# So far, so good…

## Introduction

So far, so good. The world economy appears to be finally leaving behind the legacy of the Covid-19 pandemic and the commodity price shock of the war in Ukraine. The worst fears did not materialise. On balance, globally, inflation is continuing to decline towards targets, economic activity and the financial system have proved remarkably resilient, and both professional forecasters and financial market participants see a smooth landing ahead. This was by no means a given a year ago. It is a great outcome.

Still, there is a "but". Challenges remain. The recent stickiness of inflation in some key jurisdictions reminds us that central banks' job is not yet done. Financial vulnerabilities have not gone away. Fragile fiscal positions cast a shadow as far as the eye can see. Subdued productivity growth clouds economic prospects. Beyond the near term, laying a more solid foundation for the future is as difficult as ever. It could not be otherwise: it is an arduous task that requires a long-term view, courage and perseverance.

As is customary, this year's Annual Economic Report (AER) takes the pulse of the global economy and explores policy challenges. It also devotes particular attention to two issues. Looking back, it reflects on the lessons learned so far from the conduct of monetary policy in the tumultuous first quarter of the 21st century. Looking forward, it examines the opportunities and risks associated with the rise of artificial intelligence (AI).

## The year under review

In the year under review, the global economy made further progress in absorbing the huge and long-lasting dislocations caused by the pandemic and Russia's invasion of Ukraine.

Inflation has continued to decline from its peak in 2022. Both headline and core inflation kept moving down for much of the period under review. The rotation in the contribution to inflation from goods to services proceeded further, as commodity prices edged down while services price growth proved stickier. By the end of the period, inflation had come down substantially further: monetary policy had delivered (see below). At the same time, although it was more subdued in places, particularly in Asia, it was still hovering above central bank targets across much of the world. There were signs that the decline had become more hesitant in some key jurisdictions, notably the United States.

Economic activity held up surprisingly well, indicating that a "normalisation" in both demand and supply had helped disinflation. Employment remained unusually buoyant in relation to output, supporting demand further in the near term. Households again dipped into savings accumulated during the pandemic. The lingering effects of extraordinarily generous fiscal support, and in some cases additional fiscal expansion, boosted activity. Having borrowed at longer maturities and at fixed rates, households and firms were partly shielded from higher interest rates and the burden of debt.

The resilience of the financial system and financial market sentiment underpinned activity. There were no renewed serious banking strains à la March 2023. And while banks were rather cautious in granting credit, conditions in financial markets remained quite easy. Equity prices rose, with those in the technology sector reaching heady heights, and bond spreads remained quite narrow by historical standards. For much of the period, buoyant investor sentiment reflected eager expectations of an immediate and substantial easing of monetary policy that did not materialise.

Against this backdrop, the most intense and synchronised monetary policy tightening in decades gave way to a somewhat more differentiated picture, in line with the growing differences in domestic inflation outlooks. Central banks prepared the ground for easing, for example in the euro area and much of Asia, or made the first cuts, such as in some countries in Latin America, where policy had been tightened ahead of the rest, and in Asia. The People's Bank of China eased further in response to weak domestic conditions and given subdued inflation. In Japan, the central bank finally exited the negative interest rate policy era and abandoned yield curve control while retaining an accommodative stance.

This more differentiated picture has raised the prospect of larger interest rate differentials and pressures on currencies. In particular, following the latest monthly inflation readings in the United States, financial market participants expect greater divergence in policy rate trajectories, especially between the Federal Reserve and other central banks. This has reinforced a broad-based dollar appreciation, which has been especially marked vis-à-vis the yen. The appreciation has already elicited policy responses, including in some cases foreign exchange intervention or adjustments in the policy stance. And it has raised broader questions about the impact on capital flows and financial markets.

## Pressure points and risks ahead

Looking ahead, the central scenario painted by professional forecasters and priced in financial markets is a smooth landing. Price stability is restored, economic growth picks up, central banks ease, and the financial system remains strain-free. Compared with past expectations, which were generally that a significant economic slowdown could be required to lower inflation, this is an impressive outcome. That said, risks persist. Some are more near-term, others further out. Some reflect an incomplete adjustment to the pandemic dislocations, others longer-standing weaknesses. To varying degrees, they all stem from the same root cause analysed in previous AERs: the pandemic hit a global economy that, while enjoying low inflation and growing briskly, had been relying for too long on an unsustainable debt-fuelled growth model. Hence worrying signs emerged, such as the historically high levels of private and public debt and the drastically reduced monetary and fiscal policy headroom.

Consider several pressure points pertaining to inflation, the macro-financial nexus and real economy factors, respectively. While somewhat arbitrary given the tight interconnections involved, this classification can help organise the discussion.

At the heart of the risks to inflation is the partial adjustment of two, closely related, relative prices thrown out of kilter by the pandemic. One is the price of services relative to that of (core) goods; the other is the price of labour (wages) relative to that of goods and services (the price level), ie real wages.

The pandemic-induced dislocations interrupted the secular increase in the price of services relative to that of goods. As demand rotated away from services to goods and clashed with inelastic supply, the price of goods rose by much more. And as demand subsequently rebounded strongly after having been first artificially suppressed by public health measures and then turbocharged by economic policies, its rotation back to services failed to re-establish the pre-pandemic relative price relationships even as services became the prime inflation driver. It is possible that the pandemic, and associated aggregate demand stimulus and supply disruptions, has permanently altered the trend relative price relationship between goods and services. However, it is not clear why this should be the case, to the extent that the trend reflected deep-seated structural forces. These include a growing relative demand for services as incomes rise, slower productivity growth in services than in goods and nominal wage increases that do not compensate for the productivity growth rate differential in the two sectors. If the relative price between goods and services did return to its previous trend, it would raise overall inflation significantly above pre-pandemic rates for some time, unless disinflation in goods proceeded sufficiently fast, with prices growing below those rates. It might be hard for goods prices to grow that slowly in a world in which globalisation tailwinds are waning.

The pandemic-induced dislocations also interrupted the secular increase in real wages, as the surprising inflation flare-up eroded purchasing power. Real wages have recovered somewhat since then, but generally languish considerably below the previous trend. The shortfall could add to wage pressures ahead, especially given continued tightness in labour markets and sluggish productivity growth (see below). To the extent that profit margins have benefited from surprise inflation, there should be room for adjustment. But having regained a taste for pricing power during the inflation phase, firms might be tempted to use it again.

The two relative price adjustments are closely linked because the services sector is more labour-intensive. This is one reason why services price increases tend to be stickier than those of goods. And it helps to explain why the pass-through from wages to prices is much higher in this sector.

These incomplete relative price adjustments could provide fertile ground for other sources of inflationary pressures. Any commodity price spikes linked to, say, geopolitical tensions or the withdrawal of price subsidies would be more likely to trigger second-round effects. And the likelihood is higher following the long phase of above-target inflation, which can encourage and entrench inflation psychology.

Macro-financial pressure points reflect the combination of higher interest rates and financial vulnerabilities in private sector balance sheets in the form of high debt and stretched valuations. The current configuration is rather unique. The previous globally synchronised and intense monetary policy tightening took place during the Great Inflation era of the 1970s, when a repressed financial system had not allowed widespread vulnerabilities to develop (see previous AERs).

The outcome, so far, has been surprisingly benign, but tougher tests may lie ahead. The significant banking strains in March 2023 stemmed in many cases from the materialisation of interest rate risk alone, as higher interest rates shook valuations without causing borrowers to default. The materialisation of credit risk is still to come; the only question is when and how intense it will be. The lag is typically quite long, and yet it can appear deceptively short as memories fade. There are indications that financial cycles have started to turn. Savings buffers are dwindling. Debts will have to be refinanced.

Within this broad picture, specific macro-financial pressure points abound. There are those we know about. Commercial real estate, historically a much more typical source of banking stress than residential real estate, has been on supervisors' radar screen for quite some time. The office segment, in particular, has fallen victim to the confluence of post-pandemic structural and cyclical forces. Similarly, the opaque risks in the burgeoning private credit markets have attracted considerable attention. And then there are certainly vulnerabilities we know far less about. They could catch markets by surprise and shake confidence and trust.

The intensity of any stress that could emerge will naturally depend on the condition of financial institutions. Banks are now much better capitalised than before the Great Financial Crisis, notably thanks to stronger prudential regulation. Their profits have also benefited from higher interest rates, which have buoyed net interest margins. That said, many are still facing longer-term profitability challenges and investor mistrust, as reflected in depressed price-to-book ratios. The more lightly regulated parts of the non-bank financial sector remain a source of concern as stress amplifiers, owing to hidden leverage and liquidity mismatches.

Two real economy pressure points stand out: fragile fiscal positions and subdued productivity growth.

As assessed in detail in last year's AER, fiscal trajectories represent one of the biggest threats to macroeconomic and financial stability in the medium to longer term. Pre-pandemic, the threat was masked by the long phase of exceptionally low interest rates, which had taken the debt service burden to historical lows despite historically high debt-to-GDP ratios. Since then, further broad-based fiscal support has darkened the picture. In some cases, fiscal policy is still adding stimulus to the economy, acting at cross-purposes with monetary policy. Absent consolidation measures, debt ratios are set to climb over time, even in a scenario in which interest rates remain below the growth rate of the economy. And demands on fiscal authorities have been increasing, as the financing needs of the green transition and geopolitical considerations have come on top of the looming burden of ageing populations.

Post-pandemic, productivity growth – the key to longer-term prosperity – has been generally lacklustre compared with previous trends, although the United States is one exception. The lingering impact of the pandemic makes it especially hard to parse the influence of cyclical and structural forces. But gradually slowing productivity growth was a concern even before Covid-19 struck. The wave of technological advances under way, notably AI, could significantly improve the picture. Still, it would be unwise to simply assume it will. Should slow productivity growth continue, it would make the economic and political environment more challenging. It would add to inflationary pressures, reduce the headroom for both monetary and fiscal policy, and, more generally, widen the gap between society's expectations and policymakers' capacity to meet them, making any adjustments much harder.

## Policy challenges

The overarching policy challenge is to complete the job of returning to price stability while at the same time keeping a firm eye on the longer term, thereby laying the foundations for sustainable and balanced growth. This has implications for both policy settings and frameworks in the monetary, prudential, fiscal and structural domains.

### Near-term policy settings

The priority for monetary policy is to firmly re-establish price stability. In doing so, the lessons learned from the conduct of policy in the tumultuous years since the turn of the century can be helpful in guiding decisions (see below). This means travelling the last mile of the disinflation with a steady hand, being especially alert to the risk of further significant upward surprises and not hesitating to tighten again if inflation proves to be more stubborn and unresponsive than anticipated. It also means safeguarding the room for policy manoeuvre that central banks have finally regained – the only silver lining of the inflation flare-up. For instance, it would be imprudent to cut interest rates significantly based on the view that the "neutral" or "natural" interest rate (r-star) remains as low as it was perceived to be before inflation took hold. We simply know too little about where such a rate might be and what its determinants are. Rather, it would be safer to be guided by actual inflation and to take this opportunity to wean the economy off the low-for-long state that can generate longer-term risks for financial, macroeconomic and, hence, price stability.

The prospects of greater divergence in the outlook for interest rates and concomitant pressures on exchange rates and capital flows could raise additional challenges for adjustments in monetary policy settings. Emerging market economies, in particular, are in a better position to address them than in the past, thanks to the build-up of foreign currency reserve buffers and stronger policy frameworks generally. As experience in recent years indicates, this should provide greater room for manoeuvre in the calibration of monetary policy, supported, where appropriate, by judicious use of foreign exchange (FX) intervention.

The priority for prudential policy is to strengthen further the resilience of the financial system. There is still a window of opportunity to build up defences for the credit losses that will inevitably materialise at some point. In particular, on the macroprudential side, it would be important to avoid a premature loosening, calibrating the measures with respect to financial cycle conditions. On the microprudential side, tight supervision can temper risk-taking and help ensure adequate provisioning and realistic asset valuations. Should financial stress emerge, supervisors would need to act in concert with monetary and fiscal authorities to manage the strains in an orderly way while allowing monetary policy to focus on re-establishing price stability.

The priority for fiscal policy is to consolidate with clear-eyed and firm resolve. This would relieve pressure on inflation, even if in the near term any removal of lingering energy and food subsidies would raise prices – a foreseen side effect. More importantly, it would pave the way for the arduous long-term task of ensuring the sustainability of public finances.

## Longer-term policy frameworks

Monetary policy frameworks have faced a series of extraordinary tests since the Great Financial Crisis shattered the deceptive tranquillity of the so-called Great Moderation. And central banks have delivered: they have contained the damage of financial crises; they avoided major shortfalls of inflation from target all the way to the pandemic; and they have put in place a solid basis for a return to price stability following the post-pandemic inflation surge. The years ahead may be no less challenging. Unless fiscal positions are brought under control, the threats to financial and macroeconomic stability will grow. The risk of global fragmentation, the reality of climate change and demographic trends could make the supply of goods and services less elastic and the world more inflation-prone. At the same time, a return of persistent disinflationary pressures cannot be ruled out either, especially if the current wave of technological advances bears fruit.

Against this backdrop, Chapter II's in-depth analysis of the conduct of monetary policy over this long historical phase points to a number of lessons that could inform refinements to existing frameworks. Some of these lessons confirm previous widely held beliefs; others temper previous expectations. Together, they help us to better understand monetary policy's strengths and limitations. Five lessons stand out.

First, forceful monetary tightening can prevent inflation from transitioning to a high-inflation regime. Arguably, central banks underestimated the extent to which the exceptional and prolonged further easing at the time of the pandemic would contribute to the flare-up in inflation, and could have responded more promptly once inflation surged. But their subsequent vigorous and determined response has so far succeeded in preventing a shift to a high-inflation regime.

Second, forceful action can stabilise the financial system at times of stress and prevent the economy from falling into a tailspin, thereby eliminating a major source of deflationary pressures. On such occasions, the deployment of the central bank balance sheet does the heavy lifting, as the central bank is called upon to perform as lender and, increasingly, market-maker of last resort. That said, whenever the solvency of borrowers, financial or non-financial, is threatened, this requires government backstops. And those interventions, if repeated, can distort risk-taking incentives in the longer term. Hence the importance of strengthening regulation and supervision further.

Third, exceptionally strong and prolonged monetary easing has limitations. It exhibits diminishing returns, it cannot by itself fine-tune inflation in a low-inflation regime, and it can generate unwelcome side effects over the long term. These include weakening financial intermediation and inducing resource misallocations, encouraging excessive risk-taking and the build-up of vulnerabilities, and raising economic and political economy challenges for central banks as their balance sheets balloon. These limitations were not fully appreciated at the time the measures were first introduced.

Fourth, communication has become more complicated. The multiplicity of instruments makes it difficult to aggregate their effect and to understand which of them are intended to influence the stance, and when. The failure to anticipate the surge in inflation has threatened credibility. More generally, there is a growing "expectations gap" between what central banks are expected to deliver and what they can actually deliver.

Finally, the experience of emerging market economies, in particular, has illustrated how the deployment of complementary tools can help to improve the near-term trade-offs that monetary policy faces between price and financial stability. If used judiciously, FX intervention – a form of balance sheet policy, but in foreign currency – allows the build-up of FX buffers that strengthens resilience and can help to address disruptive swings in global financial conditions and exchange rates. Macroprudential measures, which central banks either control or help set, have been a welcome addition to the toolkit to address financial booms and busts.

These lessons highlight the importance of four features that could inform refinements to frameworks: robustness, realism in ambition, safety margins and nimbleness. Together, they can reduce the risk that monetary policy, just as fiscal policy, is relied upon excessively to drive growth – the "growth illusion" analysed in detail in last year's AER. And they are designed to ensure that monetary policy focuses on maintaining inflation within the region of price stability while safeguarding financial stability. Consider the implications of these considerations for the definition of the inflation objective, for acceptable deviations from targets, for the deployment of the tools, and for the institutional arrangements that support policy, including the role of communication in that context.

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

When 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 extended periods. This would allow central banks to better take into account the threats to financial, macroeconomic and price stability that develop over longer horizons and would reduce the risk of losing precious safety margins. At the same time, the self-reinforcing nature of transitions from low- to high-inflation regimes underscores the importance of reacting strongly when inflation rises sharply above levels consistent with price stability and threatens to become entrenched. It is one thing to avoid fine-tuning, leveraging the self-stabilising properties of the low-inflation regime; it is quite another to put the system's self-equilibrating properties to the test.

The desirability of operating with safety margins to reduce the vulnerability of the economy puts a premium on the prudent deployment of instruments. 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, or frameworks designed for seemingly invariant economic environments.

Good monetary policy often requires taking actions that may involve costs in the short run to reap benefits in the longer run. This calls for appropriate supporting communication strategies and institutional arrangements. As regards communication, the toughest and growing challenge is to narrow the "expectations gap" – a major source of pressure on the central bank to test the limits of sustainable economic expansions and to pursue mutually inconsistent and overly ambitious objectives. Failing to do so 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 they 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.

Monetary policy frameworks, however, are only one element of the broader policy setup. Indeed, the trade-offs monetary policy faces can become unmanageable, and sustainable macroeconomic and financial stability remain beyond reach, unless other policies also play a key role in a coherent whole – what the BIS has termed a holistic macro-financial stability framework.

In the years ahead, further efforts will be needed to strengthen prudential frameworks. In the near term, it is essential to complete the international banking reforms, known as Basel III, in a full, timely and consistent manner. In the longer term, as discussed in more detail in last year's AER, it will be important to adjust regulatory and supervisory arrangements in the light of the evolving financial landscape and the lessons drawn from episodes of financial stress, both recent ones and inevitable future ones. An area that requires urgent action is the non-bank financial intermediation sector. Despite many post-Great Financial Crisis initiatives, a systemic stability-oriented ("macroprudential") regulatory framework has proved beyond reach. Making substantial progress may well require more incisive steps, not least to include financial stability as an explicit objective in the mandate of securities regulators.

Fiscal policy frameworks, too, require strengthening. It is imperative that sufficient institutional safeguards be put in place to ensure that fiscal positions are sustainable and that, just like monetary policy, fiscal policy can operate with adequate safety margins. The types of remedy are well known. They all involve constraints that can be embedded in legislation and enforced in a variety of ways, with different degrees of stringency. Ultimately, though, no remedy is workable without the political will to adopt it. And implementing the necessary policy adjustments has arguably become harder since the Great Financial Crisis, as expectations of government support have grown.

The same political will is needed to revive the flagging effort to reinvigorate the supply potential of the global economy. Only structural policies can deliver the productivity improvements needed to enable higher sustainable growth. Recognising this point, in turn, calls for a broad change of mindset to dispel the deeply rooted "growth illusion" at the heart of the debt-fuelled growth model that the world has de facto relied on for too long. The analysis and proposals in this report are intended to promote such a change.

## The AI wave

Among the structural developments of relevance to central banks, AI figures high on the list. AI has taken the world by storm and has set off a gold rush across the economy, with an unprecedented pace of adoption and investment in the technology.

The technology underpinning AI has been in development for decades, but AI has come of age with the ready availability of unstructured data and the computing power that can process it. Machine learning excels at imposing mathematical structure on unstructured data, such as text or images, to allow enormous computing power to process the information. The result is the uncanny versatility of the latest AI applications. They can perform tasks that they were not specifically trained to perform, or need only minimal training to do so; they are "zero-shot learners" or "few-shot learners". Large language models (LLMs) are trained on the totality of the text and non-text data on the internet, drawing on connections in the data to tackle a wide range of tasks. Such versatility distinguishes the latest AI models from past expert systems that were good for only narrowly defined domains. For these reasons, AI will have a profound impact on daily lives.

AI impinges on the job of central banks in two important ways.

First, it bears on central banks' core activities as stewards of the economy. The versatility of AI models will have far-reaching implications for the economy. In the labour market, AI could displace some workers but could complement the skills of others and introduce altogether new tasks that boost economic activity, innovation and growth. Central banks' mandates around monetary and financial stability would be profoundly affected by AI. The impact on inflation will depend on how the balance of supply and demand effects plays out, but widespread adoption of AI could enhance firms' ability to adjust prices quickly in response to changing circumstances, affecting inflation dynamics. Financial markets will also be affected, with implications for market dynamics and financial fragility. These issues are rightly of great concern to central banks.

AI also affects central banks as users of the technology. The ability to impose mathematical structure on unstructured data makes AI ideally suited to identify patterns that are otherwise obscured. This ability "to find a needle in the haystack" could offer breakthroughs in nowcasting economic activity and in the monitoring of financial systems for the build-up of risks. The "zero-shot" or "few-shot" nature of LLMs also means that they can perform tasks other than simply analysing textual information. LLMs excel at detecting patterns. Just as LLMs are trained by guessing the next word in a sentence using a vast database of textual information, macroeconomic forecasting models can use the same techniques to forecast the next numerical observation from a sea of structured and unstructured data. Many central banks already support their economic analysis with nowcasting models, producing real-time assessments of the economy. Financial market applications by central banks mirror AI tools already in use by private sector institutions in their data analytics, risk management and fraud detection, but AI's potential impact could be of even greater importance for central banks given their influence on the economy.

All this said, AI also introduces new challenges.

One such challenge is new sources of cyber risk that exploit weaknesses in LLMs to make the model behave in unintended ways, or to reveal sensitive information. By the same token, however, AI can be harnessed to strengthen cyber security by uncovering anomalies, trends or correlations that might not be obvious to the naked eye.

Most importantly, the new era of AI highlights the importance of data governance. While the underlying mathematics of the latest AI models follow basic principles that would be familiar to earlier generations of computer scientists, their capabilities derive from the combination of vast troves of data and massive computing power that is up to the task of unlocking the insights. The centrality of data demands a rethink of central banks' traditional roles as the compilers, users and disseminators of data.

Our conventional approach to data favours using existing structured data sets organised around traditional statistical classifications. However, the age of AI will rely increasingly on unstructured data drawn from all walks of life, collected by autonomous AI agents. Data availability and data governance are key enabling factors for central banks' use of AI. Both will require investment in technology and in human capital. Above all, the challenges of the age of AI necessitate close cooperation among central banks. Central banks need to come together to foster a "community practice" to share knowledge, data, best practices and AI tools.