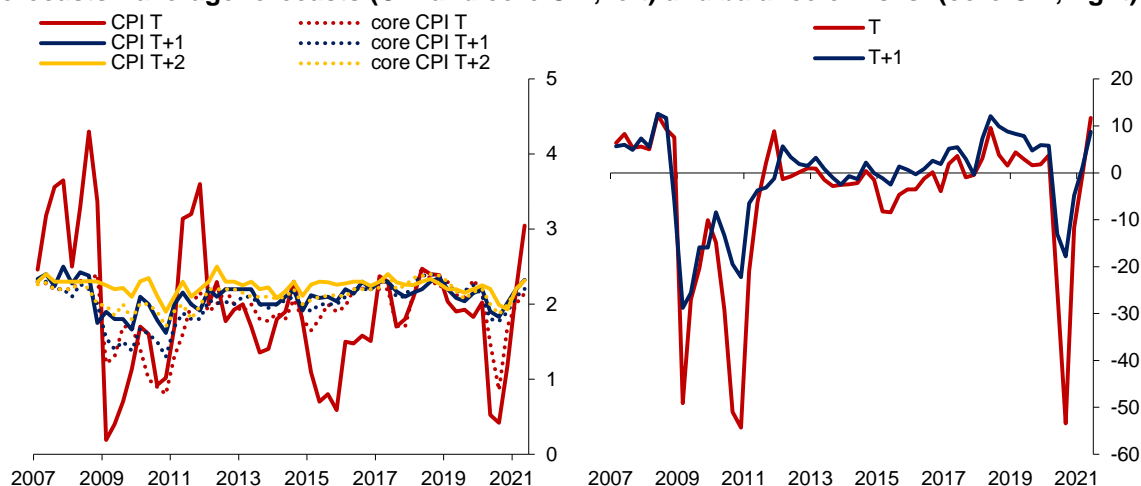
Source: Bloomberg Finance L.P and Bank of England calculations. Last observation 25 May 2021.

1: The moments are calculated from the forward (risk-neutral) distributions of inflation extracted from inflation caps and floors, as described [here](#).

Next, I examine the risk-neutral distribution for inflation compensation implied by options. There has been no material change in the width of the distribution as measured by the standard deviation (Chart 5, left). And the distribution of inflation compensation still has a downside skew, as has been the case for the past decade. No sign therefore of either a rise in the magnitude of perceived inflation risks around the mean, nor of risks being perceived to be more to the upside.

The story in the US is different, but consistent with movements in yield curve components discussed in the previous section. Near-term inflation expectations have increased substantially, as the Fed's new AIT framework aims for an inflation overshoot for a period. But inflation risks further out have only unwound the downside risks from recent quarters, not suggesting any particular perceived risk of higher inflation.

**Chart 6: Federal Reserve Survey of Professional Forecasters (SPF) Inflation Calendar Year Forecasts<sup>1</sup>: average forecasts (CPI and core CPI, left) and balance of risks<sup>2</sup> (core CPI, right)**



Source: Federal Reserve Bank of Philadelphia [Survey of Professional Forecasters](#) and author calculations.

1: Quarterly forecasts for same calendar year as survey (T) and for following calendar years (T+1, T+2). Last observation May 2021.

2: Balance of risks is the probability that inflation will be above 3% minus the probability it will be below 1%.

First, looking at inflation expectations from US surveys, shown in Chart 6 (left), in the short term there is a significant overshoot expected in this year,<sup>9</sup> but very little further out (see also Chart 7).<sup>10</sup> And while the balance of risks has now shifted to more upside risks (Chart 6, right), these are still modest. From the distribution forecasts we can see that risks in the short run have shifted up, along with central expectations, but risk of inflation exceeding 3% in the next couple of years remains within the range seen since 2000, and is much lower than in the 1990s, and even further below the perceived risk in the 1970s or 1980s.<sup>11</sup>

Looking at US inflation options in financial markets confirms this picture of normalization in inflation and inflation risks, with a short-term overshoot. The movements have been bigger than in the UK because US inflation compensation and risks were at more depressed levels even prior to Covid. This likely reflects the fact that US inflation itself has on average been below target in the post-financial crisis period. While the standard deviation of the option-implied risk-neutral distribution has increased (Chart 8, left), it is still far below the levels in the period of 2009 through 2013. The most significant change has been the shift from a negative skew in the years prior to Covid, similar to the UK, to a more balanced risk in the short term and even a modest positive skew at the 10 year horizon (Chart 8, right). But, while the upper tail of the inflation distribution has increased more markedly than in the UK, it is still at levels well below 2009-2013, let alone the 1970s or 1980s.

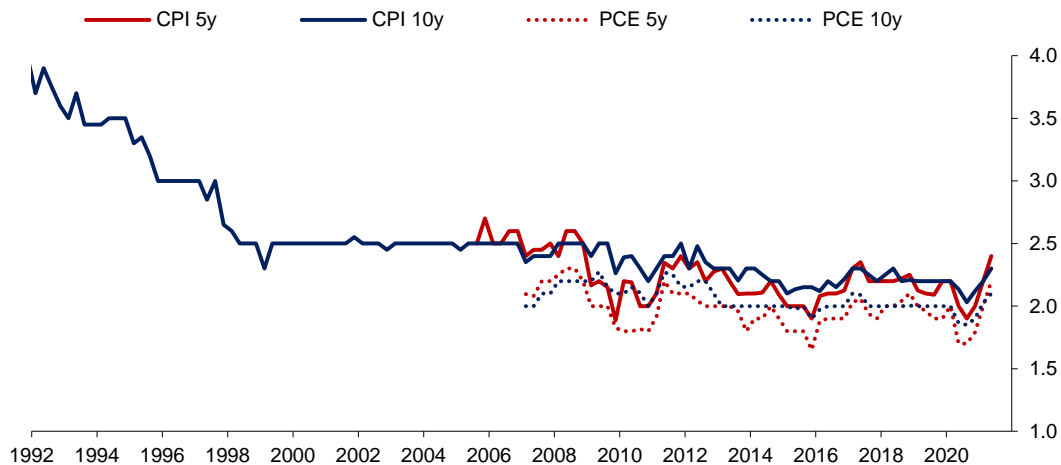
<sup>9</sup> In Chart 6 I am showing the chart of CPI expectations, which peaks at 3%. The Fed's target is 2%, but on the PCE measure. We have data on PCE expectations as well, which peak at 2.7%, consistent with the historic CPI-PCE spread of around 30bp

<sup>10</sup> Current forecast for average PCE inflation over next five years is 2.2% and next 10 years 2.1%, which means the 5y5y expected inflation is 2%.

<sup>11</sup> Core CPI and core CPE were only included in the SPF probabilities surveys since 2007, but probabilities for the inflation rate measured by the GDP price deflator is available since 1968 for current calendar year, and from 1982 for next calendar year and show similar picture for recent period but much higher before the 1990s.



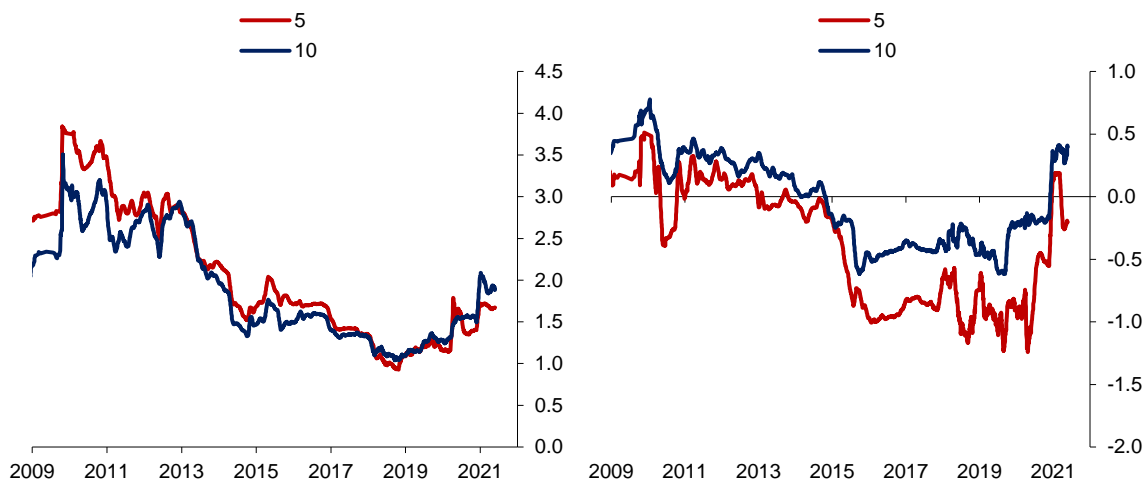
**Chart 7: Federal Reserve Survey of Professional Forecasters (SPF) Long Term Inflation Forecasts<sup>1</sup>**



Source: Federal Reserve Bank of Philadelphia [Survey of Professional Forecasters](#).

1: The '5y' forecasts are the average inflation over next 5 years and '10y' the average inflation over the next 10 years.

**Chart 8: US Option-Implied Forward Inflation Risk-Neutral Distribution Moments<sup>1</sup>: standard deviation (left) and skew (right)**



Source: Bloomberg Finance L.P and Bank of England calculations.

1: The moments are calculated from the forward (risk-neutral) distributions of inflation extracted from inflation caps and floors, as described [here](#).

In summary, evidence from surveys and option-implied distributions shows the same pattern as evidence from the inflation component of the yield curve. Survey evidence in the UK remains consistent with the MPC's target. And there is no sign so far of emerging risk to the credibility of our target, either from surveys of inflation distributions or inflation options. In the US the increase in inflation expectations is consistent with a larger short-run overshooting, with a similar increase in upside inflation risks, consistent with the Fed's new framework of AIT. Nevertheless, even in the US both central expectations and upside risks remain very modest by historical standards.

#### 4. The role of QE

At the start of the Covid crisis in March 2020, there was significant financial turmoil, an episode often referred to as the “dash for cash”.<sup>12</sup> The market turmoil was leading to a significant tightening in financial conditions, which, if left unaddressed, would have led to a further worsening of the outlook for growth and inflation. The MPC therefore voted to buy gilts and corporate bonds at a rapid pace to help restore market functioning and thereby ease financial conditions. Those actions, alongside similar actions by other major central banks, as well as an expansion of various central bank liquidity facilities, were highly successful.

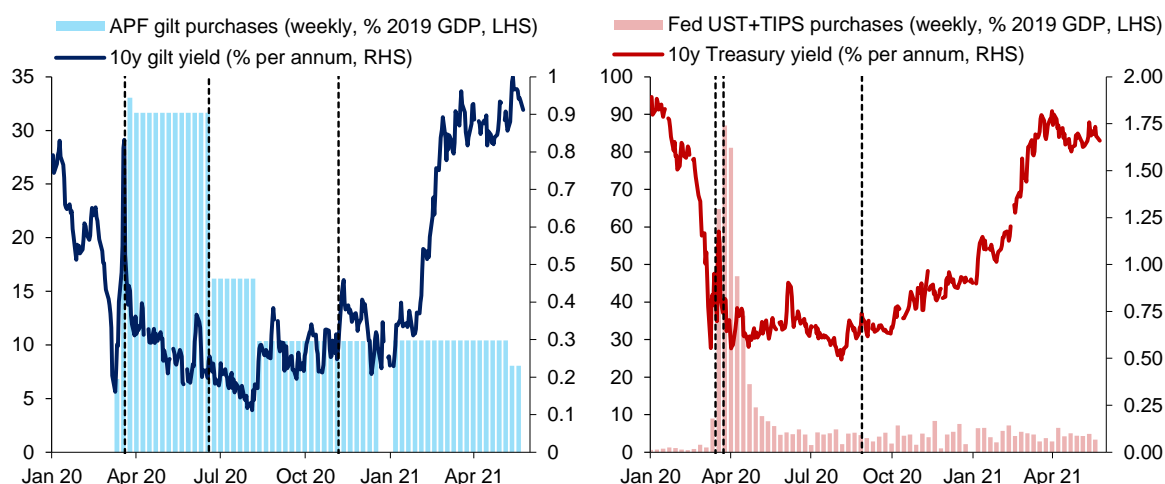
This is consistent with a view of QE that I have expressed on a number of occasions, namely that it is a very powerful tool to lower yields when market functioning is poor, by significantly increasing aggregate liquidity through abundant reserves and signalling the willingness to offset shocks. But when market functioning is restored, and if long term yields already at very low levels with inflation expectations near the target, in my view the ability for QE to impart additional macro-economic stimulus is limited. In other words, the impact of QE is state-contingent. I therefore voted in favour of the subsequent rounds of QE in June and November last year largely because I thought they served as insurance against a renewed episode of tightening in financial conditions due to market dysfunction, rather than because I was expecting to achieve an outright further easing in the monetary stance.

One illustration of this is that, when market functioning had been restored, we lowered the pace of purchases significantly, to well below the pace of government sales of new bonds. Yet yields remained little changed, as shown in Chart 9 (left). Slowing the pace of purchases did not increase yields, and announcing increases in the stock of purchases in June and November did not lower yields, although the further purchases might have helped raise inflation expectations from depressed levels by reinforcing our commitment to fight disinflationary forces. Relative to a counterfactual of no further QE, we lowered the risk of a premature rise in yields that might otherwise have taken place, but it is not clear that the policy stance became materially *more* stimulative once market functioning had been restored. A similar pattern can be seen in the US (Chart 9, right), where the pace of Fed purchases was lowered much sooner, and from higher levels, but yields remained little changed and very low.

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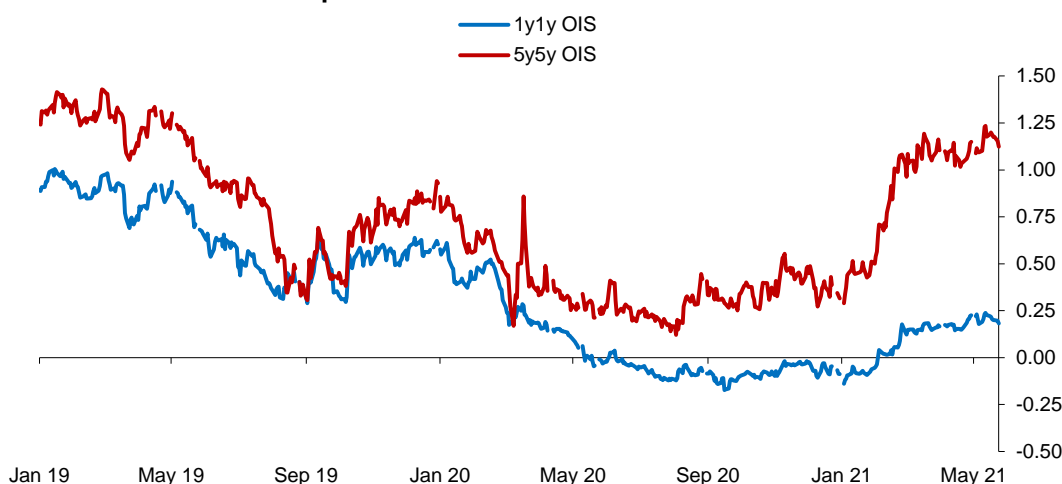
<sup>12</sup> See for example in [Bailey \(2020\) “LIBOR: entering the endgame”](#), [Hauser \(2020\) “Seven moments in Spring: Covid-19, financial markets and the Bank of England’s operations”](#), and [Vlieghe \(2020\) “Monetary policy and the Bank of England’s balance sheet”](#)

**Chart 9: Government bond yields and asset purchase pace in UK (left) and US (right)**



Source: Bloomberg Finance L.P., Tradeweb, Bank of England, Federal Reserve Bank of New York, and Bank calculations.  
 Notes: Asset purchases are normalised by average weekly nominal GDP in 2019 for both countries. Vertical lines in the UK chart (left) denote the announcement of new asset purchases on 19 March 2020, 18 June 2020, and 05 November 2020. For the US, these denote the announcement of asset purchases on 15 March 2020 and the subsequent removal of a stock target (“QE infinity”) on 23 March 2020, as well as the announcement of the Fed’s new average inflation targeting strategy. Latest observation: 21 May 2021.

**Chart 10: UK forward OIS swap rates**



Sources: Bloomberg Finance L.P. and Bank calculations. Latest observation: 25 May 2021.

In the period between April and December 2020, the fact that UK 10y yields fell further than US yields, and then remained lower relative to US yields, is largely attributable to expectations that UK policy rates might go negative, rather than any QE effects. After the MPC announced that it was considering adding negative rates to the toolkit, financial markets priced in an increasing probability of short term interest rates going negative in the coming years (Chart 10). That probability remained elevated until the end of 2020. It was only in the first few months of this year, when economic prospects recovered thanks to rapid rollout of the vaccine, that financial markets judged that negative interest rates were less likely to be required in the UK.

## 5. QE and fiscal policy

One aspect of QE that has received increasing attention over the past year is its impact on the interest rate sensitivity of government debt, and whether that impacts government debt sustainability and therefore feeds back onto the level of yields.

The argument goes as follows.<sup>13</sup> Normally the interest rate sensitivity of government debt is determined by the maturity profile of the government bonds it has issued. Short-term bonds need to be refinanced at prevailing interest rates in the coming years, so if interest rates rise along the yield curve, the interest cost to the government will rise. Longer-term bonds, on the other hand, will not need to be refinanced for many years, even decades, so they act to slow the impact of any yield rises on the interest costs faced by the government.

But QE changes this calculation, by making the interest cost on government debt more sensitive to short-term interest rates, in particular to the level of Bank Rate.

The main direct aim of QE is to lower long term borrowing costs once short-term interest rates are near their effective lower bound (ELB). The MPC's ultimate aim in doing this is unchanged from what it has always been, namely to stimulate private sector spending in order to bring inflation back to target. As a side effect, QE also lowers the borrowing costs for the government, since it works initially through long-term government bond yields. However, once QE is in place, i.e. once the Bank of England has accumulated the government bonds, it does increase the sensitivity of government finances to movements in short-term interest rates. The reason for this is that, when one considers the balance sheets of the government and the Bank of England together, the net effect of QE can be thought of as akin to swapping the cost of part of the government debt from long-term interest rates to short-term interest rates (the rate paid on reserves, i.e. Bank Rate).<sup>14</sup> The total interest cost to the government, once the Bank of England settles any cash surplus or deficit in its APF facility with government, can be calculated as follows:

$$\begin{aligned} \text{Total interest cost} &= \text{interest rate on gilts} \times \text{gilts held by the private sector} \\ &+ \text{Bank rate} \times \text{gilts held by the Bank of England} \end{aligned}$$

That works in both directions. When short-term interest rates are low, as they have been for the past decade, the interest cost faced by the government is also very low. Bank Rate has been below the yield on most gilts for the past decade.<sup>15</sup> But if Bank Rate rises, the interest cost faced by the government will immediately rise,

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<sup>13</sup> See also [Vlieghe \(2020\) "Monetary policy and the Bank of England's balance sheet"](#)

<sup>14</sup> This is not just a theoretical argument, there are actual observable cash flow implications. The costs of paying interest on reserves reduces the transfer from the Bank to Treasury, including from APF gains.

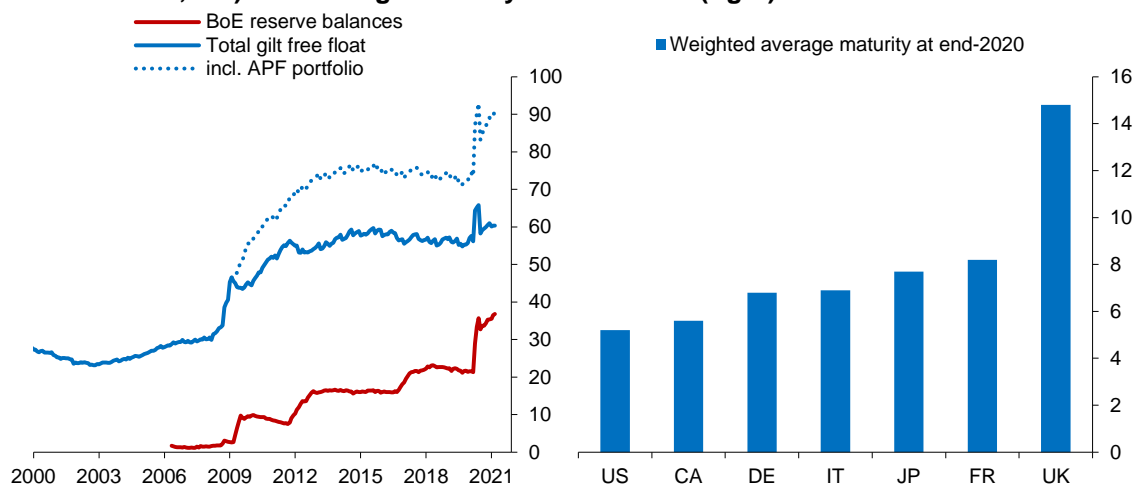
<sup>15</sup> The difference between Bank Rate and gilt yields at the time of APF purchases has resulted in approximately £110 billion that has been transferred from the Bank of England to HMT since the Asset Purchase Facility was created, which is how – operationally – the reduction in the average financing cost manifests itself. We have always been clear that these flows would reverse once Bank Rate rises sufficiently, and depending on how much yields have risen when the APF portfolio is reduced.

one for one, on the portion of government debt that is held by the Bank of England, which is roughly equal<sup>16</sup> to the amount of reserves outstanding. That is in contrast to the more gradual pass-through of interest rises on the portion of government debt that is held by the private sector, where interest rate costs only rise at the pace at which bonds mature and need to be refinanced.

Why am I discussing these technicalities? There is a lot of confusion about this. The objective of QE is to help the MPC hit the inflation target. Any impact on government finances is incidental, and does not play any role in the MPC’s deliberations. Nevertheless, people ask whether QE is good for the government finances, or bad for the government finances, whether government debt is more or less sustainable due to QE?

QE, to the extent that it fosters a stronger economic recovery than we would have seen without QE, is unambiguously good for government finances because a stronger recovery leads to more tax revenues and lower expenditures. QE also lowers the average government interest burden by keeping longer term interest rates low. But, once short-term interest rates do start to rise, whenever that may be, the interest cost on the overall debt position will increase somewhat faster, though from a lower level.

**Chart 11: UK public sector liabilities – outstanding amounts of gilts and reserve balances (% of nominal GDP, left) and average maturity of debt stock (right)**



Sources: Bank of England, Heriot-Watt University British Government Securities Database, and Bank calculations. Latest observation: 31 March 2021.

Sources: DMO Debt Management Report 2020-2021. Notes: Nominal weighted average maturity, excluding inflation uplift, including Treasury bills.

Chart 11 (left) illustrates these mechanisms. Following the rise in government borrowing after the financial crises and after the Covid crisis, government debt has increased as a share of GDP. And a larger share of that debt (about a third, as shown by the red), is now affected immediately by Bank Rate changes, rather than affected gradually by changes in yields along the yield curve.

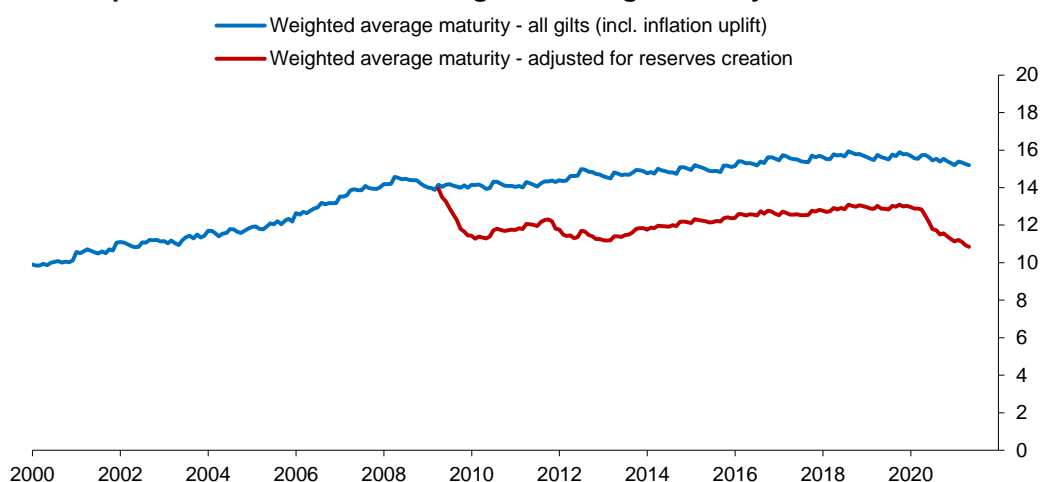
This mechanism applies to any country that has carried out QE. Chart 11 (right) shows, however, that the UK is still an outlier internationally in the relatively long average maturity of its government bonds. Reassuringly,

<sup>16</sup> The quantity of reserves is not *exactly* equal to the quantity of gilts held by the Bank of England, because there are some other assets backing reserves as well, but these are fairly small as a share of the total balance sheet.

that means that, on the portion of government bonds held by the private sector, any rises in yields will be reflected into the government debt burden only slowly, compared to countries that have a shorter average maturity of debt.

It is also worth pointing out that while QE has acted to make the government debt cost more sensitive to short term interest rates, over the same period the DMO has increased the average maturity of new issuance. One way to estimate the net effect of these two countervailing forces is shown in Chart 12. I re-calculate the weighted average maturity of government debt, but assign a maturity of zero to the portion of the debt that is held by the Bank of England. Of course the maturity is not actually zero, in fact the true maturity is however long the Bank of England keeps and reinvests those bonds. But assigning a zero maturity for the purposes of this chart captures the idea that the interest cost of this part of the debt is entirely driven by very short-term (i.e. zero maturity) interest rates, namely Bank Rate. The conclusion is that the adjusted weighted average maturity is roughly at the same level it was a decade ago. In other words, post-2010 rounds of QE have roughly offset the effect of the increase in the maturity of DMO issuance.

**Chart 12: UK public sector liabilities – weighted average maturity**



Sources: Bank of England, Heriot-Watt University British Government Securities Database, and Bank calculations. Latest observation: 31 March 2021.

## 6. Outlook for inflation and policy

Let me now turn to the outlook for the growth, inflation and monetary policy.

The economic impact of the Covid crisis was unprecedented: the UK experienced the largest GDP contraction in 300 years.

The policy response was similarly unprecedented: the largest ever peacetime rise in the fiscal deficit, and largest ever increase in the Bank of England's balance sheet.

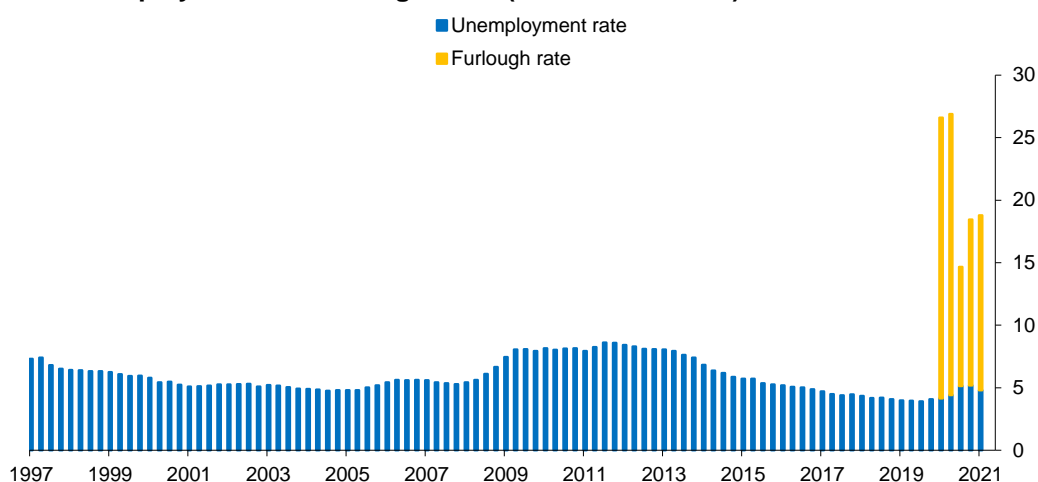
It will be some time before we know how successful these policies have been, but I would say, so far so good. The unemployment rate has only risen by about a percentage point, despite a 10% annual contraction

in GDP, in large part due to the government's furlough scheme protecting people's income as well as their connection to their employer. Fiscal policy has done the heavy lifting in this downturn.

With significant help from the government's credit easing schemes and Bank of England policy actions to keep borrowing costs low and ensure orderly functioning of funding and asset markets, credit provision throughout the pandemic generally worked well. A strongly capitalised financial system was able to help firms absorb the shock.

This year, the unprecedented contraction in GDP is likely to give way to an unprecedented rate of growth in GDP, such that by the end of the year the MPC expects to have regained the pre-Covid level of GDP. There is some temptation to call that a boom. I think it is more accurate to call it a prospective return towards normal. During this return towards normal, we should be prepared for some erratic price moves as not all sectors experience a return of demand at the same speed, which may create temporary bottle-necks. These temporary price moves, along with significant base effects, are likely to push inflation above our target temporarily later this year and early next year.

**Chart 13: Unemployment and furlough rates (% of labour force)**



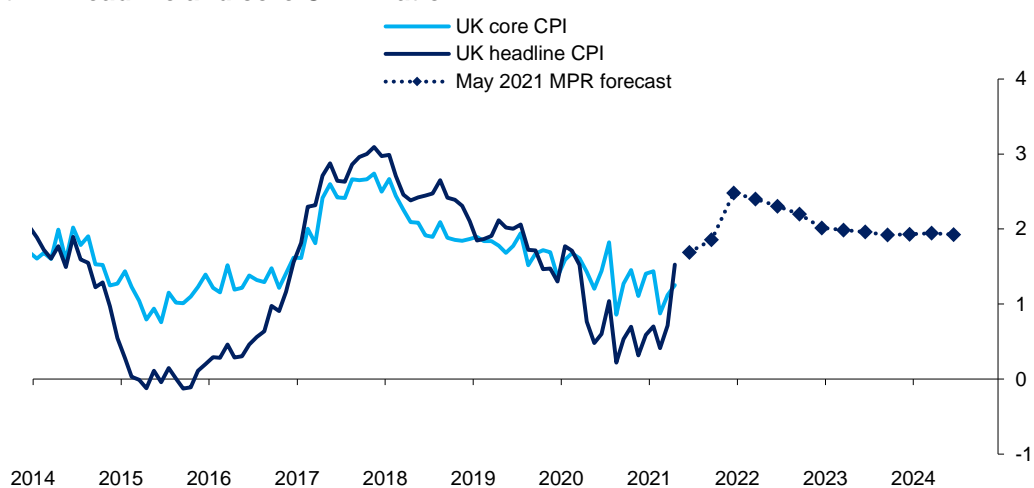
Source: ONS and Bank calculations. Notes: Yellow bars show the number of furloughed jobs at the end of the quarter per cent of the economically active population aged 16-64. Latest observation: 2021 Q1.

Economic prospects are better now than they have been at any time over the past year, thanks to the on-going rapid rollout of vaccinations, but we are not out of the woods yet. Internationally, new virus cases remain elevated, which continues to weigh on global economic activity. In the UK, we are still dealing with so-called "Variants of Concern", which may yet affect the pace at which the Covid-related restrictions can safely be eased. On the domestic economy front, we still have the wind-down of the furlough scheme ahead of us. While the MPC expect most furloughed workers to be reintegrated into the labour market smoothly, this process is subject to significant uncertainty. We are talking about millions of workers (Chart 13), and

even if only a small share of them end up in unemployment later this year, that could lead to a rise in unemployment that is of macro-economic significance.<sup>17</sup>

The fact that we will have temporarily high GDP growth rates and temporarily higher inflation in the coming months is not the main focus of monetary policy. Instead, monetary policy will focus on returning inflation sustainably to its target, which will require focusing on the medium-term outlook for inflation, and therefore the medium-term pressure of demand on supply, rather than transient factors. This approach to monetary policy is outlined clearly in the MPC's May Monetary Policy Statement and Minutes.

**Chart 14: Headline and core CPI inflation**



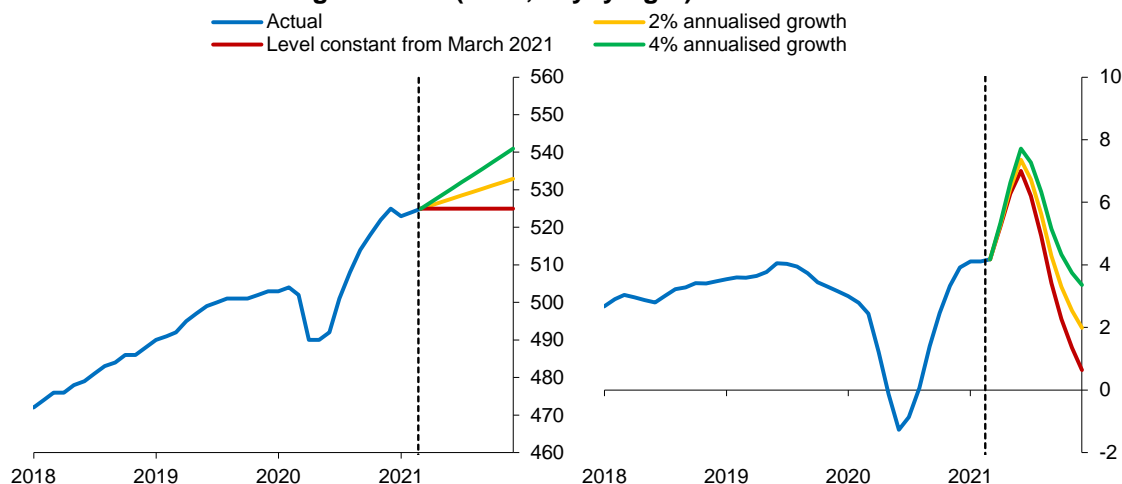
Source: ONS and Bank of England. Latest observations: April 2021 (actual).

It will be a communications challenge to keep reminding people of the likely temporary nature of the upcoming inflation. CPI inflation is likely to move above the target (Chart 14), as I have already mentioned, due to base effects and temporary price rises due to supply bottle-necks in the face of uneven demand. When CPI inflation is affected by temporary factors and base effects, one cross-check of underlying inflation pressures is to look at wage inflation. But wage inflation is affected by temporary factors and base effects as well. Year-over-year growth in Average Weekly Earnings (AWE) is likely to rise sharply in the coming months before slowing again later this year – and this will happen regardless of the underlying strength of the labour market. Chart 15 shows the evolution of the year-over-year growth rate of private sector regular AWE on the illustrative assumptions that wages grow at 0%, 2% and 4% respectively from the most recent data point. The chart illustrates that in all three scenarios the year-over-year growth rate is set to spike sharply to 7-8%, before falling back in subsequent months.

<sup>17</sup> Note that the mapping between furloughed *jobs* and unemployed *persons* is not going to be one for one. That is because a single worker can be furloughed from two jobs at the same time. Thus, if after the end of the furlough scheme they cannot return to either job and become unemployed, it would add only one person to the unemployment rate. Or, alternatively, if they lose one of them but return to the other, they would not be counted as unemployed at all.



**Chart 15: Private sector regular AWE (£ left, % yoy right)**



Source: ONS and Bank calculations. Notes: Chart on the right shows growth in the rolling 3-month average AWE over the 3-month average one year before. Latest observation: March 2021.

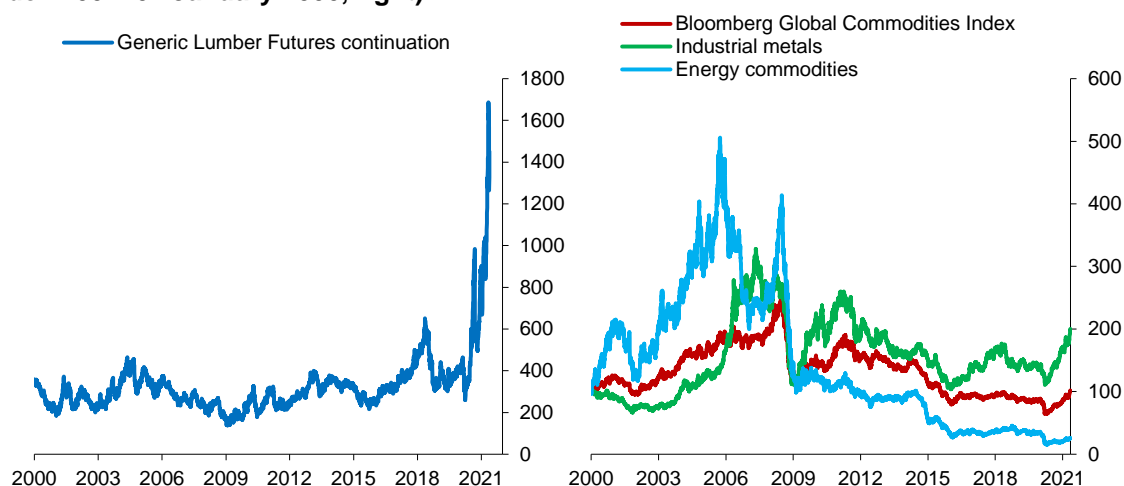
Aside from CPI and wage inflation, commentators point to all kinds of indicators that have not been particularly reliable in the past in order to make the case for persistent inflationary pressure.

Some cite rapid money growth, which has not been a reliable inflation indicator for decades. Rapid money growth has not been a counterpart to rapid credit expansion. Instead, high deposit balances reflect excess savings accumulated by higher income households, who have maintained a steady wage income but have seen their spending opportunities temporarily curtailed. In the May MPC forecast, only a small share of that income is expected to be spent, with the remainder saved. These are not the ingredients of an inflationary money and credit expansion. Instead, I expect money growth to slow.

Some cite rising commodity prices as evidence of a persistent inflationary problem. The price of lumber is a favourite, and it makes for a spectacular chart indeed (Chart 16, left). But inflation is not about the increase in the price of a few commodities. It is about broad-based and on-going price increases. Moving our focus simply from some isolated commodities to broad indices of a range of commodities, the picture is much less spectacular (Chart 16, right). The commodity price increases are more modest than in 2011, and it is worth remembering that even in 2011 their rise did not signal any persistent inflationary pressure.

What will ultimately tell us whether inflation pressures require a policy response or will turn out to be transient without a policy response, is the passage of time. I suspect that upward underlying inflation pressure will only emerge once economic slack has been fully eroded, which in turn will require a smooth transition of the economy out of furlough. Only once the furlough scheme has ended will we have a better idea of how much underlying slack there is in the labour market.

**Chart 16: International lumber prices (USD, left) and Bloomberg commodity price indices (index 100 = 01 January 2000, right)**



Sources: Eikon by Refinitiv. Latest observation: 21 May 2021.

Some argue that it will be too late if we wait for the data to give us clarity on underlying inflation pressure. I do not put much weight on such arguments, for three reasons.

First, given the proximity of the effective lower bound (even with the possibility of modestly negative rates), tightening too early would be a much costlier mistake than tightening too late. The international experience of the past two decades has taught us that premature tightening can lead to even more easing later, with below target inflation.

Second, monetary policy does, in fact, work quite quickly.<sup>18</sup> It does not take years for interest rates increases to start having an effect. As long as we make clear that we will not tolerate persistent deviations of inflation from target, and act accordingly, inflation expectations are unlikely to drift, and inflation will not become a persistent problem. Comparisons with the 1970s are misplaced, and fail to take into account that the institutional framework for monetary policy has fundamentally changed since then.

Third, as I have discussed many times before, I think we continue to find ourselves in an environment where the neutral rate of interest, namely the rate at which monetary policy is neither stimulating nor putting the brakes on the economy and inflation, is very low relative to the past several decades. That was apparent before we were hit by the Covid shock, when Bank Rate was just 0.75% and inflation pressures were too weak. A low neutral interest rate will remain relevant once the Covid shock has passed. If anything, Covid may have lowered it by increasing the perception of tail risks.<sup>19</sup> So if interest rates do need to rise once the data show that medium-term inflationary pressures are rising, then I suspect that interest rates will not need to rise very much to slow the economy to a pace that is consistent with our 2% inflation target.

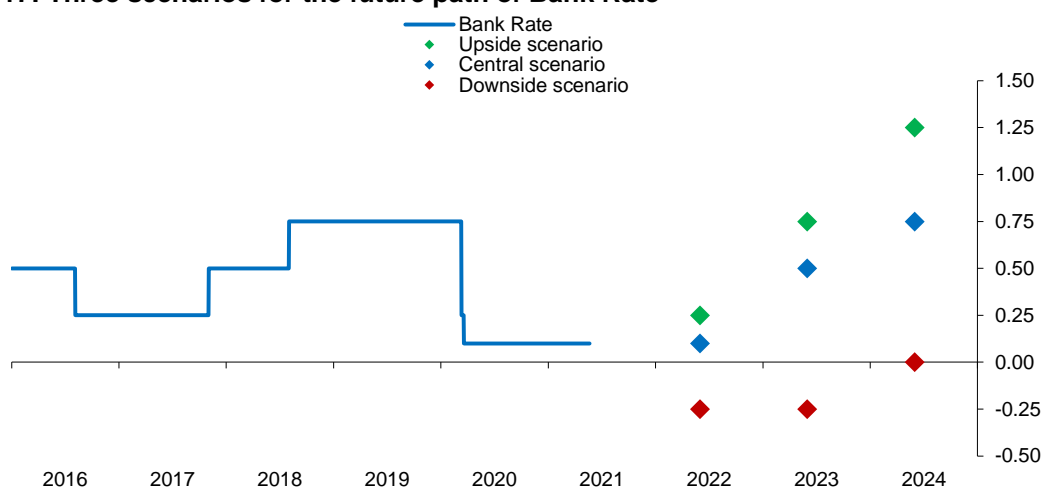
<sup>18</sup> For example, [Cloyne and Hürtgen \(2016\)](#) find that in post-1992 samples inflation reacts quickly to monetary policy with sizeable effects in the first and second year after the shock, as do [Ellis et al. \(2014\)](#). These findings for the UK are corroborated by [Cesa-Bianchi et al. \(2020\)](#). For the US, [Olivei and Tenreyro \(2007\)](#) find a fast transmission of monetary policy to inflation depending on the timing of the shock which they explain using a structural model of unevenly staggered wage setting.

<sup>19</sup> For the role of macro-economic tail risk in determining the level of the neutral interest rate see [Vlieghe \(2019\) "Monetary policy: adapting to a changed world"](#).

## 7. Illustrative scenarios and preferred paths of Bank Rate

I will conclude by briefly describing some illustrative scenarios for the economy in the coming years, and what my preferred Bank Rate path might look like in each of these scenarios. These scenarios fall within the fan chart of the May Monetary Policy Report. The Bank Rate paths I am showing in Chart 17 are consistent with the MPC's guidance on monetary policy, but the guidance encompasses a wide range of other paths as well. I want to be very clear that these are my own personal views, and do not represent the view of the MPC. And I emphasise that any future rate path that I discuss is not a promise, it is my own forecast based on a particular economic scenario. If the data turn out differently, so will the associated rate path.

**Chart 17: Three scenarios for the future path of Bank Rate**



Notes: Diamonds show hypothetical level of Bank Rate in one, two, and three years' time.

My central scenario is that the economy evolves similarly to the MPC's central projection in May, but with somewhat more slack than in the central projection. Relative to the MPC's central projection, I worry that the transition out of furlough does involve a modest rise in the unemployment rate, while the economy's supply potential is somewhat less adversely affected, so that there is still some excess supply around the turn of the year. In that scenario, the first rise in Bank Rate is likely to become appropriate only well into next year, with some modest further tightening thereafter.

On the upside, should the transition out of furlough happen more smoothly, with the unemployment rate at or a little below current levels by the end of the year, with associated signs of upward inflation and wage pressure beyond the temporary and base effects, then a somewhat earlier rise in Bank Rate would be appropriate. It would probably take until the first quarter of next year to have a clear view of the post-furlough unemployment and wage dynamics, so a rise in Bank Rate could be appropriate soon after, along a slightly steeper path than in my central case.

On the downside, the economy might not recover as quickly, perhaps as lingering concerns about "variants of concern" continue to weigh on demand, which in turn results in more adverse unemployment dynamics as

fewer furloughed workers are hired back straight away, with weaker underlying wage pressure. In that case, it is still possible that monetary policy might be required to stimulate the economy a little further to help eliminate slack and ensure inflation, after its temporary rise later this year, does not subsequently fall back below its 2% target persistently.