



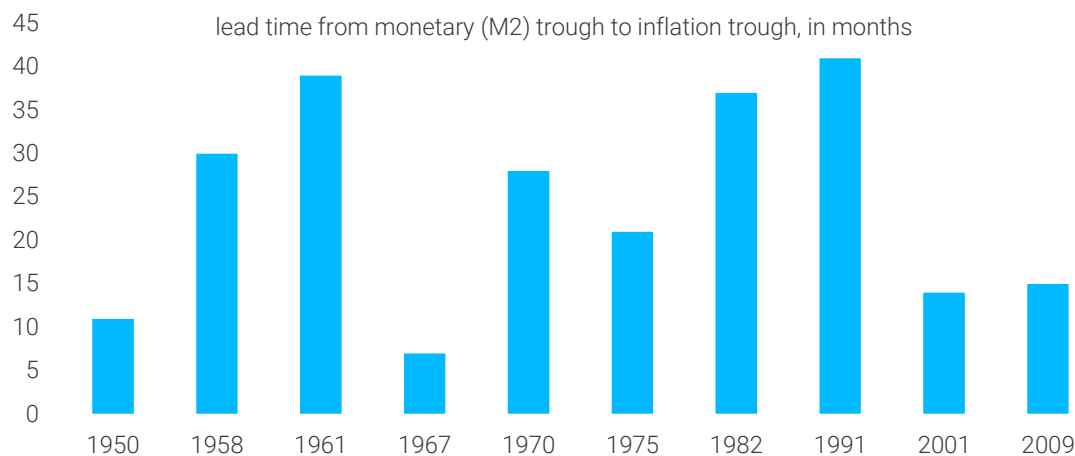
Macro Picture

# MONETARY LAGS - TOO LATE TO PIVOT?

Dario Perkins

Monetary tightening famously affects the economy with “long and variable lags”, which is the main reason the consensus expects a global recession in 2023 – even if central banks stop raising rates soon. Yet new research raises big questions about this prevailing consensus. Not only are the lags shorter than we thought; they have probably also diminished over time.

**Chart 1: The origin of ‘long & variable lags’ – but new research suggests it was flawed**



Source: Friedman (1972), [Bank of England update \(2002\)](#), TS Lombard update

## PENT-UP DESTRUCTION

The idea that monetary policy operates with “long and variable” lags dates to Milton Friedman in the 1970s. Intuitively, it makes sense: it takes time for complex economies to adjust to higher interest rates and even longer for weaker activity to curb inflation. These policy lags could explain the central bank habit of “overtightening” and why the consensus expects a recession in 2023.

## SHORTER & LESS VARIABLE

Yet new research has raised important questions about the “long and variable lag” thesis. Modern statistical techniques, which are better able to identify the impact of monetary policy, suggest the lags are shorter than economists previously believed. There is also evidence that central bank transparency – and important shifts in financial markets – have shortened the lags over time.

## LOST IN TRANSMISSION

Shorter monetary lags are bullish for the macro outlook, especially in the US, where Fed officials are keen to pause the tightening cycle so they can assess the full impact of their policy actions. But there are significant differences in monetary transmission across the developed world. And some central banks are determined to push on with rate hikes, regardless of any policy lags.

## MONETARY LAGS – TOO LATE TO PIVOT?

Monetary policy operating with “long and variable lags” is the central-bank equivalent of “God moves in mysterious ways”. The authorities are sure their actions have a profound impact, but sometimes it is hard to observe the effects in real time, or trace a precise sequence of causal macro linkages. The idea of monetary lags is certainly intuitive. The economy is complex, often driven by sentiment; existing contracts will condition short-term trends; and investment/hiring decisions made today will have persistent effects. Even if tighter policy is successful in curbing demand, it might take a while for this to generate sufficient “slack” in the economy and longer before any rebalancing of demand and supply influences inflation. The failure to take account of the lags in monetary policy could be why central banks have a nasty habit of overtightening. They raise interest rates and nothing immediately happens, so they raise them again. By the time they have observed the full impact of their policies on the economy – especially in lagging indicators such as employment and the CPI – it is too late to avoid a serious downturn. Presumably this is the reason why consensus thinks the global economy will continue to deteriorate in 2023, even if central banks end their tightening cycles soon. Ask any sellside economist to explain their recession forecast and the phrase “long and variable lags” will inevitably enter the conversation.

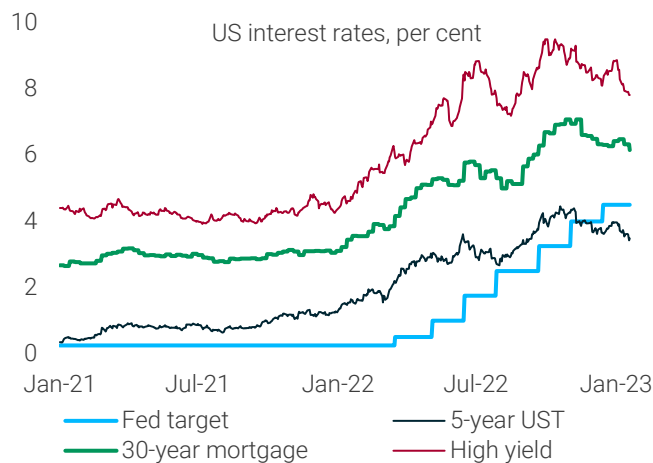
Yet just because an idea is consensus doesn’t mean it is true, especially in macro, [where irony dictates there is nothing more dangerous than conventional wisdom](#). And new research has raised important questions about the “long and variable lag” thesis. The doubts have appeared on two levels. First, several recent studies suggest the historical failure to identify clear and tractable effects from monetary policy was the result of poor econometric analysis rather than inherent complexities in the transmission of those policies to the real economy. Economists assumed “long and variable lags” mainly because they had failed to identify robust statistical effects from monetary policy. Using more sophisticated procedures, academics have been able to reveal much clearer effects, with shorter policy lags, and none of the statistical puzzles that plagued previous empirical work (in the past, for example, researchers often found that tighter monetary policy raised output and added to inflation). The second empirical challenge to the consensus is that the lags in monetary policy seem to have shortened over time. Not only has enhanced central bank transparency made it easier for policymakers to signal their intentions more clearly – ensuring faster/fuller transmission of their actions to financial conditions – but the modern (market-based) credit system has enhanced the rate passthrough to the real economy.

Shorter lags in monetary policy could be bullish for the global economy in 2023, especially if central banks are prepared to pause their tightening cycles relatively soon. Assuming recent studies are correct and rate hikes have their maximum impact on GDP growth after 6-9 months (as opposed to the 2–3 year lags commonly cited in previous research), there is still a decent chance the world will avoid a serious recession. The distortions associated with COVID and the war in Ukraine are set to unwind, which should further enhance the resilience of the global economy in 2023. But it is important to remember that there is still much uncertainty about the impact of monetary policy, not least because of the speed/magnitude of the current tightening cycle and the potential for nasty feedback loops to arise where genuinely recessionary dynamics appear ([watch property sectors particularly closely](#)). Finally, much of the recent empirical work on monetary transmission has been focused on the United States, but there is likely to be considerable variation across countries, reflecting differences in financial structure. Central banks in some of the most vulnerable economies – especially those with high levels of debt and a lot of variable rate mortgages – are aware of these risks and are now proceeding more cautiously. Others, such as the ECB, might be underestimating the full macro impact of their policy actions.

# 1. PENT-UP DESTRUCTION

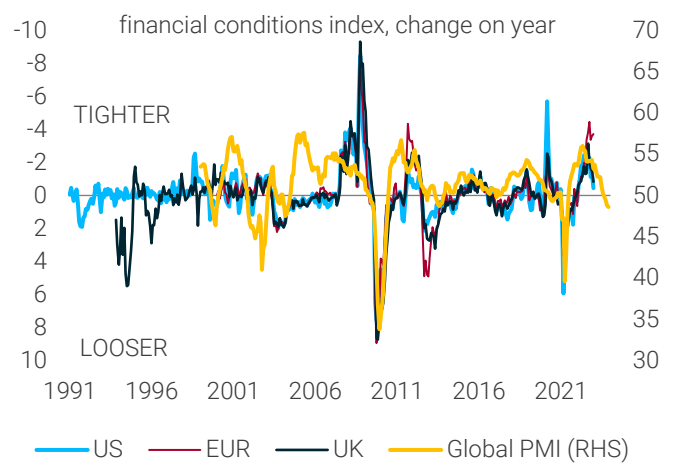
Monetary policy famously operates with “long and variable lags”. Since we have just had one of the quickest and broadest episodes of monetary tightening in history, understanding these dynamics is crucial to successfully forecasting the global economy over the next 12-18 months. In fact, the transmission of monetary policy is arguably the most important issue in global macro right now. Unfortunately, central banks have a horrible track record when it comes to taking account of the lags in their policymaking. They raise interest rates, and nothing happens immediately, so they keep raising rates until something in the economy – or more likely in the financial system – breaks. And by that point it is too late to avoid a recession. Many investors think we will see the same pattern in 2023. Even if the authorities stop raising rates soon, the global economy will continue to deteriorate. Ask any sellside economist why they expect a recession in the next 12 months and the phrase “long and variable lags” is sure to enter the conversation. The idea is part of the conventional wisdom – a stylized fact in macroeconomics.

**Chart 2: Fed hikes and their passthrough**



Source: Datastream, TS Lombard

**Chart 3: Financial conditions and the cycle**

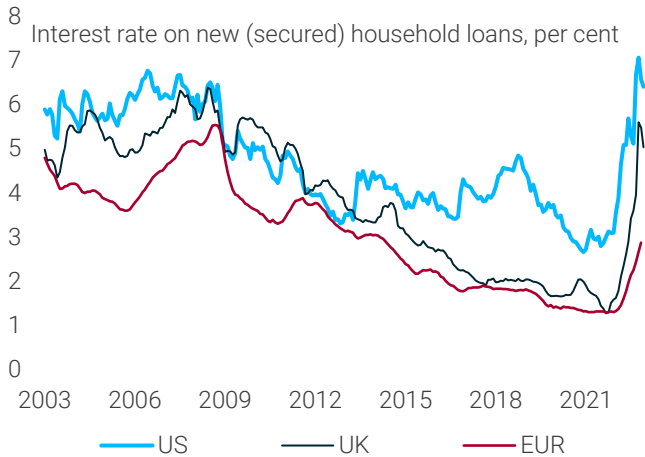


Source: Bloomberg, Markit, TS Lombard

## The origins of monetary lags

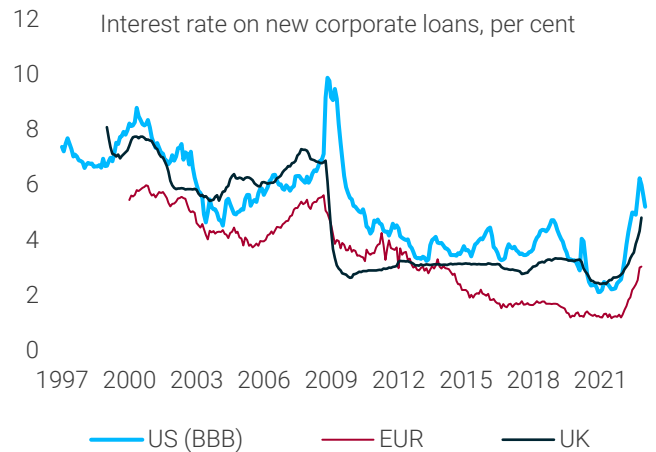
It was Milton Friedman who popularized the notion of long and variable lags. [Writing in the early 1970s](#), Friedman noted: “There is much evidence that monetary changes have their effect only after a considerable lag, and over a long period, and that the lag is rather variable. In the National Bureau study on which I have been collaborating with Mrs. Schwartz [one of their influential volumes on US monetary history], we have found that, on the average of 18 cycles, peaks in the rate of change in the stock of money tend to precede peaks in general business by about 16 months, and troughs in the rate of change in the stock of money precede troughs in general business by about 12 months... For individual cycles, the recorded lead has varied between 6 and 29 months at peaks, and between 4 and 22 months at troughs.” Friedman was analysing a specific relationship – the link between the money supply and inflation (an idea that would define his legacy) – but his view remained fashionable long after economists had given up monitoring the monetary aggregates. Central banks adopted similar ideas when controlling interest rates, and even institutionalized the idea of monetary lags by adopting inflation targets that applied over the medium term – the horizon over which they believed they had most influence.

**Chart 4: Household loan rates respond**



Source: FRED, ECB, BoE

**Chart 5: Corporate borrowing costs increase**

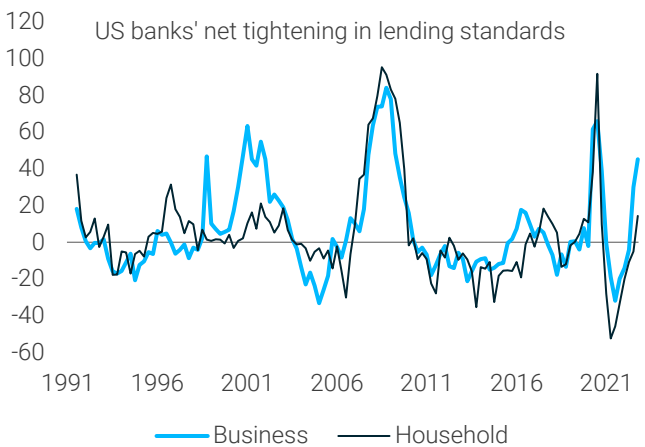


Source: FRED, ECB, BoE

**What causes monetary lags?**

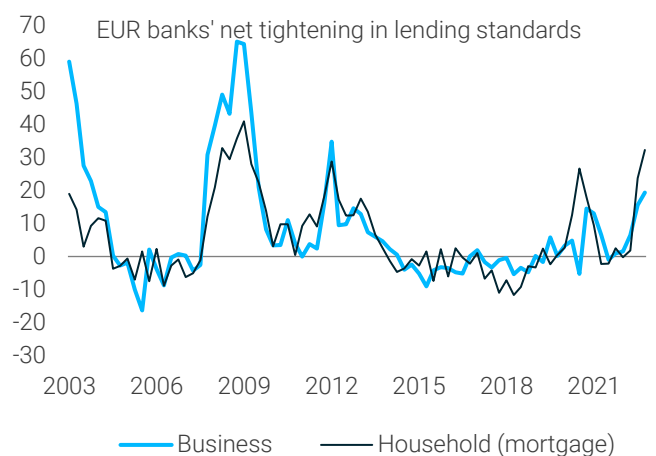
Intuitively, it should take time for the full impact of monetary policy to work its way through to inflation. The economy is a complex system, and deciding whether to make an investment or hire a worker may take a while – there are contracts already in place, and shifts in sentiment or expectations can often matter more than the current stance of monetary policy. Remember also that most households and businesses do not follow every central-bank policy deliberation as closely as the average investor, which can also slow down their response times. To understand where these monetary lags can arise, it is useful to review the conventional wisdom about how changes in interest rates affect the economy (the so-called “transmission mechanism”).

**Chart 6: US banks have tightened credit availability**



Source: Federal Reserve, TS Lombard

**Chart 7: Similar situation in the euro area**



Source: ECB, TS Lombard

Academics and central banks believe there are three stages:

**Stage 1: Higher policy rates tighten broad financial conditions**

Central-bank rate hikes should lift private-sector borrowing costs (and the rate of return on savings accounts) relatively quickly. Chart 2 shows that the Federal Reserve’s recent tightening cycle had a rapid passthrough to a broad range of financial conditions. If long-

term interest rates also increase, as they did in 2022, asset prices can fall, particularly “long duration” equities and housing. The discount rate rises, which cuts the current value of a stream of future returns. The availability of credit may decline, too, causing market spreads to widen. And the currency is likely to appreciate (depending, in part, on what other central banks are doing). Recent experience reminds investors that monetary policy always has its largest and most immediate impact in financial markets.

## **Stage 2: Tighter financial conditions reduce demand and create “slack”**

Tighter financial conditions should eventually reduce demand via various channels. Mainstream economics usually highlights the role of “intertemporal substitution”, which is just a fancy way of saying that saving becomes more attractive relative to current consumption. If households and businesses are credit-constrained, an increase in the cost of borrowing should discourage them from taking out new loans. The demand for consumer durables – especially big-ticket items like housing and autos – is particularly sensitive to interest rates. Alongside intertemporal substitution, higher interest rates are also likely to have an impact on cashflows and incomes. Existing debtors will lose – particularly if they borrowed at variable rates – while savers will gain. Combined, there are both “flow” and “stock” effects from monetary tightening. Higher rates reduce the feasibility/desirability of new big-ticket purchases, while simultaneously reducing the spending power of households and businesses that previously borrowed.

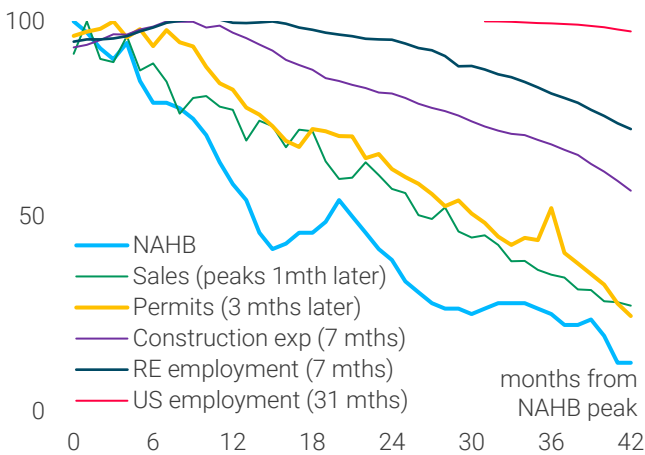
Besides the direct impact of monetary tightening, there are likely to be indirect channels and knock-on effects. Not only is borrowing suddenly more expensive and saving more attractive, but tighter monetary policy might reduce household and business confidence – particularly if, as of late, the central bank is warning about the threat of an imminent recession. And falling asset prices are likely to reinforce these dynamics, by making the private sector feel less wealthy (so-called “wealth effects”). Naturally, these parts of the monetary-transmission process are inherently difficult to quantify and likely to change over time. If demand in one systemically important sector of the economy suddenly disappears – similar to what happened in the US housing market when the subprime bubble burst – there will be powerful spillovers elsewhere. Chart 8 reminds us that the 2008 housing crash happened in several distinct stages. Central bankers must somehow take account of all these effects when setting interest rates.

## **Stage 3: Economic slack leads to lower inflation**

This is the stage where we start to see the impact of monetary policy on inflation. If higher interest rates are successful in reducing demand (Stage 2), they should also affect the balance of demand and supply in the economy. (Central banks like to assume that their actions will not affect aggregate supply, which is somewhat debatable.) Some companies will now be operating with spare capacity and may reduce their prices. Unemployment may increase, curbing workers’ wage demand. Rightly or wrongly, most economists still put enormous emphasis on classic Phillips-curve dynamics, whereby more economic slack in the economy will, over time, lead to disinflation in wages and, ultimately, to lower inflation. This is probably where the lags in monetary transmission are at their longest and most variable – not least because they will depend on the prevailing macro conditions, such as whether the economy was previously “overheating”. But there are ways central banks can influence inflation more quickly and directly – by shifting household and business expectations. In 2022, central banks worked particularly hard to manipulate private-sector inflation expectations.

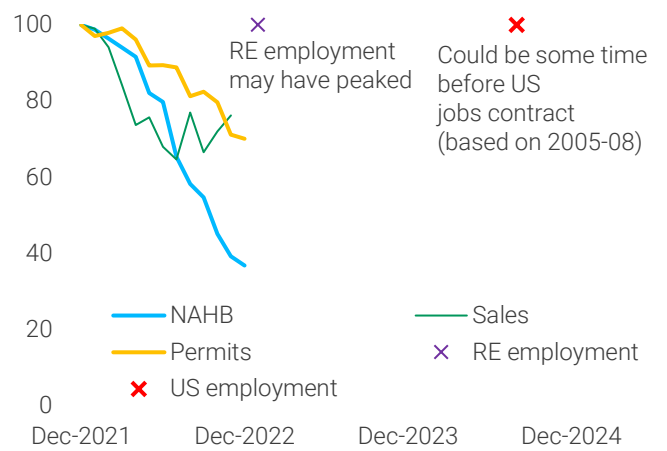
It should be obvious that monetary tightening is more art than science, and that it is likely to take time for the full impact of interest-rate changes to pass through all three stages of the monetary transmission mechanism – particularly if we are waiting to see a discernible impact on inflation (the last stage of the process). Central banks that fail to take account of these dynamics are liable to make systematic policy mistakes. Worse, their actions could end up being procyclical – policy tightening has its maximum impact just when the economy is sliding into recession, exaggerating the downturn (this is why Friedman was never a big fan of countercyclical demand management, preferring a steady monetary “rule” instead.) So, macro researchers have sought to quantify the policy lags. Until recently, there were not very successful.

**Chart 8: The 2008 recession happened gradually**



Source: Datastream, TS Lombard

**Chart 9: Could there be another slow-grind crash?**



Source: Datastream, TS Lombard

## 2. SHORTER AND LESS VARIABLE

While the idea of long and variable lags is intuitive and resonates with central bankers, it is important to realize that this is actually just a case of clever marketing, or spin. Researchers have consistently failed to identify a robust and tractable impact from monetary policy, so they have concluded that the relationship between interest rates and the economy must be “dynamic”, state-dependent, and liable to change. This is a more convenient explanation than questioning the effectiveness of monetary policy or asking whether it is even a good idea to try to “fine-tune” a complex economy by tinkering with borrowing costs. Monetary policy works in mysterious ways, so to speak. New research, however, suggests that the long and variable lags traditionally found in empirical work are the result of faulty analysis rather than revealing anything profound about the way monetary policy operates. Not only are the lags shorter and less variable than we thought, but there is evidence they have become shorter over time. If these findings are correct, investors should take this research into account when considering current recession risks.

**Table 1: Long and variable lags in empirical work**

Study	Type of study	Trough effect, from +100bps hikes	Price puzzle*?
Christiano, Eichenbaum, Evans (1999)	SVAR, 1965-1995	-0.7% at 8 quarters	Yes, but small
Faust, Swanson, Wright (2004)	HFI, 1991-2001	-0.6% at 10 mths	
Romer and Romer (2004)	Narrative, 1970-96	-4.3% at 24 mths	No, but CPI has long lags
Uhlig (2005)	Sign restrictions, 1965-1997	positive, not stat significant	N/A
Bernanke, Boivin, Eliasziw (2005)	FAVAR, 1959-2001	-0.6% at 18 mths	Yes
Smets-Wouters (2007)	DSGE, 1966-2004	-1.8% at 4 quarters	No
Boivin, Kiley, Mishkin (2010)	FAVAR, 1962-1979	-1.6% at 8 mths	Yes
	FAVAR, 1984-2008	-0.7% at 24 mths	No
Coibion (2012)	"Robust" Romer-Romer methods, 1970-1996	-2% at 18 mths	Yes, sometimes
Barakchian-Crowe (2013)	HFI, Romer hybrid VAR, 1988-2008	-5% at 23 mths	Yes
Gertler-Karadi (2015)	HFI-proxy SVAR, 1979-2012	-2.2% at 18 mths	No
AMIR-Uhlig (2015)	Bayesian FAVAR, 1960-2010	-1.3% at 9 mths	N/A

Source: Ramey (2016). \*The price puzzle is where monetary tightening is found to RAISE – not lower - inflation

## Evidence on the monetary lags

Since Friedman's analysis in the 1970s, there has been a vast body of empirical analysis examining the effects of monetary policy. For central bankers, in particular, this has been of crucial importance. Understanding interest-rate transmission is fundamental to what they do. Yet, until recently, the research effort was thoroughly unsatisfactory. Table 1, based on [Valerie Ramey's \(2016\) review of the literature](#), shows enormous variation in researchers' findings. Different studies have radically different conclusions, both about the effectiveness of monetary policy, and the lags over which it operates. Looking across the literature, there is an alarming lack of robustness to the empirical work in this area. Results are often statistically insignificant, there are a number of fundamental disagreements about the impact of monetary policy on crucial macro variables (including their "sign"), and results often depend on the precise identification strategies researchers deploy, their sample periods, the information set they consider, and how they specify their econometric models. In a word, the end result is a mess.

The classic empirical problems in this area include:

- 1) **Confusion about the appropriate proxy for monetary policy:** Researchers often had different results based on their choice of monetary variable. While early studies used (various measures of) the money supply, it then became popular to base empirical work on the central-bank policy rate, or the difference between short-term interest rates and a policy "rule". More recently, economists have focused on case studies (the "narrative approach") or high-frequency data from financial markets.
- 2) **Price and output 'puzzles':** A surprisingly large number of studies failed to identify a significant impact from monetary policy or, worse, ended up with the opposite result to what they had expected. It often appeared, for example, that higher interest rates in fact raised output and added to inflation. Such results were so frequent that they became known as the "price puzzle" in the literature. Which was not exactly an encouraging outcome. As we discuss below, it seems that researchers failed to identify genuine "exogenous" shocks to monetary policy, since the links to the economy work both ways.
- 3) **Time variation in empirical results:** Different sample periods led to radically different conclusions about the impact of monetary policy on the economy. Some even

discovered a statistical break after the mid-1980s, reflecting a shift in the way central banks conducted monetary policy. Setting interest rates became more systematic and gradual, which made it difficult to disentangle the relationship between interest rates and inflation. After the 2008 crisis – when policy hit the lower bound – new complications emerged. Central banks could no longer cut short-term rates, so they used QE instead.

- 4) **Disagreement over statistical techniques:** Economists have used various approaches to model the impact of monetary policy, making wildly different assumptions about how interest rates should affect the economy. One question, for example, is whether rate hikes should permanently shift the level of consumer prices or simply alter their short-term trajectory (a [comprehensive meta study](#) showed that this is a contentious issue, with the existing empirical work divided into two main groups). Adding new variables – such as commodity prices – has made a difference, too, perhaps because they contain information about the future path of the economy.
- 5) **Asymmetric policy responses:** Some researchers have found asymmetries between the impact of interest-rate increases and cuts. Hiking rates seems to have a bigger impact on inflation than cutting rates – consistent with the idea that monetary stimulus is like “pushing on a string” (i.e., central banks can pull the string to lower inflation but cannot push the string to force inflation higher). Studies that take account of these asymmetries are likely to reach conclusions about the average effectiveness of monetary policy that differ from those of studies that don’t. More bizarrely, there is evidence of seasonality in the impact of interest rates and that the choice of quarterly or monthly data affects recorded lags. [Olivei and Tenreyro \(2007\)](#) found that monetary shocks that took place in the first half of the year are more powerful because that is when wage contracts are set.
- 6) **Cross-sectional variation:** Research suggests there is significant variation in monetary transmission – internationally, by level of financial development, across different sectors of the economy and even by income group. A [study of German credit card data](#), for example, showed that discretionary spending is more responsive to borrowing costs than consumer staples and that wealthier people respond more than lower income earners.

Looking across decades of messy and inconclusive empirical work, it should be obvious that the “long and variable lag” thesis is just a sophisticated way for economists to admit (without admitting...) that they do not really know how monetary policy works or, more precisely, that nobody has been able to quantify the effects of interest rates with any degree of precision. But is this failure to identify a robust and stable relationship between monetary policy and the economy the result of flawed empirical techniques? Or does it tell us something profound about how monetary policy works (or rather doesn’t work)? The good news, at least for central bankers – because it is their job to try to hit an inflation target using only interest rates – is that the answer appears to be the latter (i.e., we can probably blame faulty research techniques). Several recent studies using more sophisticated statistical methods have identified a much clearer and more stable impulse from central banks’ actions. Monetary policy does, in fact, work!

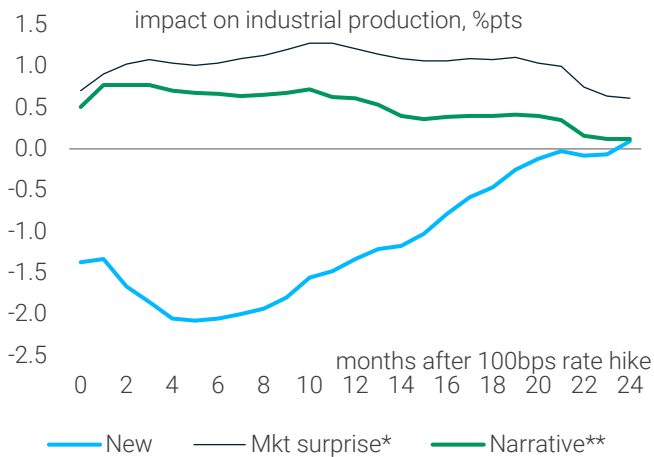
### Identifying monetary shifts

The underlying flaw in much of the empirical work on monetary transmission is that researchers failed to isolate the true effects of interest-rate changes on the economy. This failure is understandable, since there are feedback loops running in both directions. Faster economic growth and higher inflation will encourage central banks to raise interest rates, but higher interest rates will restrain demand and reduce inflation. And financial markets will try to anticipate the central bank’s behaviour, which adds further complications – particularly if the central bank’s own



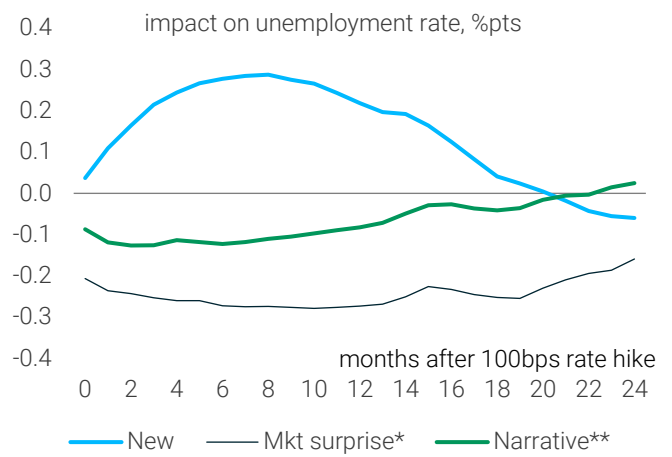
actions reveal new information about the state of the economy. Ideally, economists need to first isolate genuine “surprises” in monetary policy and then map their impact on the broader economy. In time, 2022 could become the perfect case study for such analysis. Central banks that previously thought inflation was “transitory” and seemed determined to ignore it suddenly changed their response – shocking financial markets by raising interest rates rapidly. The trick is to find previous episodes that broadly match what happened in 2022. And new research using sophisticated statistical techniques has made some important breakthroughs.

**Chart 10: New research shows robust impulse**



Source: Miranda-Agrippino-Ricco, \*old event studies, \*\*old case-studies

**Chart 11: Relatively quick unemployment effects**



Source: Miranda-Agrippino-Ricco, \*old event studies, \*\*old case-studies

### Empirical breakthroughs

By overcoming the “identification” problem in existing empirical work, the latest studies – most notably [Jarociński and Karadi \(2020\)](#), [Miranda-Agrippino and Ricco \(2021\)](#) and [Bauer and Swanson \(2022\)](#) – are shifting the consensus on “long and variable lags”. These researchers have been able to identify much clearer and more stable effects from monetary policy, with none of the “puzzles” that plagued existing analysis. They have achieved this outcome by using a combination of high-frequency market data, taking greater account of central banks’ own internal analysis and deploying sophisticated econometrics. By doing so, these economists have been more successful in isolating genuine “exogenous” monetary shifts that were a surprise to markets and not part of central banks’ systematic (endogenous) response to the economy. And their results are important: not only do higher interest rates achieve what they are supposed to – namely, a sizeable reduction in output and inflation – but they do so much quicker than economists previously thought. Charts 10 and 11, based on the [Miranda-Agrippino and Ricco study](#), show that the maximum impact on the economy happens within 6-9 months, which is a far cry from the 12-36 month policy lags that were frequently cited in earlier work. These shorter lags confirm recent analysis from Goldman Sachs, which calibrated the impact of its influential financial conditions index on US GDP growth, recording a maximum hit within two quarters.

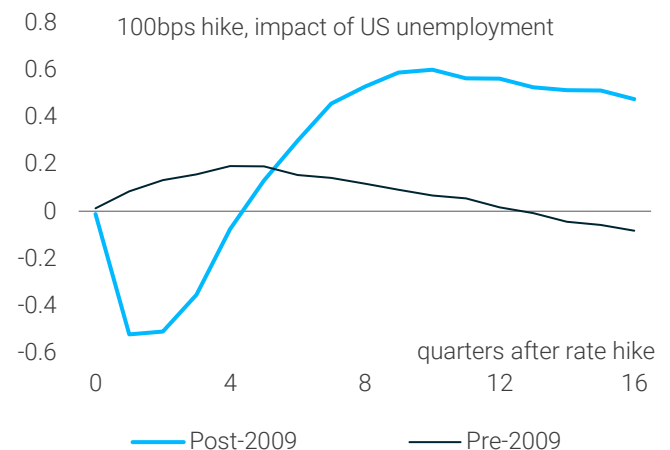
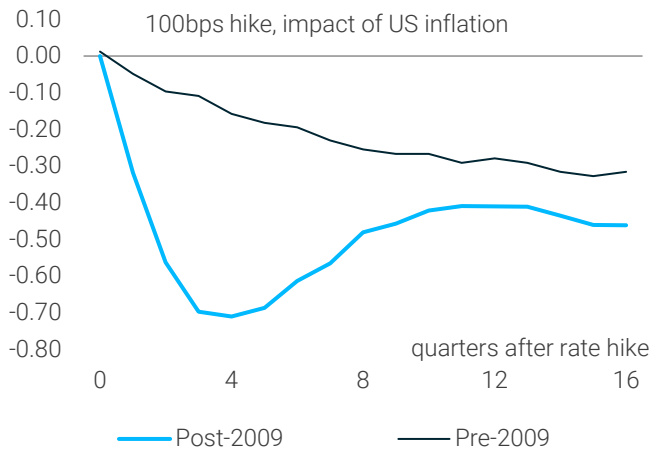
### Have the lags shortened over time?

Thanks to recent empirical breakthroughs, we now know that the lags in monetary policy are shorter than economists previously believed because the prevailing consensus was based on faulty analysis. But there is also evidence that the lags have shortened over time. With a message that clearly resonates at the highest levels of US policymaking, [the Kansas City Fed has just published a study](#) showing that not only has monetary policy become a more potent tool for managing demand, but its maximum impact is now felt faster than in the past. Comparing the

periods before and after the 2008 global financial (Chart 12), Fed officials found that a 1 percentage point increase in the US policy rate reduces inflation by around 0.8% pts (larger than in the past) and that the peak impact happens three times faster than in the pre-2009 period – four quarters instead of three years. The impact they found on the labour market, however, remained somewhat fuzzier, with officials unable to identify a statistically significant effect.

**Chart 12: Fed shows faster monetary impulse**

**Chart 13: Impact on the job market is fuzzier**



Source: Kansas City Fed (2022)

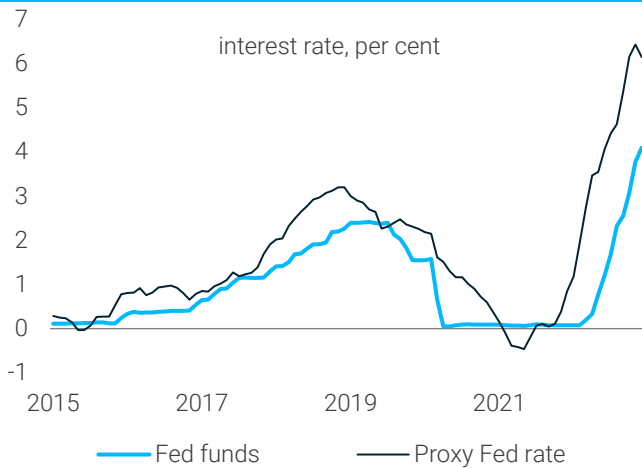
Source: Kansas City Fed (2022)

The economists at the Kansas Fed cite two reasons why monetary tightening has become faster and more effective: central bank transparency, and the use of the Fed’s balance sheet as an additional policy tool. The idea is intuitive. As central banks have become more open in their public communication, they have been able to signal their policy intentions more clearly to investors. This encourages financial markets to price in a succession of policy moves earlier and more fully, particularly at the start of a tightening cycle. We saw this dynamic in 2022, when broad financial conditions tightened substantially even before central banks had started raising interest rates. The economists at the Kansas City Fed take this into account using a “proxy” Fed funds rate that includes private borrowing rates and spreads to measure the broader stance of policy. Balance sheet tools are important because they strengthen the credibility of forward guidance – when central banks do QE, investors can be confident that rates will stay low for some time. Conversely, QT could be a signal that the authorities are keen to continue tightening policy.

### Changing market structure

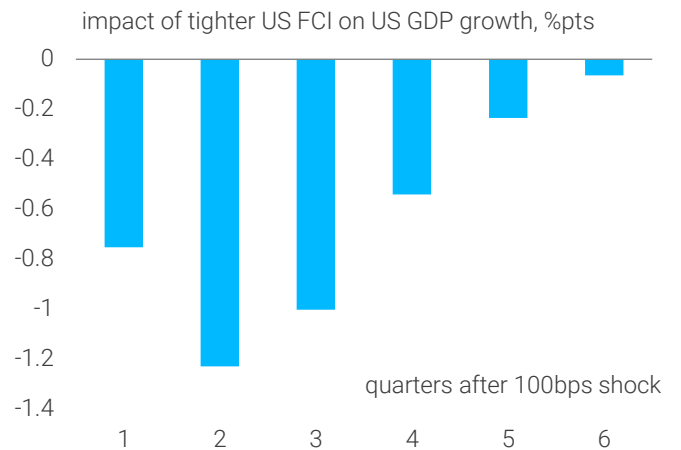
There is a third factor that should have hastened the speed with which shifts in interest rates pass through the economy – changes in the structure of financial markets. As [we have highlighted in previous research](#), the post-2008 period has seen a big migration in global credit creation from the traditional banking system to capital markets and shadow banks (the “non-bank sector”). This trend is particularly important outside the US (Chart 19). Since capital markets tend to be more sensitive to shifts in monetary policy (see Chart 23, based on ECB estimates), it should have strengthened central banks’ influence over the economy. We saw this dynamic most clearly at the start of the COVID pandemic when there was a “run” on the non-bank credit system (and, more recently, during the UK pension fund drama). Central banks were able to resolve such problems much more quickly than in the past, when they would have had to arrange meetings with all the top bankers and use moral suasion to encourage them to change their behaviour.

**Chart 14: US markets tightened ahead of the Fed**



Source: Kansas City Fed (2022)

**Chart 15: Goldman, too, finds quick passthrough**



Source: Goldman Sachs (2022)

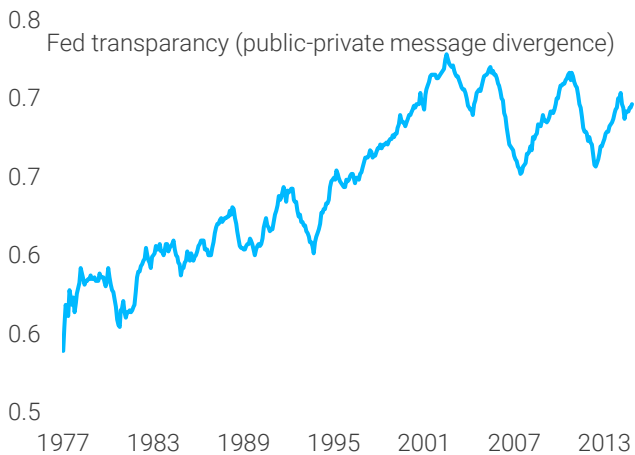
### 3. LOST IN TRANSMISSION

Shorter policy lags could be bullish for the global economy in 2023, particularly if the authorities end their tightening cycles by the spring, as this would reduce the danger of central banks making the classic policy error of continuing to raise interest rates into a nasty recession. And if the economy deteriorates more quickly than the consensus expects, a swift reversal in policy could help contain any recessionary fallout. Investors would not need to worry about a further “pent-up” deterioration in activity; and as the transitory elements of inflation reverse and the economic distortions associated with COVID-19 and the Ukraine war unwind, they might even discover a more resilient global environment than the gloomy consensus expected at the start of the year. But it is important to remember that – despite recent empirical breakthroughs – there is still enormous uncertainty about the transmission of higher interest rates to the economy, both in terms of the true speed of adjustment, and the appropriateness of the terminal interest rate. This warrants a cautious approach to asset allocation during the first half of the year, not least as leading indicators could deteriorate further. We are also concerned that the debate about monetary lags has become rather US-centric. Given significant international heterogeneity in financial structures, we could see large cross-country variation in monetary transmission. Even if the Fed avoids the mistake of “overtightening”, other central banks might not be so lucky.

#### The Fed wants to pause

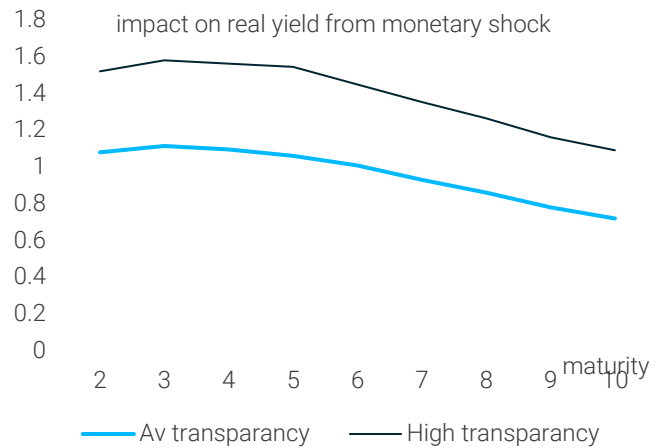
Of the major central banks, the Fed seems most enthusiastic about ending its tightening cycle soon. It helps, of course, that US officials have increased interest rates more aggressively than elsewhere, and that US inflation is now clearly moving lower. A policy pause would give Fed officials the opportunity to assess more fully the impact of their previous actions. And pausing rates seems like an admirably prudent approach, especially as Fed officials are clearly aware of the research showing that policy lags have diminished over time. Without citing his sources – although we believe they are the same studies we examined in Section 2 – Jerome Powell has said on several occasions that US policymakers believe their actions have affected the US economy more quickly than in previous tightening cycles. This combination of shorter lags and a more pragmatic policy approach is bullish because it reduces the risk of the Fed “overtightening”. But the threat has not disappeared entirely. There is still a lot we do not know about the full impact of the Fed’s policy actions – especially given their total amount of cumulative tightening.

Chart 16: Central banks are more transparent



Source: [A new measure of central-bank transparency \(2020\)](#)

Chart 17: Transparency raises policy effectiveness

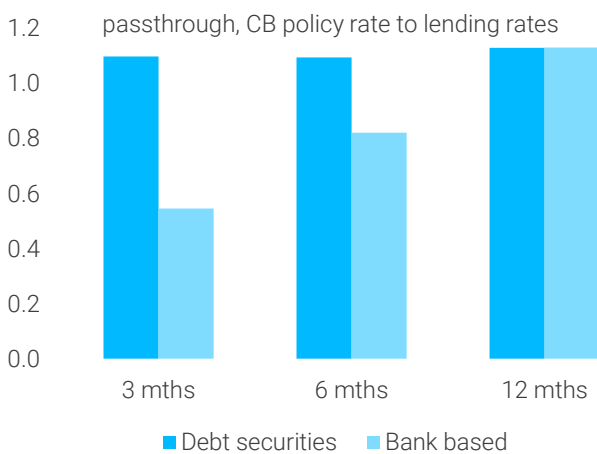


Source: [A new measure of central-bank transparency \(2020\)](#)

### Monetary uncertainties remain

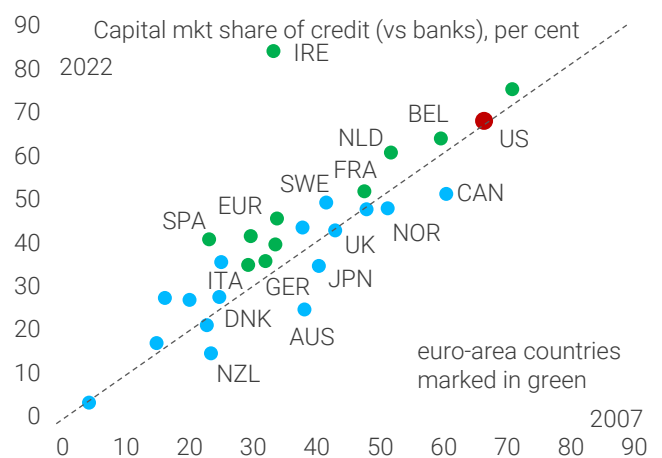
Even with shorter and less variable monetary lags, there is still a question about whether central banks have already raised interest rates too far. Academic studies focus on the marginal effects of higher interest rates – typically the impact on GDP and inflation from a 1 percentage point change in policy rates. But the cumulative effect matters, too; and most central banks – especially the Fed – have already raised interest rates aggressively. It is always difficult to judge the appropriate level of interest rates, and there is a danger that policymakers have already gone too far. Worse, once interest rates hit certain levels and recessionary dynamics take hold, there is a danger that a reflexive process takes over. Econometric analysis always struggles to capture these “non-linearities”. As we explained elsewhere, we are [paying close attention to housing markets](#). If central banks have indeed overtightened and a genuine recession materializes – [as opposed to the soft-ish landing everyone is expecting](#) – the global property sector is the obvious vulnerability. For the US, a severe housing-induced recession seems unlikely. But there is enough uncertainty about the situation to warrant a more cautious approach from the Fed, especially if inflation anxiety is rapidly disappearing and the US economy is already deteriorating.

Chart 18: Capital markets are rate-sensitive



Source: [ECB analysis](#)

Chart 19: Migration to non-bank lending

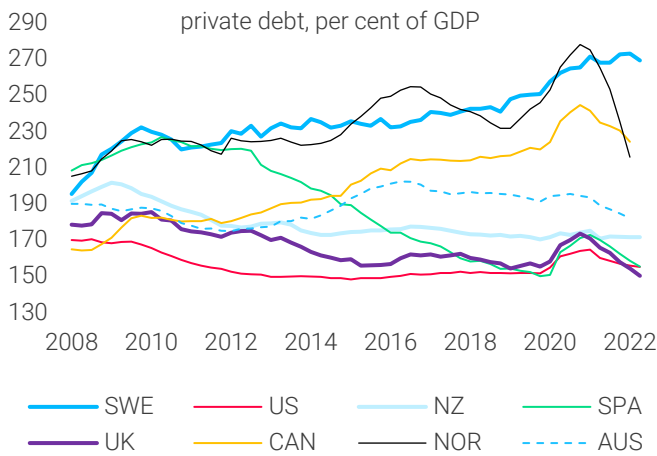


Source: BIS, TS Lombard estimates

## International differences

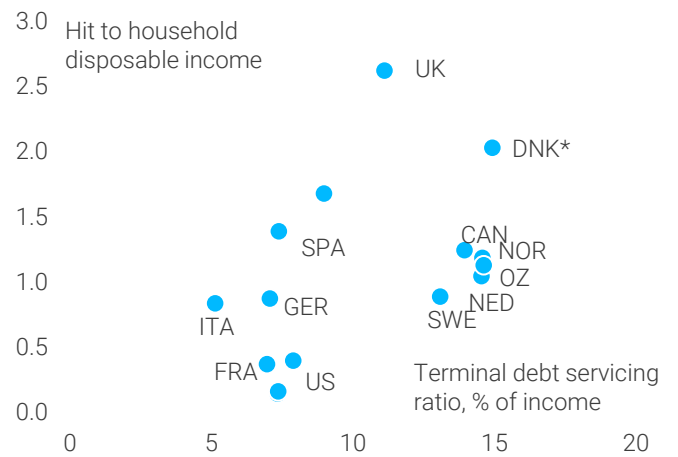
When it comes to the risks in property markets, there are a number of economies that look shakier than the United States. And this raises a broader issue. Much of the research on monetary lags has been US-centric – in other words, focused on the impact of Fed decisions. Similarly, the emerging consensus – that the policy lags have shortened and become less variable – is based on US developments. Of course, it is reasonable to assume that some of these findings apply elsewhere. If enhanced central-bank transparency is part of the story, then it is obvious other parts of the world should have experienced the same trends. Since the 2000s, the ECB, the BoE and most other central banks, have become more transparent, which should have enhanced their influence over financial conditions. At the same time, most jurisdictions have seen a migration of their credit system from banks to capital markets, which should also have accelerated the pace of monetary transmission. Yet there are still important cross-country differences, which will have an important influence on relative recession probabilities in 2023.

Chart 20: Some countries more exposed to rates



Source: BIS, TS Lombard

Chart 21: Mortgage-debt sensitivity varies



Source: BIS, TS Lombard analysis ([see here for more](#)) \*only hiking cycles

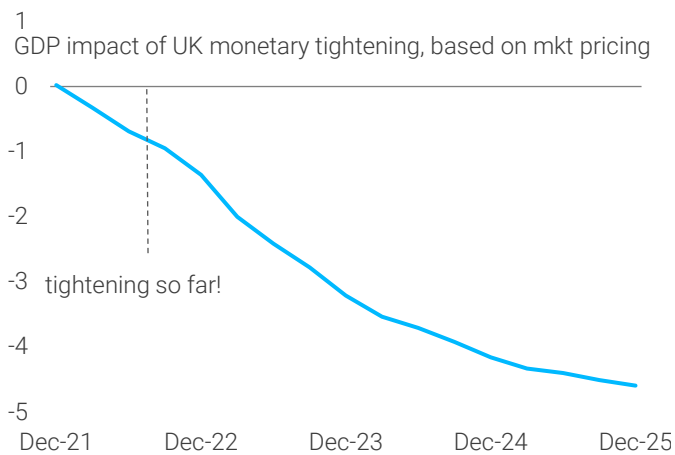
## Differences in financial structure

We know that capital markets respond faster to central-bank decisions than banks (Chart 18). But there are still big differences across countries. Based on the latest data, the non-bank system was responsible for around 70% of US credit provision in 2022, compared with 45% in the euro area. This is one reason why [the ECB believes the monetary lags are longer in the euro area](#), although there is considerable variation across individual EMU countries. The more important difference in monetary transmission, however, comes from mortgage markets. Where mortgages are variable as opposed to fixed-rate, central-bank tightening produces an additional “stock” effect on top of its classic “flow” effect. Higher interest rates not only make new borrowing less attractive; they also squeeze the spending power of existing debtors. In highly indebted countries, there is no doubt this is the dominant effect of monetary tightening. And, of course, there is considerable international variation in mortgage markets. In countries like the US, where 90% of mortgage debt is fixed over 30 years, this stock effect is absent. But there are some countries, like Australia, where all the debt is variable, which means central-bank rate hikes have a larger and more immediate impact. And there is a third group – including the UK – where rates are fixed over relatively short periods, typically 2-3 years, which creates a large but gradual squeeze.

### Can the ECB 'decouple'?

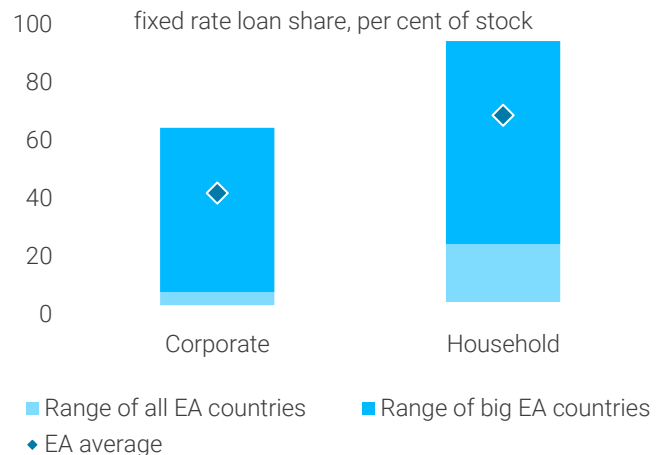
We have analysed [differences in mortgage structure in previous research](#), highlighting those countries with property markets that were particularly vulnerable to higher interest rates. Canada, Australia, Norway and parts of the euro area could soon run into trouble, as could the UK, albeit gradually. The good news is that the central banks with those vulnerabilities appear to understand the risks, which is why they have recently conducted their own “dovish pivot” – in effect, [ending their “reverse currency war” with the Fed](#). But there is one central bank that seems determined to keep tightening, even after other central banks have stopped – the ECB. Officials at the ECB seem to believe that the EMU economy is not particularly sensitive to higher rates. Private debt levels are low by international standards, and the majority of mortgages now carry fixed rates. There is no euro area-wide housing bubble. Yet when you look at financial structure, you continue to see significant variation across member states, which could mean the speed and absolute degree of monetary tightening will vary significantly. Even if the euro area economy in aggregate can handle higher borrowing costs, there could be some individual EMU countries that will face serious difficulty. The last time the ECB tried to “decouple” from US policy by hiking beyond the Fed, it triggered a banking crisis in the periphery – Spanish and Irish housing. Perhaps this time, rate hikes will cause problems in the EMU “core”. French corporates, the Dutch housing market, the German construction sector and Italian public debt all look vulnerable.

**Chart 22: Gradual interest-rate squeeze in UK**



Source: [Bank of England analysis](#)

**Chart 23: Large financial heterogeneity in EMU**



Source: [ECB analysis](#)

### Bottom line

Long and variable monetary lags have been part of the conventional wisdom in macroeconomics ever since Milton Friedman made the idea popular in the 1970s. Changing interest rates affects the economy in various ways, and it can take time for the full effects to feed through to output, employment and (finally) inflation. These lags presumably explain why the overwhelming majority of economists think the global economy will continue to deteriorate in 2023, even if the authorities stop raising interest rates in the coming months. Perhaps it is already too late to avoid a serious recession. But new research has raised important questions about whether the conventional wisdom about long and variable lags is true. It now seems, in fact, that the failure to identify a robust link between interest rates and the economy was ultimately the result of poor statistical techniques rather than revealing anything profound about the monetary-transmission mechanism. New empirical work, which tries harder to identify true monetary-policy shocks, has found a more stable relationship – with shorter lags. In addition, there is also evidence that the lags in monetary policy have shortened over time. Central banks have become more transparent, they now use their balance sheets to make their policy guidance more credible, and the transition from a bank-based to a capital market-based credit system has made financial conditions more

responsive to shifts in monetary policy. On balance, these findings are bullish for the global economy in 2023 – especially with central banks now looking to “pause”. But there is enough uncertainty about the impact of monetary policy to warrant a cautious approach to asset allocation, especially given potential non-linearities at higher levels of interest rates. And monetary transmission will vary across countries, leaving some economies vulnerable.