

Monetary policy in the 21st century: lessons learned and challenges ahead

Speech by Claudio Borio

Head of the Monetary and Economic Department, Bank for International Settlements

on the occasion of the Bank's Annual General Meeting
in Basel on 30 June 2024

Monetary Policy has gone through a tumultuous journey since the beginning of the century. It has gone from the deceptive tranquillity of the so-called Great Moderation to the agitated waters of the Great Financial Crisis (GFC), a pandemic and a surprising global surge in inflation.

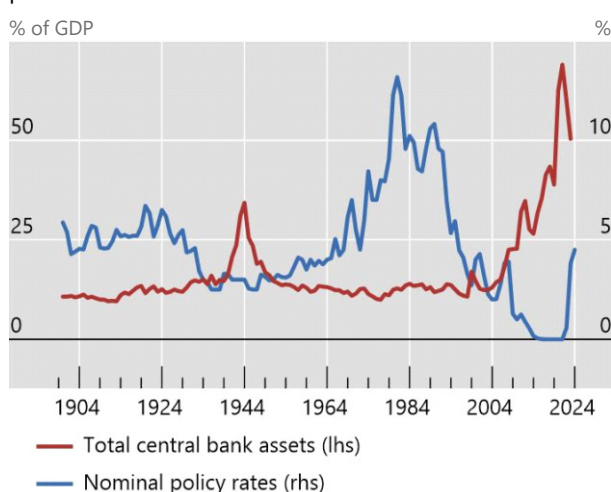
Policy settings have been on an equally extraordinary journey. Interest rates reached historical troughs, and central bank balance sheets historical peaks, during the pandemic (Graph 1.A). And the subsequent inflation surge elicited one of the most intense and synchronised tightenings on record (Graph 1.B).

Central banks have navigated these turbulent waters and delivered. They have contained the damage of financial crises. They have avoided major shortfalls of inflation from target. And they

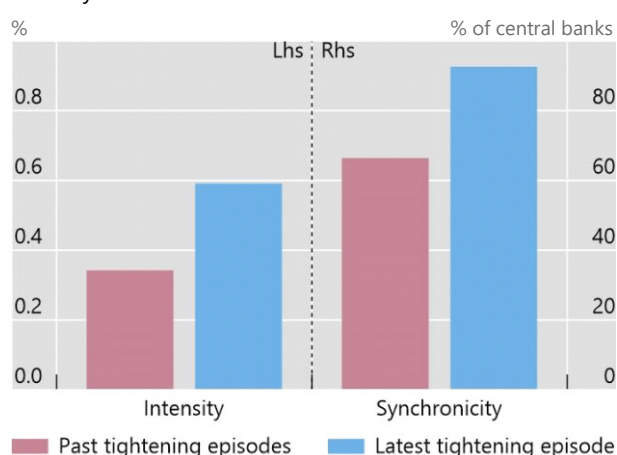
A tumultuous 21st century

Graph 1

A. Policy rates to new troughs and balance sheets to new peaks¹



B. A particularly intense and synchronised tightening recently²



¹ Medians across 22 AEs, using a smaller set of economies when data are not available. For policy rates, latest available for 2024.

² Intensity: average policy rate change per quarter during tightening episodes. Synchronicity: peak share of central banks tightening simultaneously. Based on data for 11 AEs and 16 EMEs from January 1970 to February 2024. See Cavallino et al (2022) for details.

Sources: P Cavallino, G Cornelli, P Hoerdahl and E Zakrajšek, "‘Front-loading’ monetary tightening: pros and cons", *BIS Bulletin*, no 63, December 2022; Global Financial Data; national data; BIS.

are well on their way to re-establishing price stability. This has proved, once more, the value to society of having an independent institution devoted to that objective.

At the same time, surely such an extraordinary journey holds lessons for monetary policy – for what it can and cannot achieve and for how it might be refined to face challenges ahead.

In this year's Annual Economic Report (AER) we devote a chapter to these issues. We identify lessons and propose refinements.

We draw five lessons. They concern: the ability to prevent transitions from low- to high-inflation regimes; the ability to stabilise the financial system during crises; the impact of prolonged and intense easing; communication; and the role of key complementary tools, such as FX intervention and macroprudential measures.

The refinements concern how to help assure price and financial stability. They rely on the importance of five considerations: robustness, realism in ambition, safety margins, nimbleness, and coherence across policy domains.

Let me elaborate.

The tumultuous journey

To start with, recall the basic features of the tumultuous journey.

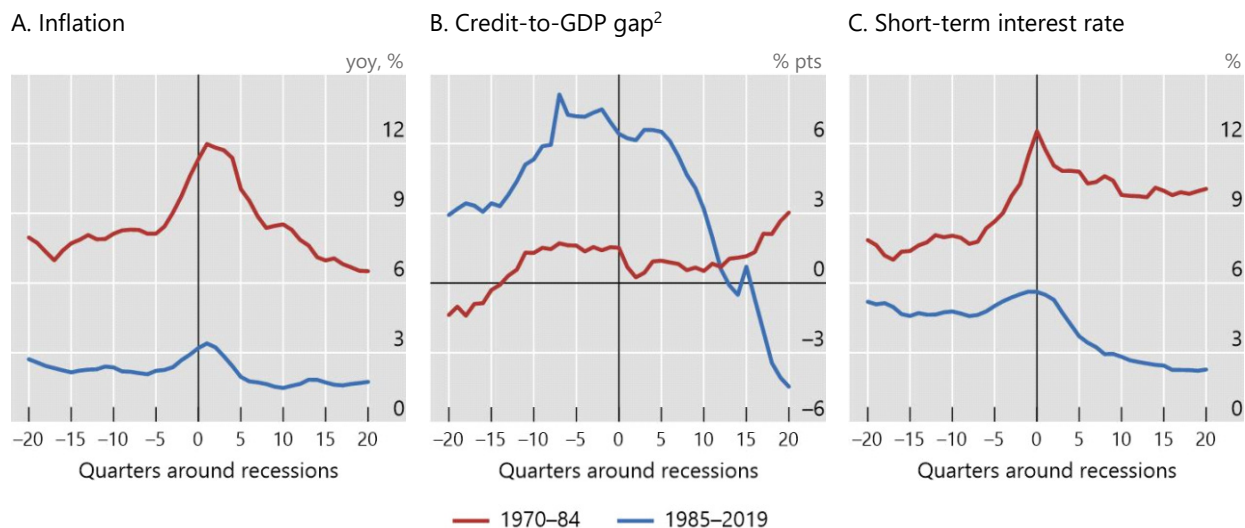
As argued in detail in previous AERs, the GFC was in fact the most spectacular example of a subtle change in the nature of the business cycle that had gradually taken shape since the mid-1980s (Graph 2). We shifted from downturns induced by a sharp monetary policy tightening to quell rising inflation to downturns caused by a largely spontaneous unwinding of financial imbalances. The shift, in turn, reflected a combination of factors: central banks' success in taming inflation, financial liberalisation and the globalisation of the real side of the economy.

The recession ushered in by the GFC was especially deep and prolonged, testing policymakers to the full (Graph 3). Central banks pulled out all the stops and embarked on an unprecedented phase of monetary easing – first to stabilise the financial system, then to nurture the recovery and finally to push a stubbornly low inflation rate back to target. Policy rates reached new troughs, sometimes even negative in nominal terms, and central bank balance sheets soared to war-time peaks.

The pandemic was a bolt from the blue. It meant an exceptionally sharp global contraction induced by a health emergency, as the economy was placed in suspended animation to quell the virus. Once again, central banks, alongside other policymakers, pulled out all the stops to stabilise the system and nurture it back to health. And once again policy rates reached new troughs and balance sheets new heights.

The changing business cycle: from inflation-induced to financial recessions¹

Graph 2



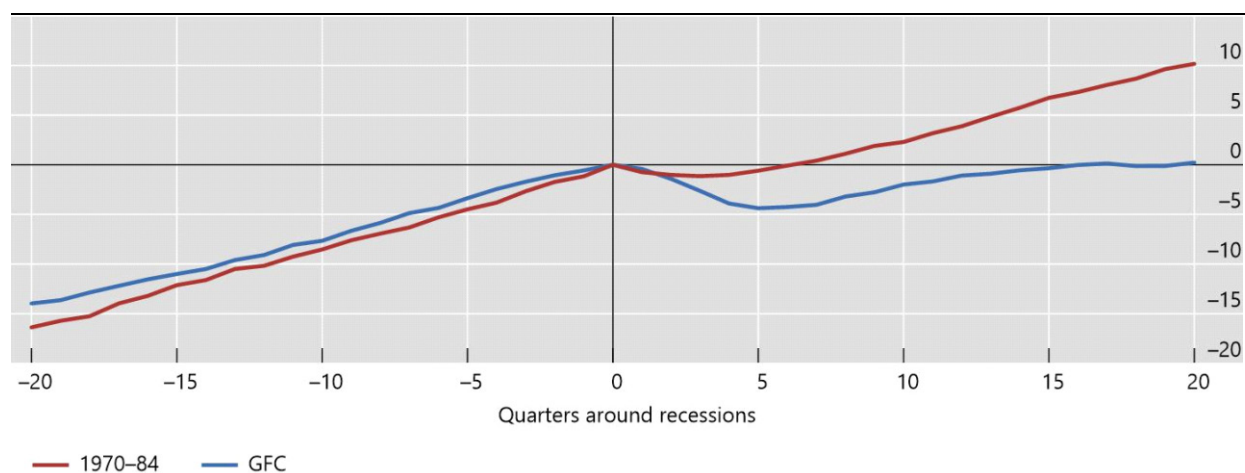
¹ The horizontal axis denotes quarters around recessions in the business cycles, with the peak date set at zero (vertical lines). Lines show the mean evolution of the time series across 16 AEs and events from 1970 to 2019, upon data availability. Business cycle dates are from the National Bureau of Economic Research for US and the Economic Cycle Research Institute for AU, CA, CH, DE, ES, FR, GB, IT, JP and SE. For BE, FI, IE, NL and NO, business cycles are dated with a business cycle-dating algorithm. Episodes for which data for the previous and next 20 quarters are available are used in computations. ² The credit-to-GDP gap – a proxy for financial imbalances – is measured as the deviation of the credit-to-GDP ratio from a long-term trend.

Sources: IMF; OECD; Economic Cycle Research Institute; LSEG Datastream; National Bureau of Economic Research; national data; BIS.

The GFC financial recession was especially deep and prolonged¹

Real GDP, business cycle peak = 0

Graph 3



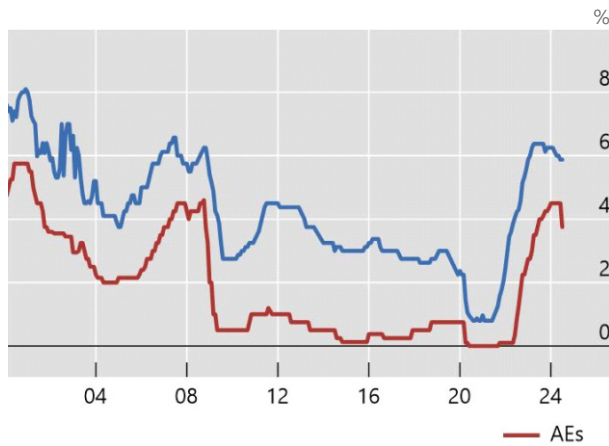
¹ The horizontal axis denotes quarters around recessions in the business cycles, with the peak date set at zero (vertical line). Lines show the mean evolution of the real GDP index across 16 AEs and events from 1970 to 1984 and during the GFC, upon data availability. Business cycle dates are from the National Bureau of Economic Research for US and the Economic Cycle Research Institute for AU, CA, CH, DE, ES, FR, GB, IT, JP and SE. For BE, FI, IE, NL and NO, business cycles are dated with a business cycle-dating algorithm. Episodes for which data for the previous and next 20 quarters are available are used in the computations.

Sources: Economic Cycle Research Institute; National Bureau of Economic Research; national data; BIS.

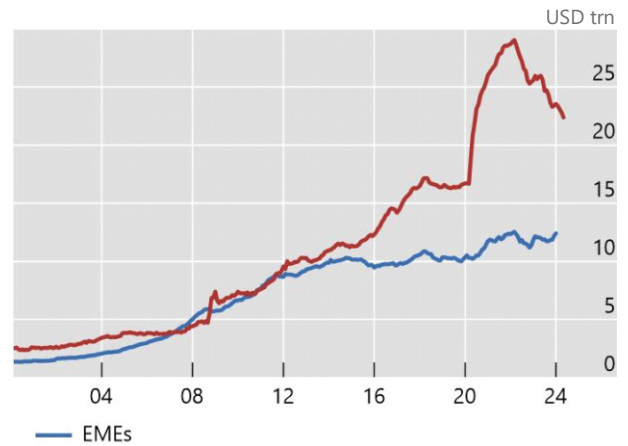
A tumultuous journey: from the GFC to COVID-19 and the inflation surge¹

Graph 4

A. Nominal policy rates



B. Central bank balance sheets



¹ The sample covers 11 AEs and 22 EMEs, subject to data availability. Medians for policy rates; sum for balance sheets.

Sources: LSEG Datastream; national data; BIS.

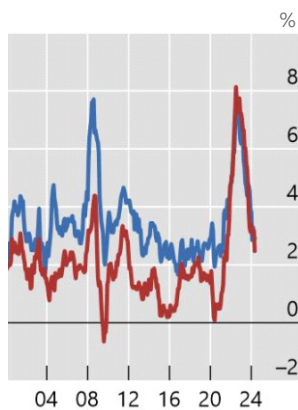
Then, as containment measures were lifted and economies rebounded, inflation surged, exacerbated by the war-induced sharp rise in commodity prices. Once the inflation surge proved persistent, central banks tightened strongly around the world (Graph 4).

Where are we now? Inflation is returning to target, as central banks travel the last mile (Graph 5.A). In both nominal and real terms, interest rates are roughly where they were before the GFC (Graphs 5.B and 5.C). And central bank balance sheets have begun to contract (Graph 5.D).

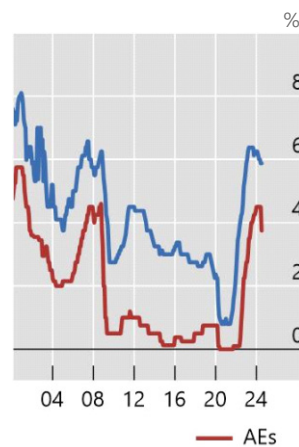
Where are we now?¹

Graph 5

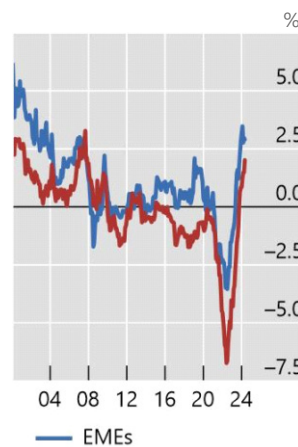
A. Inflation



B. Nominal policy rates



C. Real policy rates



D. Central bank balance sheets



¹ The sample covers 11 AEs and 22 EMEs, subject to data availability. Medians for inflation and policy rates; sum for balance sheets.

Sources: LSEG Datastream; national data; BIS.

Lessons learned

Looking back at this tumultuous period, at least five lessons stand out. Some confirm previous convictions. Others nuance them. But they all shed light on the power and limitations of monetary policy.

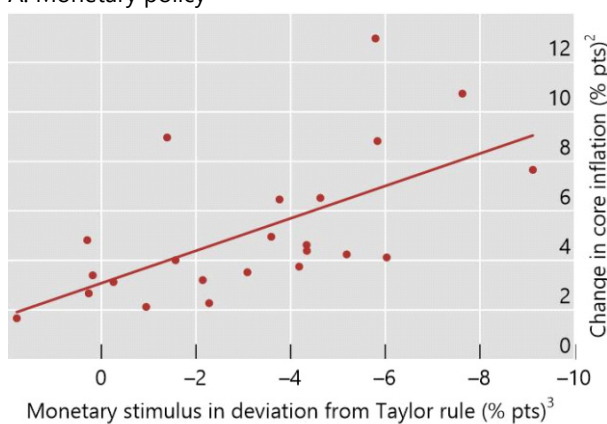
Lesson 1: *Forceful monetary policy tightening can forestall a shift to a high-inflation regime.*

To be sure, while other forces played a much bigger role, monetary policy did contribute to the inflation flare-up. Surely the exceptionally forceful and sustained easing accommodated it, as savings were run down and fiscal policy was loosened substantially. Consistent with this, there is a positive correlation across countries between inflation, on the one hand, and the degree of monetary policy easing and fiscal expansion, on the other (Graph 6). Moreover, the initial hesitancy prolonged the accommodation.

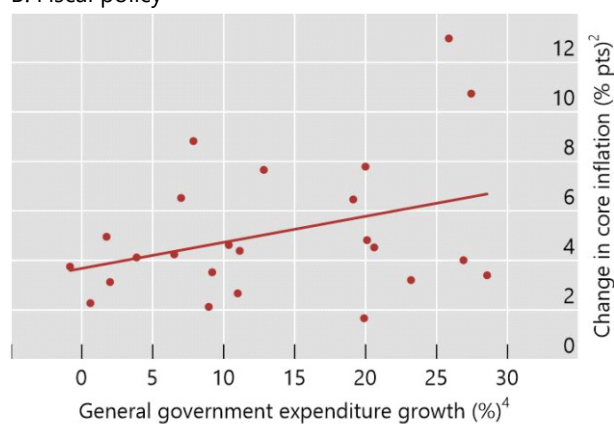
An expansionary policy mix contributed to the inflation surge¹

Graph 6

A. Monetary policy



B. Fiscal policy



¹ Based on 11 AEs and 15 EMEs, subject to data availability. ² Q1 2021–Q1 2023. ³ 2021–22 average. ⁴ Cumulative change in 2021–22. Sources: IMF; OECD; national data; BIS.

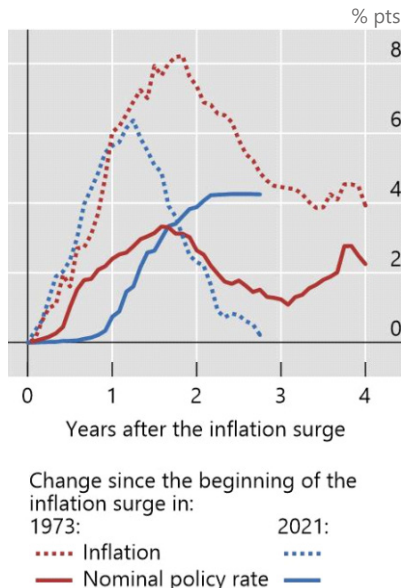
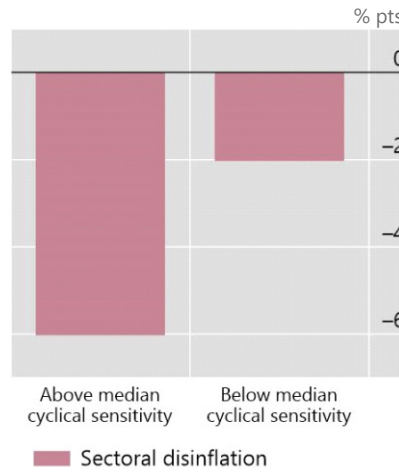
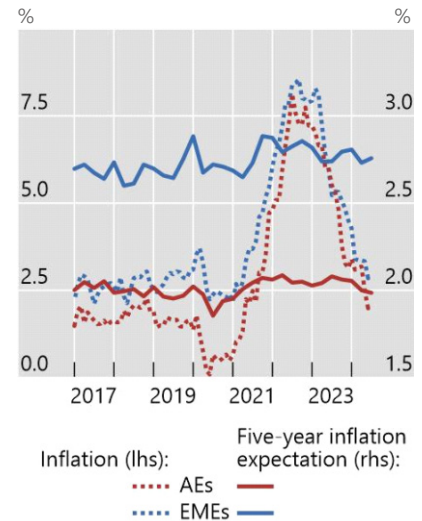
But central banks did prevent inflation from becoming entrenched. They responded more vigorously than they had in the 1970s despite a similar initial increase in inflation (Graph 7.A). They restrained the expansion in nominal aggregate demand: the more cyclically sensitive prices responded most (Graph 7.B). And, more importantly, they prevented an inflation psychology from setting in, as suggested by the stability of inflation expectations (Graph 7.C).

Lesson 2: *Forceful action can stabilise the system at times of financial stress and prevent the economy from falling into a tailspin.* By so doing, it also eliminates a major source of deflationary pressures.

The experience during the GFC and the pandemic strongly support this old conviction.

Forceful monetary tightening can prevent the transition to a high-inflation regime

Graph 7

A. Decisive tightening has contained the inflation surge relative to 1973¹

B. Inflation has dropped more for cyclically sensitive sectors²

C. Medium-term inflation expectations remained anchored³


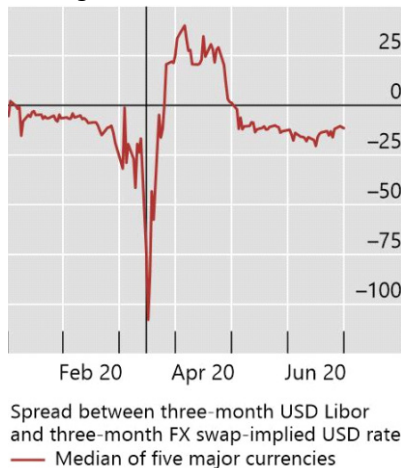
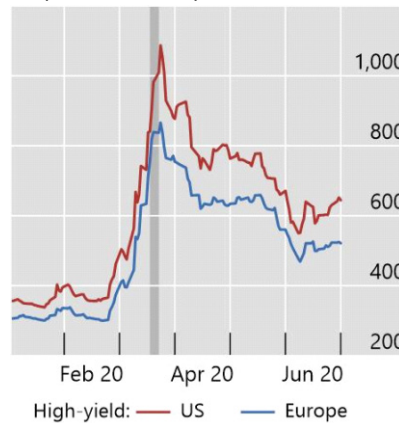
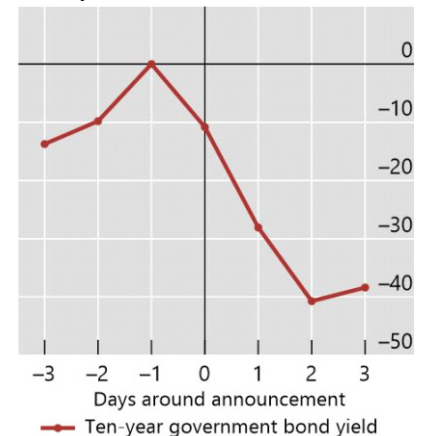
¹ Simple average across 22 AEs. The starting dates of the inflation surges are January 1973 and July 2021. ² Cyclical sensitivity is measured based on estimates for 10 AEs since 1990, depending on data availability, obtained by regressing sectoral inflation on its fourth lag and the output gap. Change in sectoral price growth corresponds to the change in year-on-year rate from peak to latest. ³ Median across 11 AEs and 19 EMEs.

Sources: Consensus Economics; Global Financial Data; national data; BIS.

Forceful central bank action can stabilise the system at times of financial stress

Basis points

Graph 8

A. Swap lines stabilised dollar funding markets¹

B. Asset purchases reduced corporate bond spreads²

C. EME bond purchases reduced bond yields³


¹ The vertical line indicates when the Federal Reserve announced measures during the Covid-19 crisis (15 March 2020). ² The shaded area indicates the period from 18 March 2020 (ECB announced €750 billion pandemic emergency purchase programme) to 23 March 2020 (Federal Reserve announced extensive new measures). ³ Responses to EME central banks' bond purchase announcements in 2020 calculated as the cumulative changes relative to the day prior to the announcement. Simple average of the responses for announcements that did not coincide with interest rate changes in nine EMEs. See Arslan et al (2020) for details.

 Sources: Y Arslan, M Drehmann and B Hofmann, "Central bank bond purchases in emerging market economies", *BIS Bulletin*, no 20, June 2020; Bloomberg; ICE Data Indices; LSEG Datastream; BIS.

During crises, it is the deployment of the central bank balance sheet that does the heavy lifting. That's because the institution is called upon to act as lender and, increasingly, market-maker of last resort, in domestic or foreign currency. Indeed, the mere announcement of the measures can calm markets, be these for FX swaps (Graph 8.A), for corporate bonds (Graph 8.B) or for sovereign bonds in emerging market economies (EMEs) (Graph 8.C).

That said, the power of central banks has clear limits. Whenever the solvency of borrowers is threatened, this requires government backstops. And central bank interventions, if repeated, can encourage risk-taking in the longer term – hence the importance of regulation and supervision.

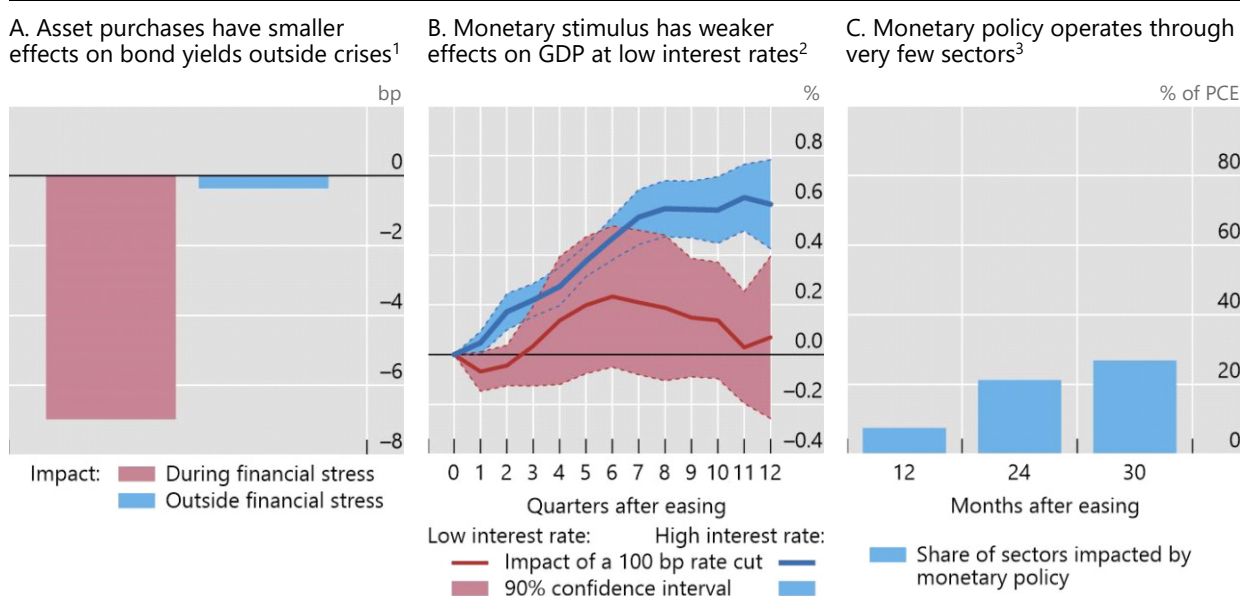
Lesson 3: Strong and prolonged monetary easing faces limitations.

Arguably, these limitations were not fully appreciated when central banks embarked on the post-GFC long accommodation phase. There are clear signs of diminishing returns. For instance, large-scale asset purchases lose some of their power to push down yields once market stress wanes (Graph 9.A). And the impact of interest rates on aggregate demand weakens once interest rates reach low levels and stay there (Graph 9.B).

This is consistent with the difficulties many central banks faced when pushing inflation back to point targets post-GFC, even as the effects of the crisis faded. And it is also consistent with the broader evidence, examined in detail in the 2022 AER, that monetary policy operates through a

Prolonged monetary easing faces limitations

Graph 9



¹ Average response of US five-year government bond yield to asset purchase announcements of the Federal Reserve. ² Impulse response of real GDP to a 100 basis point expansionary monetary policy shock. The sample covers 19 AEs for the period between Q1 1985 and Q4 2019. The threshold for the low interest rate regime is 2.25%. See Ahmed et al (2024) for details. ³ Based on a standard local projections exercise to assess the impact of monetary policy shocks (25 basis points). The sample used in estimations covers US personal consumption expenditures (PCE) data from July 1992 to December 2019. It shows the proportion of price decreases that are statistically significant at the 5% level. See Borio et al (2023) for details.

Sources: R Ahmed, C Borio, P Disyatat and B Hofmann, "Losing traction? The real effects of monetary policy when interest rates are low", *Journal of International Money and Finance*, vol 141, March 2024; C Borio, M Lombardi, J Yetman and E Zakrajšek, "The two-regime view of inflation", *BIS Papers*, no 133, March 2023; LSEG Datascope; BIS.

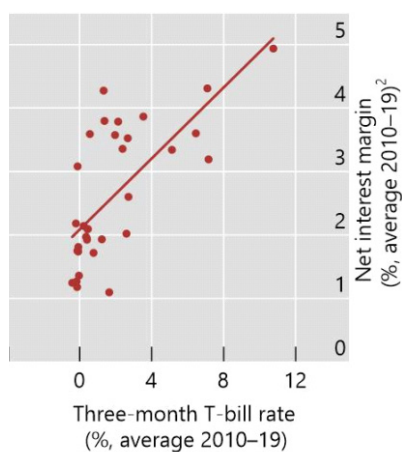
rather narrow set of cyclically sensitive sectors when inflation evolves in a low-inflation regime. Even after 30 months, the percentage of sectors that display a statistically significant price response is only around 20%. Monetary policy cannot fine-tune inflation under such circumstances.

This, in turn, amplifies the by-now familiar side effects of rates that stay low for long. One such side effect is weakening the profitability of financial intermediaries. This is true for banks, as net interest margins suffer – hence the positive correlation across countries between the level of interest rates and margins (Graph 10.A). And it is also true of insurance companies and pension funds, given that their liabilities have a longer duration than their assets – hence insurance companies’ lacklustre equity price performance (Graph 10.B). Another side effect is helping to keep in business structurally unprofitable firms – so-called “zombies” (Graph 10.C) – thereby worsening the allocation of capital. Yet another one concerns the economic and political economy challenges raised by large and risky central bank balance sheets, such as through the volatility of the financial results and their impact on government finances. And a more general side effect is encouraging risk-taking and the build-up of financial vulnerabilities – hence one reason for the banking strains in March 2023.

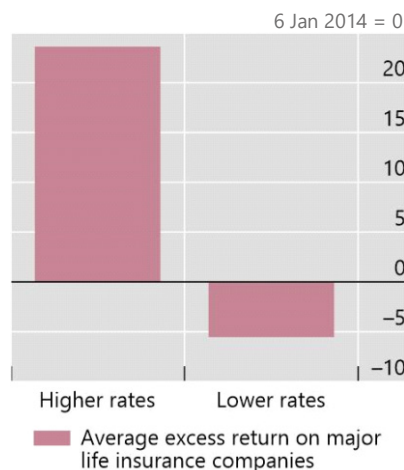
Prolonged monetary easing faces limitations and entails side effects

Graph 10

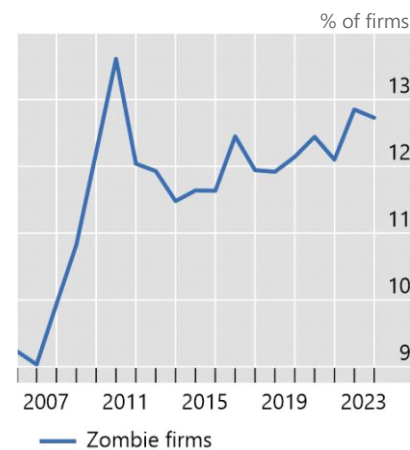
A. Low interest rates reduce banks’ net interest margins...¹



B. ...erode the profitability of insurance companies...³



C. ...and contribute to the proliferation of zombie firms⁴



¹ The sample covers 3,520 banks in 16 AEs and 16 EMES. ² Simple average of net interest margin across banks within each economy. ³ The sample covers 13 large life insurance companies in seven AEs. The excess return is computed as the asset-weighted average of cumulative equity returns relative to the domestic stock market since 6 January 2014. “Higher rates” corresponds to the period 2000–08; “lower rates” corresponds to the period 2009–21. ⁴ The sample covers 14 AEs.

Sources: R Banerjee and B Hofmann, “Corporate zombies: anatomy and life cycle”, *Economic Policy*, vol 37, no 112, October 2022, pp 757–803; Bloomberg; Fitch; LSEG Datastream; S&P Capital IQ; national data; BIS.

Lesson 4: *Communication has become more complicated.*

For one, the multiplicity of instruments makes it hard to aggregate their effect and to understand which of them are intended to influence the stance, and when. Partly as a result, markets may respond more unpredictably. Recall, for instance, the taper tantrum, when the mere

announcement of a slowdown in future purchases by the Fed jolted markets around the world (Graph 11.A). In addition, the failure to anticipate the inflation surge, as shown in the large forecast errors in Graph 11.B, has threatened central banks' credibility.

More generally, there is a growing "expectations gap" between what central banks are expected to deliver and what they can actually deliver. Just to cite one example, think of the pressure on central banks to explain their record concerning income and wealth inequality. This has been reflected, for instance, in the growing number of central bank speeches on the subject (Graph 11.C). Indeed, the relationship between monetary policy and inequality is an issue we devoted a whole chapter to in the 2021 AER.

Communication has become more complicated

Graph 11

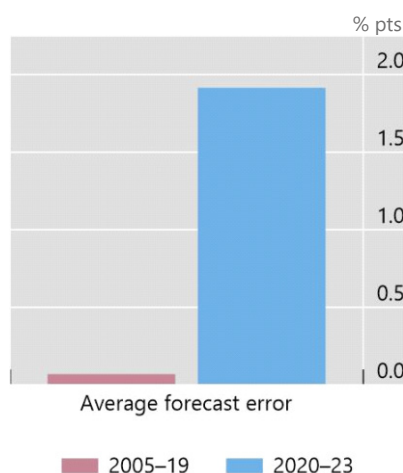
A. 2013 taper tantrum¹



Lhs: — S&P 500

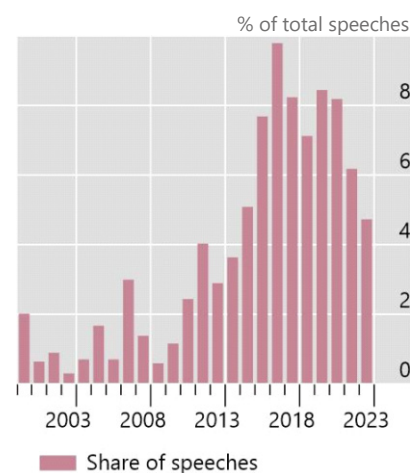
Rhs: — Emerging Market Bond Index
— US 10-year gov't bond yield

B. Failure to anticipate inflation surge²



■ 2005–19 ■ 2020–23

C. Share of speeches mentioning inequality³



■ Share of speeches

¹ Taper tantrum on 22 May 2013. Growth rate for S&P 500 and change for EMBI (JPMorgan Emerging Markets Bond Index Global, yield to maturity) and the US 10-year government bond yield, with respect to 21 May 2013. ² Average across ECB, Bank of England and Federal Reserve forecast errors. ³ As a share of all central bankers' speeches in the BIS database (www.bis.org/cbspeeches/index.htm).

Sources: ECB; Bank of England; Board of Governors of the Federal Reserve System; Bloomberg; JPMorgan Chase; LSEG Datastream; national data; BIS.

Lesson 5: *Central banks can deploy complementary tools to help improve the near-term trades-offs that monetary policy faces between price and financial stability.*

As developed in detail in our 2019 AER, these tools include, notably, FX intervention – but, importantly, only if used judiciously and not as a substitute for necessary macroeconomic adjustments – and macroprudential measures – a welcome addition to the prudential arsenal.

The two tools work in similar ways to address financial imbalances, be these external or domestic. They strengthen resilience by accumulating buffers; think of foreign exchange reserves or, say, stronger bank capital. And they help constrain the build-up of the imbalances in the first place.

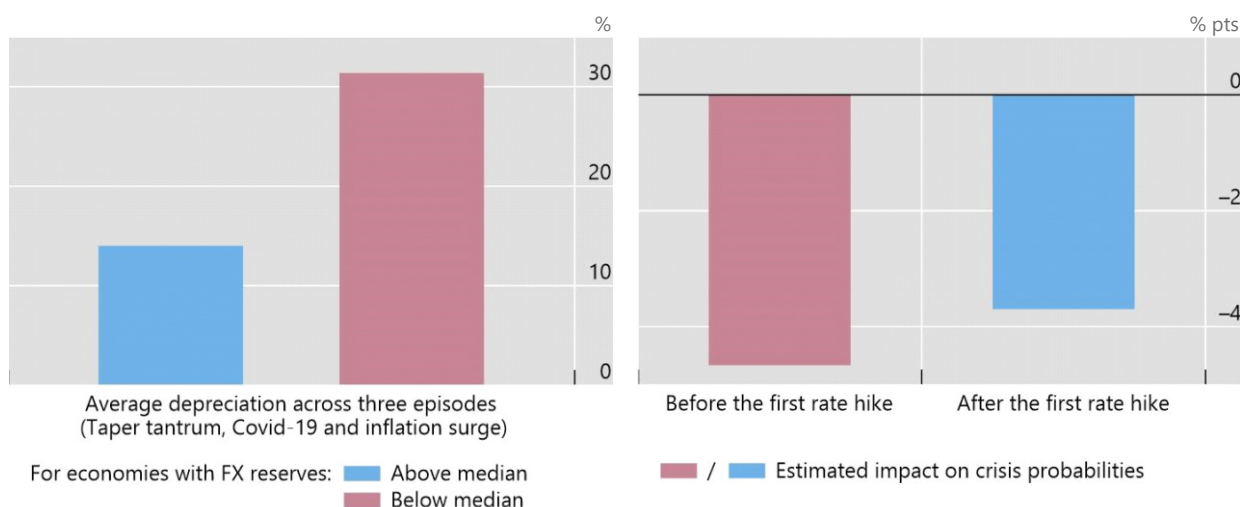
As an illustration, Graph 12 shows their resilience-building function. Larger FX buffers limit depreciations following shocks (Graph 12.A). And tightening macroprudential measures reduces the probability of banking stress, regardless of whether this is done before or after the first interest rate hike (Graph 12.B). This underscores the complementarity with monetary policy.

FX intervention and macroprudential measures can enhance resilience

Graph 12

A. FX reserves limit exchange rate depreciation during crises¹

B. Macroprudential tightening reduces the likelihood of financial stress²



¹ The sample covers 21 EMEs. For the taper tantrum, FX reserves as of 2012 and depreciation against the US dollar from Q1 2013 to Q4 2015; for Covid-19, reserves as of 2019 and depreciation from January to March 2020; and for the inflation surge, reserves as of Q2 2021 and depreciation against the US dollar from Q3 2021 to Q2 2022. ² The sample covers 157 monetary tightening episodes for 22 AEs and 15 EMEs. Estimates of the change in the probability of a banking crisis within three years of an interest rate hike due to the adoption of macroprudential tightening measures based on regression analysis, controlling for confounding factors. See Boissay et al (2023) for details.

Sources: F Boissay, C Borio, C Leonte and I Shim, "Prudential policy and financial dominance: exploring the link", *BIS Quarterly Review*, March 2023, pp 15–31; IMF; national data; BIS.

Refinements to monetary policy frameworks

What possible refinements to current frameworks do these lessons suggest?

Considering refinements is important, since the years ahead may be no less challenging. Unless fiscal positions are brought under control, the threats to financial and macroeconomic stability will grow. In addition, the risk of global fragmentation, the reality of climate change and the demographic trends under way could make the supply of goods and services less "elastic" and more shock-prone and the world more inflation-prone. At the same time, a return of persistent disinflationary pressures cannot be ruled out altogether, especially if the current wave of technological advances bears fruit.

As the chapter elaborates, five considerations could inform the refinements: robustness, realism in ambition, safety margins, nimbleness and coherence across policy domains. Together, the refinements can reduce the risk that monetary policy, just as fiscal policy, is relied upon

excessively to drive growth – the “growth illusion” discussed in detail in last year’s AER. And they are designed to ensure that monetary policy focuses on price stability while safeguarding financial stability.

Consider, in turn, the implications of the guiding considerations for the operational definition of price stability, for acceptable deviations from targets, for the deployment of tools, and for communication strategies and institutional arrangements.

The *operational definition of price stability* would need to help hardwire a low-inflation regime while allowing for deviations consistent with the ability of central banks to control inflation. Ideally, the objective would be low enough so that inflation did not materially influence economic agents’ behaviour. Adjusting current targets upwards, quite apart from risking to undermine central banks’ hard-earned credibility, would not be consistent with this goal. In addition, it would risk squandering the self-equilibrating properties that inflation exhibits in a low-inflation regime.

The *acceptable deviations from targets* would need to take into account the specific features of inflation across low- and high-inflation regimes, examined closely in the 2022 AER. Once inflation evolves in a low-inflation regime, there is room for greater tolerance than in the past for moderate, even if persistent, shortfalls of inflation from narrowly defined targets. The additional room would take advantage of the self-equilibrating properties of inflation and reduce the side effects of keeping interest rates very low for long. This would allow central banks to better take into account the threats to financial, macroeconomic and price stability that develop over longer horizons, and it would lower the risk of losing precious safety margins. By contrast, when inflation threatens to shift from a low- to a high-inflation regime, there is a need to react strongly, owing to the self-reinforcing features of the transitions. It is one thing to avoid fine-tuning; it is quite another to put the system’s self-equilibrating properties to the test.

The *deployment of tools* would need to stress prudence, especially given the importance of safety margins in reducing the vulnerability of the economy. This means implementing policies that include as an explicit consideration retaining policy room for manoeuvre over successive business and financial cycles. It means putting a premium on exit strategies from extreme policy settings designed to stabilise the economy and on keeping balance sheets as small and riskless as possible, subject to effectively fulfilling mandates. And it means avoiding overreliance on approaches that may unduly hinder flexibility, such as certain forms of forward guidance, critical dependencies on unobservable and highly model-specific concepts such as *r*-star, or frameworks designed for seemingly invariant economic environments.

Communication strategies and institutional arrangements would need to be tailored to a perennial condition of monetary policy: the need to take actions that involve costs in the short run to reap bigger benefits in the longer run – a root cause of short-termism. As regards communication, the toughest and growing challenge is to narrow the expectations gap – a major source of pressure on central banks to test the limits of sustainable economic expansions and to pursue mutually inconsistent and overly ambitious objectives. Failing to address this gap can ultimately undermine the central bank’s legitimacy and society’s trust. As regards institutional arrangements, there is a need to shield the central bank from political economy pressures, be these linked to inflation or the build-up of financial imbalances. Safeguards for central bank independence are essential. They may become even more important in the years ahead, as pressures on fiscal positions grow.

This brings me to the broader importance of *coherence across policy domains*. Coherence is important to ease the trade-offs that monetary policy faces when fulfilling its mandate. Coherence can be achieved through a more holistic macro-financial stability framework. In such a framework, fiscal policy remains proportionate and sustainable, operating, just as monetary policy, with adequate safety margins; prudential policy – both micro- and macroprudential – continues to strengthen the financial system; and structural policies boost sustainable growth. It is such coherence that holds the key to lasting macroeconomic and financial stability.