Tightening the screws: are rising interest rates actually working?

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The economic environment has shifted markedly over the last couple of years. Inflation in most advanced economies has soared to historic highs and, as a result, central banks have tightened monetary policy forcefully – principally through raising interest rates. In this note, we outline how rising rates feed through to activity, financial markets and ultimately to inflation.

It is clear from our analysis that the economic conditions within which changes in monetary policy occur have a profound bearing on its effectiveness – i.e. "state dependency". The myriad of global shocks over the last couple of years – such as the COVID-19 pandemic, war in Ukraine and supply chain disruption – may have influenced just how long higher rates are taking to feed through to the economy. In the UK in particular, there is growing evidence to suggest that while the pass-through is happening as expected, it is taking longer.

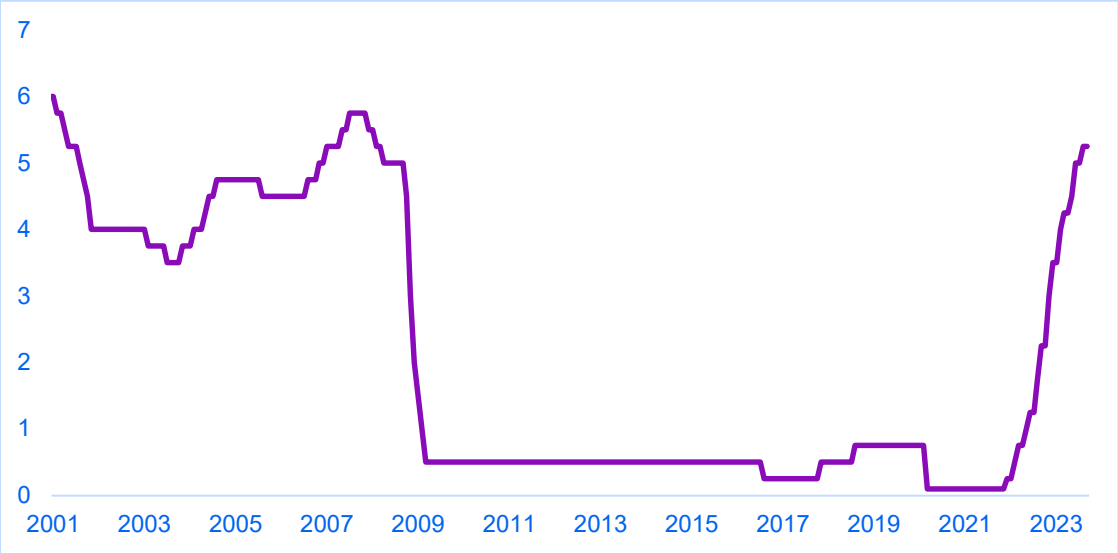
This implies that the headwinds from higher interest rates may last for longer than in previous tightening cycles, and they could also take longer to bring inflation back to the Bank of England's target.

Over the last couple of years, surging inflation has been at the heart of most advanced economies. In the UK, consumer price inflation rose to a peak of over 11% in October 2022, its highest in over forty years. While it has fallen back since (to 6.7% in August 2023), inflation remains historically high, and over triple the Bank of England's 2% target.

A key mandate of central banks in most advanced economies is to preserve price stability, via targeting a certain rate of inflation. As a result, they responded in earnest to prices rising so strongly: in the UK, the Bank of England has raised interest rates fourteen times since December 2021, bringing them to 5.25% in August, and holding them there in September. This marks a decisive shift from the preceding decade, when interest rates had generally stayed close to the zero-lower bound (having been cut to this level at the height of the global financial crisis in 2009 – chart 1).

In this note, we outline exactly how rising interest rates feed through to economic activity, drawing on the Bank of England's own assessment of this "transmission mechanism". We also examine why this pass-through might not be working quite as planned this time around.

Chart 1: UK Bank rate (%)



The architecture of monetary policy

Monetary policy works largely via its influence on aggregate demand, taking the economy's supply capacity as given. The latter is more dependent on phenomena such as productivity, labour force and capital growth, the macroeconomic management of which largely falls under the domain of government or fiscal policy.

A central bank has an effective monopoly over the supply of "base" money (i.e. notes and coins in circulation, and commercial banks' deposits at the central bank). This gives it the power to determine a specific interest rate in wholesale money markets. Through this mechanism, the central bank chooses the price at which it will lend base money to private sector institutions.

Stage 1: from changes in official rates to financial markets

The first phase of interest rate pass-through occurs through financial and asset markets, in some cases almost immediately.

Short- and long-term interest rates

A change in the official interest rate is immediately transmitted to other **short-term sterling wholesale money market rates**, such as rates on interbank deposits.

Soon after the official rate change, banks adjust their standard lending rates, usually by the exact amount of the policy change. This affects the rates that banks charge customers on variable loans, including overdrafts. Rates on standard variable mortgages may also change, but this can sometimes occur with a delay. Rates offered to savers will also change, to preserve the margin between deposit and loan rates.

In contrast, the impact of an official interest rate change on **longer-term rates** (such as those on long-dated government bonds and securities) is more uncertain, as they are influenced by number of other factors: an average of current and expected future short-term

rates, perceptions of the government's financial prudence, and legislative issues. For example, a rise in the official rate could actually lead to expectations of *lower* interest rates in the future if it is viewed as being the interest rate peak, thus leading to a fall in longer-term rates. The actual effect will also depend on the impact of the policy change on inflation expectations.

Asset prices and the exchange rate

But if a rise in official interest rates raises long-term rates, this would subsequently lower **bond prices**, as the price of bonds moves inversely to its interest rate. Higher interest rates also lower other securities prices, such as **equities**, as expected future returns are discounted by a larger factor. As a result, the present value of any given future income stream falls, thus reducing the value of the asset.

An "unexpected" rise in the official rate will also lead to an immediate appreciation of the currency in foreign exchange markets, and vice versa. Recent analysis by Monetary Policy Committee (MPC) member Catherine Mann shows that the peak impact on the **exchange rate** occurs at two to three months, following a 1 percentage point rise in Bank rate.

The exchange rate strengthens because higher domestic rates, relative to interest rates on equivalent foreign-currency assets, make assets priced in sterling more attractive to international investors.

However, the precise impact on the exchange rate is uncertain, depending on expectations about domestic and foreign interest rates and inflation. The Bank of England's own analysis shows that the impact of the most recent rise in rates through this channel has been relatively limited, given that most advanced economies have been tightening monetary policy at the same time as the UK.

Expectations and confidence

Changes in official rates can influence expectations about the future course of activity in the economy, and the confidence with which those expectations are held. These play a key role both in the initial pass-through of monetary policy to financial markets, but also throughout the transmission mechanism.

Once again, the direction of impact can be hard to predict, depending on how much "news" there is in the announcement. For example, an unexpected rate rise could be interpreted as indicating that the MPC believes that the economy is growing faster than expected, boosting confidence and expectations of growth. Conversely, it could also be interpreted as the MPC perceiving the need to slow growth in the economy to hit the inflation target, denting expectations and confidence. Meanwhile, a fully expected change may have little or no impact, even if it is a large change in rates.

The expectations channel is particularly pertinent in this tightening cycle, as the MPC have been raising rates against the backdrop of "stagflation"-like conditions, i.e. historically high inflation and an underlying stagnation in activity, thus having to balance two very conflicting objectives.

Stage 2: from markets to spending behaviour

Changes in short and long-term interest rates, asset prices and the exchange rate will subsequently influence the spending decisions of households and businesses, though with a time lag. As with the early transmission to financial markets, expectations play a key role in the effectiveness of this channel of pass-through.

Individuals

The pass through to households and individuals takes place through three main channels. Firstly, **new interest rates on debt and savings alter the disposable income of savers and borrowers**, thus influencing spending decisions. For example, rising mortgage rates reduce the disposable income of those affected, thus reducing funds available to spend on goods and services. Higher interest rates also discourage unsecured borrowing to finance spending. They may make savings products more attractive, encouraging individuals to save money and spend less now – thus effectively postponing consumption.

While higher mortgage rates alone can have a big impact on individual finances, the Bank of England suggests that the aggregate economic impact can be relatively small compared to other channels. The Bank expect the most recent rise in mortgage rates to reduce consumer spending by just 0.8% to the end of 2025.

Changes in interest rates also effect the value of financial wealth, due to changes in asset prices. Higher rates reduce asset values, thus lowering wealth and spending: in particular, they raise the cost of financing house purchases, and so reduce demand and curb house price inflation. The scale of the impact on housing wealth may also be larger than on other forms of financial wealth. For example, individuals may feel poorer when the market value of their property falls and borrowing may become more difficult, given that property is used as collateral for loans.

A rate change can also more **directly influence the prices of goods and services, through its early impact on the exchange rate**. This not only impacts the *level* of spending, but also its *composition*: a rise in the exchange rate makes imported goods and services cheaper, encouraging a switch of spending away from home-produced goods and services.

Firms

While there is a decent level of understanding around the impact of interest rate changes on businesses, the channels and direction of transmission are less clear-cut than for individuals. This is because there is (arguably) a greater degree of heterogeneity around decision making within companies, and much depends on the current and expected financial state of the firm in question.

The most direct impact from a rate change occurs on those firms that rely on bank borrowing, or where existing loans are linked to short-term money market rates. **Rising interest costs reduce profits and increase the return that firms require from new investment** projects, making it less likely that they'll start them; evidence from the Bank of England's Decision Makers' Panel of businesses suggest that rising interest rates are expected to reduce business investment by 8% on average over the next year. It'll also

mean that businesses are **less likely to hire staff**, and will be more prone to reducing employment or hours worked.

However, the link between official rate changes and the cost of capital is ambiguous. The impact may work in the other direction for more cash-rich firms; following a rise in interest rates, they will receive a higher income from funds deposited with banks or placed in money markets. This could encourage them to shift resources into financial assets, or to pay higher dividends to shareholders. Such firms may also be more affected by shifts in longer-term market interest rates, if they use capital markets to fund long-term investment projects.

The asset price channel in the first stage of the pass-through also has a bearing on businesses. Bank loans to firms – especially smaller ones – are often secured on assets, so **a fall in asset prices can make it harder for them to borrow**, given that lower asset prices reduce the net worth of a firm. The same is true for equity finance – more important for larger companies – which is easier to raise when interest rates are low and asset valuations are high.

An appreciation of the exchange rate following a rate rise would worsen competitiveness for UK-based firms, especially if a large proportion of costs were fixed in sterling terms. This is likely to be felt most acutely by manufacturers, who are most exposed to foreign competition. But the impact is also likely to be significant for many other sectors with a global footprint, such as agriculture, tourist-facing services (including hospitality), financial and business services.

Stage 3: from spending behaviour to GDP and inflation

The feed-through of policy rate changes to household and business spending is subject to two important factors. The first is **second-round effects**, where the resulting change in spending will have further effects on other individuals and firms, even if they were directly unaffected by the initial rate change. As a result, those most directly impacted by changes in official interest rates are not necessarily those most affected by its full repercussions.

The second is the **time lags** by which rate changes feed through. The impact on wholesale money-market rates and asset prices is relatively quick, but the pass-through to some retail interest rates may be slower. In some cases, it could be several months before higher official rates affect payments made by some mortgage holders, or received by savers – and even longer before these lead to changes in spending.

The Bank of England cite empirical evidence which shows that on average, it takes up to about one year in the UK and other advanced economies for a change in monetary policy to have its peak impact on demand and production; and up to a further year for these changes in activity to fully impact inflation. However in reality, these lags will be dependent on a myriad of other factors: such as confidence effects from a policy rate change, global shocks, the stage of the business cycle, and expectations about future inflation.

Orders of magnitude

Soon after it was made independent in the late 1990s, the Bank published its assessment of just how much rate changes influence economic activity and inflation. This acts as a useful benchmark for measuring the impact of monetary policy, though with the important caveat

that, among other factors, state dependency and the stage of the business cycle pay a key role.

Their analysis looks at the impact of an expected one-percentage point rise in the official rate, that lasts for one year. This leads to a maximum fall in GDP of between 0.2% and 0.35% after around five quarters. However, more recent analysis by MPC member Catherine Mann puts the impact at a much larger -1.25% over a similar time horizon.

By contrast, the rate rise leads to little change in inflation in the first year. The response is more significant in the second year, with the maximum impact felt after nine quarters: of between 0.2 and 0.4 percentage points. The impact on inflation diminishes thereafter, but it nonetheless remains higher than its pre-rate rise level three years after the policy rate change.

Bank rate has risen by 5.15 percentage points since December 2021 (i.e. over 21 months). Applying these rules of thumb, this should reduce GDP by between 1.0% and 1.8% (or a more hefty 6.4% by Mann's estimate), and bring down inflation by between 1.0 and 2.1 percentage points. Because of the shorter time lag around the GDP impact, this should in theory already be in train; in contrast, the empirical evidence suggests that the peak impact on inflation is yet to materialise.

The Bank's judgement is that rises and falls in the official rate of equal size would have effects of a similar magnitude in both directions. But this may not be the case where expectations and confidence effects are particularly important. In the post-financial crisis era, forward guidance around monetary policy has also likely played a role in ensuring the effective pass-through of rate changes to the economy, through management of expectations.

Is the pass-through of interest rates occurring as expected this time around?

Given that interest rates have been a tool for managing the economic cycle for several decades – some would argue even a few centuries – the accepted wisdom is that there is generally a good understanding of how they influence economic conditions. While this is true for central banks across the world, the latest tightening cycle is taking place against the backdrop of unprecedented conditions: the world has been beset by a number of economic shocks in quick succession, inflation is historically high, and the UK economy itself has been stagnant over the last year.

The unique circumstances surrounding the current tightening cycle – i.e. the economy's "state dependency" – matters. There is growing evidence that this may have influenced the channels by and magnitude with which interest rates influence inflation and activity. For example, contrary to the Bank's earlier judgement, Mann finds that the transmission to mortgage rates is quicker as official interest rates rise, and slower as rates fall. Similarly, the eventual impact on inflation has less of an effect when tightening from a loose stance (as in this rate cycle, where tightening occurred from near-zero interest rates) than from an already-tight stance.

We explore three areas where pass-through of higher rates may not have occurred quite as expected this time around – to equity prices, the exchange rate and to household activity.

Equity prices

Looking at the earliest stage of the transmission mechanism, the impact of rate rises on equity prices so far has largely been as expected: the FTSE All-Share index fell by 10% between the first rate rise in December 2021, and October 2022 (chart 2). Higher rates should signal a worsening economic outlook to financial markets, dampening expectations of shareholder payouts and potentially increase risk premia (i.e. the premium required for holding risky assets such as equity, over “risk-free” debt such as government bonds).

However, Mann points out that equity prices have fallen by less than expected – and are higher than the current level of interest rates and economic growth expectations would imply. Indeed, following the trough in October 2022, the FTSE All-Share index has risen by 12% since. Her analysis shows that a higher shareholder payout and a lower equity risk premium have actually boosted equity prices since the beginning of 2022 – outweighing the impact of monetary tightening through higher interest rates.

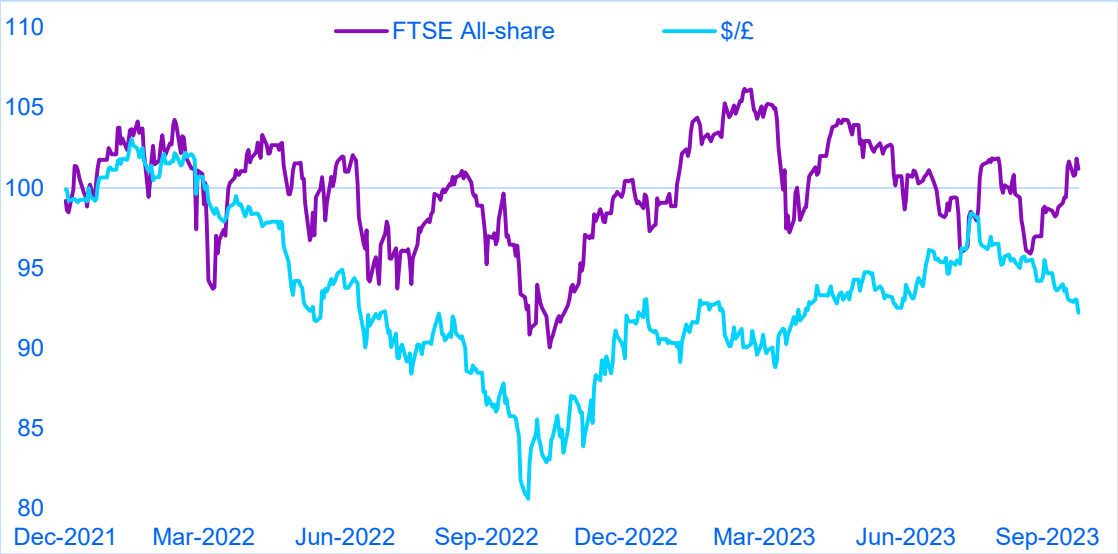
The support from shareholder payout suggests that markets believe that the economic outlook has improved since early 2022: which could reflect tail risks from the COVID pandemic receding, expectations of inflation falling back, and lower long-term interest rates (as short-term rates rise following a tightening in Bank rate). But the positive contribution from the equity risk premium implies that perceptions of a better economic outlook alone don’t fully explain equity performance.

Sterling

Movements in the sterling exchange rate have been even more contrary to what higher rates should imply. A tightening in monetary policy should lead to a rise in the exchange rate – in contrast, the pound has fallen by 7% against the US dollar since December 2021 (though once again, has recovered some ground since October 2022 – chart 2). The contribution of US policy and macroeconomic factors have likely outweighed the Bank of England’s tightening. In particular, the US Federal Reserve has been raising rates at a faster pace, against the backdrop of a better economic outlook across the Pond.

However, there does also appear to be a more persistent UK-specific risk premium weighing on the pound, which captures reduced appetite for Sterling assets more broadly – unrelated to the current state of monetary policy and future macroeconomic conditions. Interestingly, the negative investor premium on the pound sits at odds with the positive premium on equities, possibly because the latter may be more influenced by global factors.

Chart 2: UK equity prices and exchange rate (16 December 2021=100)



Backward-looking expectations

Mann's analysis also suggests that a sustained period of high inflation may have influenced price and wage-setting behaviour, in itself dampening some of the impact of monetary tightening.

She explores the notion that the number of "backward-looking" agents in the UK economy is higher now than in the past. This mostly comprises of businesses (or "price setters") who do not set prices according to supply and demand conditions, rather basing their decisions on the state of price pressures in the recent past. Evidence suggests that the share of backward-looking agents is higher when energy prices surge, as they did in early 2022 (i.e. at the beginning of the current rate tightening cycle).

This suggests that expectations about inflation and firm-level pricing are set by "looking backwards", at where inflation has been recently (i.e. at high levels). In this scenario, a given tightening of monetary policy has less of an impact on inflation. Through dampening growth in the process, it worsens the "trade-off" between prices and activity facing a central bank, which gets worse the more monetary policy is tightened.

Backward-looking expectations also amplify the impact of a "cost-push" price shock, of the nature seen by the big rise in commodity prices following the onset of the Ukraine war: in such a scenario, inflation peaks higher and remains above the Bank of England's target for longer. Furthermore, this higher inflation means that *real* interest rates (i.e. those adjusted for price changes) initially fall after monetary tightening – exacerbating the persistence in price pressures.

Crucially, a large share of backward-looking firms also affects the speed with which monetary policy impacts inflation. In other words, the lags of the monetary transmission mechanism (as outlined above) lengthen. This, combined with inflation persistence, suggests that a more forceful rise in interest rates than usual may be necessary when price-setting is backward-looking.

Individuals

There is also some evidence to suggest that the pass-through of rising rates to households may be longer than usual in this tightening cycle. Principally, this is because a greater share of mortgage-holders are on fixed rate mortgages than in previous tightening cycles – according to the Bank of England, fixed rate mortgages account for 88% of outstanding ones, compared to around 30% in the early 2000s. In addition, the length of time that people are deciding to fix their mortgage has become longer.

As a result, many mortgagors have yet to experience the impact of higher rates: analysis by the Resolution Foundation shows that households have only experienced about a third of the increase in annual interest repayments expected until the end of 2026 (£12bn). This implies only a small impact on household spending from rising rates so far (the Bank estimate a reduction of just 0.3% in Q1 2023), but one that will rise as more mortgagors roll off fixed contracts, and re-fix on to higher rates.

However, there are still uncertainties around the scale of this effect. Given how well-documented rising interest rates have been the media, households on fixed-rate mortgages may have already reduced spending in anticipation of borrowing costs rising. This further underscores the importance of expectations in the monetary policy transmission mechanism.

Furthermore, the Bank of England have also noted that the pass-through of rates to instant-access savings accounts has been unusually weak over this tightening cycle. This could reflect banks and financial institutions seeking to recover some margin, following a long period where the spreads between Bank rate and savings rates were compressed when the former was close to zero. The banking sector also has an ample supply of deposit funding, which may have reduced incentives to increase rates to attract deposits.

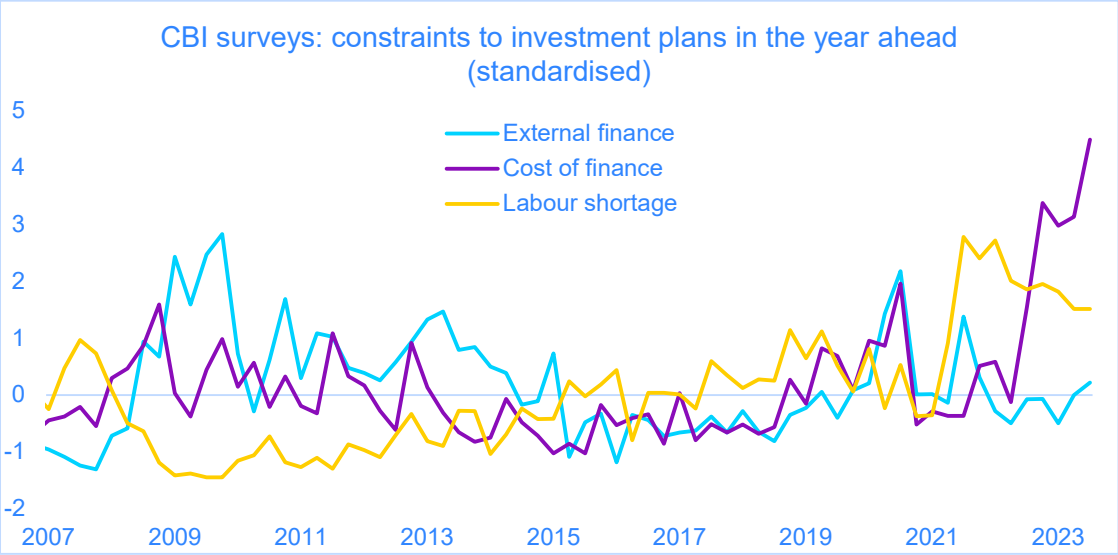
What does this mean for businesses?

The Bank of England has risen interest rates by over 5 percentage points since the end of 2021. The usual lags in the transmission mechanism suggest that this should be feeding through substantively to growth and inflation at present. The pass-through seems to be occurring broadly as past evidence would suggest – supplementing our understanding of data, anecdote from our members points to the rising cost of credit has having a bearing on investment and financing decisions. Our business surveys also show that the cost of credit as a potential constraint to capital spending has risen to a record high (chart 3).

However, there is evidence that the pass-through is happening at a slower pace than usual. This implies that headwinds from tighter monetary policy will linger for longer than previously expected. This may be amplified by the Bank of England's forward guidance, which implies that, while interest rates may be nearing a peak, they will stay higher for longer in order to fully reign in inflation.

As a result, businesses should plan for tighter financial conditions persisting for the foreseeable future. Consumer-facing companies may also need to be aware of the potential implications of higher rates for household spending and confidence. But as always, the path of monetary policy will remain data-dependent: if the near-term growth outlook weakens, alongside inflation persistence receding, the Bank of England could be prompted to act very differently.

Chart 3: CBI business surveys – factors likely to limit investment in the year ahead (standardised % balance)



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