GOVERNING SUPPLY SHOCKS: CENTRAL BANK INSTRUMENTS, FISCAL SPACE AND FINANCIAL RESILIENCE

Julia Bingler
Laura Britt Fermo
Ashutosh Jaiswal

POLICY BRIEF
October 2026

AUTHORS

Julia Bingler is Senior Fellow at the Council on Economic Policies (CEP), focusing on integrating novel risks and deep structural changes in financial supervision and monetary policy. She is also affiliated with the University of Oxford. Among other things, she works with financial regulators, supervisors and central banks on ensuring the future effectiveness of their existing instruments, and on developing novel approaches to challenges such as AI-driven change in economics and finance, and on climate-related risks. She holds a Ph.D. in Economics from ETH Zurich.

Laura Britt Fermo is Senior Economist at ASEAN+3 Macroeconomic Research Office (AMRO), which she joined in February 2024. Before AMRO, she spent 17 years at the Bangko Sentral ng Pilipinas (BSP), most recently as Principal Researcher/Director at the BSP Research Academy from 2021. She holds certificates from the University of Oxford in Transition Planning and International Carbon Markets (2025) and Sustainable Finance Executive Program (2025), and from the UN Sustainable Stock Exchanges Initiative on Managing and Reporting Nature and on Getting Started on Sustainability (2026). She holds a Ph.D. in Economics under fellowship from Keio University, Japan.

Ashutosh Jaiswal is Senior Financial Sector Specialist at the South East Asian Central Banks (SEACEN) Research and Training Centre, where he supports capacity-building and research initiatives in financial stability and supervision. He brings over two decades of central banking experience spanning operational, policy-making, and financial sector supervision functions. He holds an MSc in Finance from London Business School.

ACKNOWLEDGMENTS

This policy brief summarizes the discussions held during a roundtable on “Governing supply-side shocks – Central bank instruments and financial resilience” convened by the ASEAN+3 Macroeconomic Research Office (AMRO), the Council on Economic Policies (CEP) and the South East Asian Central Banks (SEACEN) Research and Training Centre in June 2026. We would like to thank the participants of the roundtable for the invaluable inputs and rich discussions during the meeting. The views expressed here are solely those of the authors, inspired by the points discussed among participants during our roundtable convening, and do not necessarily reflect those of AMRO, CEP, SEACEN or any other institution the authors are affiliated with.

CONTENT

Executive summary 2
1. Introduction 4
2. Central bank instruments to manage supply shocks and tightening fiscal space 4
3. Financial resilience and price stability 11
4. Main findings and implications 14

EXECUTIVE SUMMARY

Novel risks are expected to intensify supply shocks. This has considerable implications for monetary policy, fiscal space, and financial resilience. With potentially compounding and cascading effects, financial authorities might have to adopt more preventive measures and adjust their reaction toolkit. Key novel supply-side risks include geopolitical tensions, adverse demographics, energy shortages, and events related to natural catastrophes, climate change and environmental degradation.

Central banks' policy response to manage supply-side inflation comes with considerable trade-offs. Both standard options, tightening or looking through, have drawbacks. Tightening works on the demand side: it is of limited effectiveness in reducing the initial price hikes associated with supply constraints, and puts additional pressure on economic activity and investment in an already suffering economy. In the worst case, tighter monetary policy tips the economy into recession and harm investments that are needed for future resilience. At the same time, re-anchoring inflation expectations once they have de-anchored often requires much more aggressive tightening than would have been required in the first place. More nuanced and differentiated instruments are useful to ensure that tightening does not choke investments and economic activity in critical sectors.

The recent past shows that pre-shock conditions very much determine the monetary policy scope once a shock hits. However, even for those economies that managed the most recent supply shock relatively well, the relative position of strength cannot be taken for granted. Instead, resilience to various novel risks needs to be actively built and maintained. In addition to the need to build resilience, three core challenges make monetary policy in times of supply shock crises increasingly complex.

First, eroding fiscal space reduces the fiscal ability to absorb the supply-shock burden and could intensify fiscal dominance. Each shock limits the policy space for fiscal authorities to deal with the next one. This could considerably impact the optimal monetary policy response and its effectiveness. Also, overreliance on fiscal measures could intensify fiscal dominance over monetary decisions, which limits the monetary policy space further.

Second, a looming insurance protection gap increases the economic vulnerability to supply shocks. The issue of insurance protection gaps is associated with many novel risks. This has implications for the optimal monetary response once such risks materialize. Where losses remain uninsured, loss-absorption capacity is limited and the monetary stance hits

potentially harder than initially intended. The optimal response function might have to be adjusted, and overall monetary policy space might become considerably constrained. In addition, a widening insurance protection gap oftentimes shifts losses to the public balance sheet. The gap itself could become a contingent fiscal liability that contributes to the erosion of fiscal space.

Third, financial instability and financial dominance add another constraint to the monetary response. A tighter stance on top of the first-round effect of the shock raises default risks. Depending on financial institutions' interconnectedness and potentially lax pre-crisis supervisory scrutiny, this might put the financial system at risk. If supervision is designed to keep the financial system's critical functions running through a crisis, rather than to keep every individual institution solvent, central banks might be able to act more decisively when needed. This reduces the risk that individual failures disrupt the system as a whole, and thereby the degree to which financial dominance constrains monetary decisions.

A further cross-cutting consideration is technology-driven change in the financial sector. New actors are entering the market with AI and fintech-based services. Under inflationary pressure, households and firms might shift toward digital payment providers and more easily accessible (not necessarily cheaper) non-bank credit, which brings new actors into the system and makes policy-rate pass-through less predictable. Meanwhile, digital wallets, CBDCs and tokenized collateral may give central banks and fiscal authorities more direct ways to reach households and firms, for monetary policy transmission and targeted support. This could require extending supervision to the firms providing these services and reviewing whether current policy instruments still work as money and collateral take new forms.

When coordinating with the fiscal authorities on the appropriate reaction, central banks might want to emphasize the need to keep the price signal of the initial supply constraint intact. This is needed to ensure that the supply constraint is not further aggravated by artificially reduced prices, thereby potentially prolonging the supply shock by boosting demand. If needed, supporting vulnerable groups directly would be more advisable than subsidizing consumption of the scarce good.

Looking ahead, a comprehensive strategy for central banks to manage supply shocks entails both preventive and reactive measures. Given that the scope of the supply shock and the conditions on which it lands very much determine the monetary policy space, central banks have a genuine interest in investments that reduce exposure to known shock drivers *ex ante*. They could consider implementing, for example, targeted facilities that support investments in resilience before shocks hit. When a shock occurs, similar targeted facilities could ensure that central banks' differentiated response does not disproportionately discourage capital-intensive investments needed for longer-term resilience and sustainable prosperity.

1. INTRODUCTION

Supply-side shocks are intensifying, putting price stability and financial resilience at risk.

The closure of the Strait of Hormuz is the latest in a series of supply-side disruptions that have hit economies worldwide with increasing frequency and intensity. The effects of the projected "super" El Niño in 2026 and 2027 on global food supply are just about to materialize, and the increase in energy consumption due to the build-out of large artificial intelligence (AI)-driven data centers is expected to put considerable pressure on energy supply. Central banks increasingly acknowledge the build-up of supply shock intensity, which poses a risk to central banks' ability to manage price stability and safeguard financial stability.

Central banks and financial supervisors have not fully adapted their toolkits to a world of frequent, recurring supply shocks.

Conventional responses to inflationary supply shocks leave policymakers torn between two main options: Either looking through the shock and risking de-anchored inflation expectations; or moving ahead with hikes, which adds pressure to already weakened economies, harms long-term investment, and potentially threatens financial stability. Growing fiscal and financial dominance further narrows central banks' room to maneuver in managing this trade-off.

This policy brief lays out core aspects for central banks to consider when dealing with recurring supply shocks amid eroding fiscal space, widening insurance gaps and the resulting fiscal and financial dominance concerns.

It argues that exploring smart policy mixes will be increasingly relevant to stay ahead of the curve. Preemptive measures that reduce exposure to supply shocks before they materialize become very important to preserving future policy space in areas where the risk drivers are known. When a shock hits, it is worthwhile to assess how bundles of differentiated instruments could support price stability while limiting possibly adverse effects on growth, employment and longer-term investments. A differentiated policy mix might include the introduction of targeted facilities that come with differentiated interest rates for various economic segments.

2. CENTRAL BANK INSTRUMENTS TO MANAGE SUPPLY SHOCKS AND TIGHTENING FISCAL SPACE

When supply shocks drive inflation, standard central bank measures have limited effectiveness for price stability and come at considerable economic costs.

For inflation-targeting central banks, the policy rate is a key tool to manage inflation and anchor inflation expectations. When excessive demand drives the price increases, central banks respond with higher policy rates to slow down economic activity and demand, which brings inflation back to the target level. However, raising policy rates during supply shocks does not address the supply constraints that are responsible for the initial price increase. Furthermore, monetary tightening comes at the cost of slowing down output and investments in an economy that is already suffering from the initial supply constraint and

resulting price pressures. In this way, tighter monetary policy can even discourage the very investment needed to resolve or mitigate the initial supply constraint.

For central banks that manage their exchange rate, FX intervention is a common response to external price shocks. It is used to smooth exchange-rate volatility and limit excessive depreciation. Since a weaker currency raises the local-currency cost of imports, intervention that supports the currency can help contain imported inflation, with its effectiveness partly shaped by the US dollar's dominant role in global trade and financing. In emerging markets, where FX intervention is often paired with policy rate decisions, this can reduce the scale of rate increases needed to control inflation. However, sustained large-scale intervention requires sufficiently large foreign reserves, and its effectiveness is empirically contested. Intervention can even backfire if markets read it as a signal of distress, drawing attention to underlying terms-of-trade or fundamental weaknesses. Furthermore, if reserve buffers are seen as insufficient, it can invite speculative attacks against the currency.

Given the usual time lag of the monetary transmission channel, central banks oftentimes first look through the shock to see if it is temporary, and if there are no signs of second-round effects or that inflation expectations are de-anchoring. However, if there are reasonable signs that the shock could last longer, transmit quickly across sectors and risk de-anchoring expectations, acting early could avoid the need for potentially more aggressive rate increases afterward.

When a supply-side price shock hits, a position of relative institutional and economic strength preserves policy space, ensures credibility to anchor inflation expectations, and supports the ability to limit adverse effects.

The recent oil price shock has shown that the effectiveness of policy responses and the macroeconomy's vulnerability to supply-side crises depend crucially on the starting point of the economy when the supply shock occurs. Authorities everywhere faced difficult trade-offs in containing inflation while limiting damage to employment, small businesses, long-term investment, and growth. But countries that entered the shock from a position of strength with lower exposure to oil prices were considerably better placed to contain these side effects.

For example, some countries in ASEAN entered the oil price shock events with sound fundamentals. A primary example is Singapore, which exhibited robust growth in recent years and low inflation, relatively high income levels, paired with a sound financial sector, and banks maintaining strong capital buffers and high liquidity. For the specific supply shock following the closure of the Strait of Hormuz, a lower reliance on private combustion engine vehicles with reliable public transport, diversified and electrified energy systems, and targeted fiscal support for lower-income households considerably buffered the intensity at which the shock hit. With lower oil price shock exposure and good fundamentals in place, fiscal authorities and the central bank had sufficient policy space to deal with the residual inflationary pressure.

Other countries entered the oil price shock with weaker fundamentals and greater shock exposure. For them, the inflationary pressure has proven more pronounced and longer-lasting. Institutional room to maneuver and fiscal space were more limited, leaving governments and central banks with starker trade-offs. Heavy reliance on oil imports and a low degree of electrification left energy systems particularly exposed to the shock. Currency weakness that was already emerging before the closure of the Strait of Hormuz was reinforced once the shock hit, even though the underlying drivers of the currency stress were not directly linked to oil prices. In these countries, central banks faced greater challenges in

anchoring expectations, even where fiscal support measures were introduced to alleviate parts of the initial inflationary pressures.

Reducing exposure to shocks with known risk drivers in advance is key to keeping them manageable when they occur and preserves policy space and absorption capacity for dealing with fully unanticipated events.

For those shocks where risk drivers are already known, reducing exposure is possible, and should become a key policy principle. Reducing exposures *ex ante* lowers the likelihood that these risks translate into economy-wide shocks and reduces the size of the response needed once a shock hits.

While the inflationary and general economic impact of any single shock may be short-lived, each shock can compound and also trigger a cascade of other shocks. Furthermore, even if shocks are expected to materialize individually, each successive shock further erodes fiscal capacity, leaving less room to absorb the next one.

Hence, reducing exposure to known risk drivers needs to feature in policy packages to deal with supply shocks. It reduces the risk of compound adverse events and loss cascades, limits the magnitude and number of policy responses needed, and preserves policy space to deal with events that could not be anticipated at all.

Inflationary shocks and central bank measures in response to these shocks hit some segments of the economy more than others.

If inflation is driven by price increases in basic goods, such as energy and food, price hikes disproportionately affect energy-intensive industries and lower-income households who spend a larger share of income on food and fuel. In addition, higher interest rates in response to the inflationary pressures hit some economic segments harder than others. Households with higher levels of debt, and technologies or sectors that go through a period of comparably higher upfront investment costs, are particularly negatively affected. These disproportionate effects can be very harmful for the future prospects of the economy and for household welfare.

For example, in some jurisdictions, the effect of even relatively small interest rate increases by the central bank has considerably affected households' budgets even beyond the price effect itself, since mortgage rates were tied to the policy rate. This has put a double burden on household expenses, exacerbating the first-order effect of the oil price hike itself.

In addition, upfront investments in renewable energy, for example, are more sensitive to interest rate changes than fossil fuel energy supply, due to their initially higher capital intensity. During the current oil price hike, the tighter monetary stance disincentivized new renewable energy projects and put on hold ongoing projects that would otherwise reduce exposure to higher oil prices.

If these disproportionate effects are not contained *ex ante* and during crises, each successive shock erodes the capacity of the hardest-hit segments to deal with the next shock.

This risk grows as supply shocks are expected to become more frequent and intense. At the very extreme, most affected segments of the economy might be left decoupled from economic activity, and some of the segments of the economy that are most important for future economic growth and sustainable welfare might be permanently impaired.

For some segments, particularly vulnerable groups or economic activities that are important for sustainable prosperity, it can be important to incentivize resilience investments with

targeted refinancing facilities by central banks and public support schemes to reduce exposures before shocks actually occur. This would maintain central bank policy space to respond to shocks when they do materialize. Likewise, targeted fiscal support during a crisis could be decisive to ensure that the most vulnerable segments are not pushed out of the market by the inflationary shock and the central bank response to it.

For example, when the most recent supply shock hit, Bank Negara Malaysia (BNM) complemented its microlevel data analysis – which usually comes with a lag – with in-depth sectoral assessments on the ground to identify the most vulnerable groups and economic segments. This information was used to design tools precisely for those who actually needed support. BNM found that larger businesses and those with better pricing power were able to cope with the shock by themselves, while SMEs were supported with a dedicated SME stabilization facility. This SME facility is complemented by newly introduced government guarantees for longer-term investments into priority areas, which could also alleviate some of the adverse effects of rising interest rates on economically important longer-term investments.

Meanwhile, Singapore's policy response to energy price shocks illustrates a combination of short-term business relief and longer-term measures to reduce SMEs' structural vulnerability to rising energy costs. The Energy Efficiency Grant (EEG) was first introduced during the 2022 energy price shock to help SMEs invest in energy-saving equipment, complementing the enhanced Energy Efficiency Fund (E2F) for manufacturing firms.[1] This time around, in response to renewed energy pressures arising from the Middle East conflict in 2026, Singapore reinforced this approach by combining immediate financial support for businesses with an expansion and extension of the EEG.[2] These initiatives sought to reduce operating costs, improve energy efficiency, and strengthen business resilience against future energy price volatility. The enhanced scheme broadens access to energy-efficiency investments across sectors, helping firms mitigate their exposure to sustained energy costs while supporting the country's broader sustainability objectives.[3]

Effective supply shock management relies on well-coordinated policy mixes adopted within and across institutions, covering preemptive and reactive measures.

Supply-driven inflationary persistence is affected by the speed and strength of the recovery in supply and adjustments in demand. Both are materially affected by the broader policy mix, mainly the fiscal response and the scale and pace of possible insurance payouts, if any.

While central banks used to rely on fiscal measures to ease initial supply-driven inflation and look through the shock in the first place, this division of labor is increasingly hard to maintain.

---

[1] Measures introduced in response to the 2022 energy shock. On 21 June 2022, Singapore announced a S$1.5 billion support package that included the EEG, initially covering SMEs in food services, food manufacturing, and retail, with co-funding of up to 70% for pre-approved energy-efficient equipment, subject to a S$30,000 grant cap per company. (Ministry of Finance (MOF), S$1.5 Billion Support Package, 21 June 2022; NEA, Enhancements to the Energy Efficiency Fund, 8 March 2022).

[2] Singapore announced additional business assistance in April 2026, including an increase in the corporate income tax rebate from 40% to 50% for Year of Assessment 2026, a higher minimum benefit for qualifying firms, and an increase in the maximum benefit per company. (MOF, Ministerial Statement on the Impact of the Middle East Situation on Singapore, 7 April 2026, paragraphs 10–11).

[3] At Budget FY2026, Singapore announced a one-year extension of the EEG from 1 April 2026 to 31 March 2027. Subsequently, the 7 April 2026 Ministerial Statement announced that the EEG Base Tier would expand beyond six designated sectors to all sectors and be extended through 31 March 2028. The six existing sectors comprised construction, food services, manufacturing (including food manufacturing), maritime, retail, and data centres/users.

The reason is the eroding fiscal space and, at the same time, more persistent and fundamental supply shocks that spill over more easily across entire economies.

Monetary tightening alone may prolong supply-driven inflation by stifling investment and hence curtailing the availability of substitutes and alternative supply sources. This is especially relevant when demand cannot be substantially reduced with instantaneous behavioral adjustments or with readily available alternative production inputs.

Fiscal responses alone might prolong supply-driven inflation when untargeted and focused on reducing prices, hence keeping demand above equilibrium. Therefore, a mix of different policy tools is essential.

It is now more widely discussed in the literature that deploying a mix of instruments for various policy fields could be more effective and less damaging than the intensive use of any single tool.[4] This holds for both policy mixes, within and across institutions. For monetary policy instruments, the ECB states explicitly that side effects of a single instrument rise with intensity of use, and their marginal effectiveness declines.[5] In contrast, combined instruments tend to complement and reinforce each other. This implies that a broadened monetary policy toolkit, together with well-coordinated monetary-fiscal policy responses that keep price signals alive, could be a possible way forward.

This policy mix could be relevant during supply-driven inflationary shocks, but also preemptively to create sufficient monetary policy space. The European Central Bank noted for example in its updated monetary policy strategy from 2025 that "fiscal and structural policies can foster productivity and labor supply growth, supporting a higher equilibrium real interest rate and thereby creating monetary policy space."[6]

Operationalizing more differentiated policy responses requires institutional and analytical capacities that vary considerably across ASEAN+3 economies. The appropriate sequencing should therefore reflect country-specific policy frameworks, institutional mandates, market structures and implementation capacity. For economies with more constrained capabilities, strengthening data infrastructure, analytical tools and interagency co-ordination may need to precede the adoption of more sophisticated or targeted instruments.

Untargeted, prolonged fiscal interventions could worsen the supply problem and erode fiscal and monetary space.

First, if intervention subsidizes demand rather than targeting investment in supply, headline inflation may fall temporarily and price-wage spirals may be contained, but the underlying inflationary pressure will likely persist longer. Untargeted demand support pushes consumption above available supply, driving market or pre-subsidy prices even higher than without the subsidy. Targeted interventions should therefore preserve the price signal for

[4] See for example: International Monetary Fund (IMF) (2020). Toward an Integrated Policy Framework. IMF Policy Paper No. 2020/046. Available at: https://www.imf.org/en/publications/policy-papers/issues/2020/10/08/toward-an-integrated-policy-framework-49813; Agénor and Pereira da Silva (2021). Macro-financial Policies under a Managed Float: A Simple Integrated Framework. BIS Working Paper No. 964. Available at: https://www.bis.org/publications/working-paper-964-macro-financial-policies-under-managed-float-simple-integrated-framework; Borio, C., Shim, I., and Shin, H. S. (2022). Macro-financial Stability Frameworks: Experience and Challenges. BIS Working Papers No. 1057. Available at: https://www.bis.org/publications/working-paper-1057-macro-financial-stability-frameworks-experience-and-challenges.

[5] ECB (2025). An overview of the ECB's monetary policy strategy – 2025. Available at: https://www.ecb.europa.eu/mopo/strategy/strategy-review/ecb.strategyreview202506_strategy_overview.en.html.

[6] ECB (2025). An overview of the ECB's monetary policy strategy – 2025. Available at: https://www.ecb.europa.eu/mopo/strategy/strategy-review/ecb.strategyreview202506_strategy_overview.en.html.

the scarce good, supporting households and businesses directly rather than subsidizing consumption of that good.

Second, as supply shocks grow more frequent and intense, fiscal space erodes quickly. Each shock limits the capacity to address the next, and at some point the current joint monetary-fiscal response may become ineffective. Furthermore, overreliance on fiscal measures also risks deepening fiscal dominance over monetary policy.

Amid tightening fiscal space and an expected increase in supply shocks, it is important for central banks to understand how they could implement effective policies and buffer adverse effects within their own toolkits.

Central banks would need to stress test the effectiveness of their own policies against scenarios in which fiscal support is constrained or unavailable and identify solutions that do not rely on fiscal space.

Ultimately, a combination of fiscal and monetary measures still makes the most sense, but it might have to be kept within reasonable fiscal space and be complemented by dedicated central bank instruments.

Targeted refinancing operations and targeted facilities for resilience investments to reduce the economy's shock exposure in the first place and to keep investments alive in times of monetary tightening could become an important part of the monetary policy toolkit.

Central banks need effective instruments suited to managing supply-side shocks while limiting adverse side effects. Given that interest rate changes affect economic segments very differently, more targeted instruments could prevent tightening becoming too burdensome for some segments, while the overall monetary stance could still be restrictive. This could be especially important for economic activities and segments that are important for future economic resilience and sustainable welfare.

In addition, reduced interest rates for investments in resilience projects before shocks actually occur could support reducing the economy's exposure and vulnerability to known shock drivers.

To limit the risk of drifting into quasi-fiscal policy, a set of governance principles for targeted refinancing operations and facilities to manage supply shocks is required. Targeted central bank facilities should be designed to alleviate the disproportionate effects of the aggregate policy stance, and support investments into economic resilience that reduce exposure to future supply shocks. Eligibility needs to be transparent, rules-based, and subject to regular review, and facilities should come with predefined size limits and sunset clauses. It should rest on a demonstrated disproportionate sectoral impact of the aggregate stance or be tied to a demonstrated contribution to reducing the economy's exposure to specified supply shock drivers. Facilities should also be tied to a regular assessment of the actual economic exposure to shocks and the actual disproportionate burden of a tighter monetary policy stance.

The introduction of targeted central bank facilities should likewise proceed cautiously, recognizing differences in monetary policy frameworks, institutional mandates and financial-market development. Where existing instruments prove insufficient, novel facilities could first be tested through limited-scale pilots with clearly defined objectives, eligibility criteria, risk-sharing arrangements and exit provisions. Wider deployment should be contingent on demonstrated effectiveness and appropriate accountability and governance arrangements.

In addition, central banks need to understand the impacts of technological change on the monetary transmission channel and the fintech-induced broadened set of possible reactions by businesses and households to price increases.

Central banks need to understand how monetary transmission is evolving alongside new technologies. This requires expanding both the modeling toolkit and the policy reaction function in two respects: first, capturing the possible and observed behavioral responses of households and businesses; second, accounting for how responsive households and businesses are to the policy stance itself, given that transmission channels may be accelerating or becoming less direct.

In times of high inflationary pressure, for example, both households and firms actively look for savings, including on banking fees, and may move to digital payment providers that typically charge lower fees, or to non-bank financial institutions for credit provision. This has implications beyond the individual transaction, since new actors are becoming more important in the financial system. It also has direct consequences for monetary policy transmission, since credit intermediation and payment flows migrate toward non-bank financial institutions (NBFIs), oftentimes in the fintech area, so that the pass-through of the policy rate via traditional bank lending becomes less predictable.

Technological change and fintech solutions also come with new options for central banks to potentially influence monetary policy transmission directly and for targeted support instruments.

Digital wallets can make it easier for governments to transfer targeted support, and with retail central bank digital currencies (CBDCs), the central bank could potentially directly reach households and real economy businesses. While setting up and using these channels comes with its own risks and challenges, it is worthwhile noting that they may support the monetary transmission mechanism in countries that opt for their adoption, especially in crisis times when the transmission channel might be distorted.

Furthermore, tokenization could improve the mobility and liquidity of some previously illiquid assets used as collateral. Markets might be more willing to provide loans and credit against liquid tokenized collateral in contrast to illiquid assets, which could be especially relevant for lending willingness in crisis times. If tokenized assets are well governed and if these additional loans are provided within scope of a resilient financial system, this could also reduce the reliance on support measures by the public sector in times of crisis.

Last, if well governed and within regulatory perimeter, technological change could make the payment system more resilient to financial crises and reduce the financial dominance concerns that will be discussed in the next section, since the systemic role of banks in the payments system might be reduced.

This means that bringing technological change and the relevant activities into the regulated perimeter is not only important for financial supervision. It is also important for calibrating appropriate monetary policy responses, and central banks are well advised to understand which new channels they could potentially explore to design effective, targeted policy responses.

From a broader perspective, the recent supply shock also triggered debates about appropriate inflation targets and horizons.

It has been argued that a higher frequency of shocks might require additional nominal policy space. Policy target tolerance bands rather than point targets, similar to the inflation target range of the Bangko Sentral ng Pilipinas (BSP) or the exchange rate policy band applied by

the Monetary Authority of Singapore (MAS), could be policy options. In addition, average inflation targeting over a longer time horizon could support short-term policy space. Yet, after having introduced this approach in 2020, the US Federal Reserve moved away from it in its 2025 framework review due to the persisting inflation pressures. Critics argued that the built-in flexibility created an upward bias on price expectations. In any case, explicit communication of the strategies is important. For example, some central banks might want to communicate that the first-round effects of identified supply shocks will be tolerated while second-round effects will be resisted forcefully.

The question of calibration becomes considerably more difficult where the underlying pressures are structural rather than temporary. Climate change, demographic transition and the diffusion of artificial intelligence act on the natural rate of interest itself. This means that the reference point against which any target and any policy stance is formulated might itself shift, which might require an update of the monetary policy framework and strategy.

3. FINANCIAL RESILIENCE AND PRICE STABILITY

As monetary policy in response to supply shocks could destabilize the financial system and public finances, fiscal and financial dominance are a serious concern for central banks.

Monetary policy has a direct impact on public debt burden and on financial stability. A tighter stance with higher rates increases the costs of government debt, and could destabilize financial institutions, depending on leverage and maturity mismatches.

This issue is particularly pronounced with monetary tightening under supply shocks, since the interest rate increase puts additional pressure on households and companies that already suffer from supply-driven price increases. Where interest rate increases come on top of the price shock itself, the risk of defaults rises further than it would have under the price shock alone. This raises credit risk across the system and might trigger a cascade of losses across balance sheets.

For the public sector, the debt burden rises at a time when spending might need to increase to buffer the adverse effects of the supply shock. Tax revenues, meanwhile, decline in an economy that is struggling with the initial supply shock and is hit on top of that by the second-round effect of lower production and weaker investments amid tighter monetary policy. Rising unemployment adds to this from both sides, since it depresses income tax receipts and social contributions while raising the demand for unemployment benefits and other social support.

These effects could trigger downward spirals. Depending on the size of the shock and the situation the economy is in, central banks might have limited room to maneuver. Price stability would then conflict directly with financial and fiscal stability. Monetary policy is then subject to financial and fiscal dominance.

Building financial resilience is key to preserving monetary policy space once a supply shock hits.

Reducing exposure to supply shocks and maintaining sufficient financial buffers in the system is not only a financial stability issue, but also of monetary policy relevance. Financial buffers in the system need to be large enough to hold for various serious stress scenarios

with compounding novel risks and sovereign-economic-financial feedback loops. They should also hold for individual institutions under the assumption of reduced or unavailable insurance coverage for supply shock drivers.

While established prudential instruments and supervisory stress-testing frameworks provide a foundation for strengthening financial resilience, proposals to incorporate resilience-building incentives into capital-buffer requirements remain exploratory. Such approaches would require further analytical validation of their risk-reduction benefits, compatibility with existing prudential standards and potential implications for financial stability and credit allocation.

To accommodate the fact that resilience needs to be built *ex ante*, not just with buffers that absorb the shocks but also with explicit investments in reduced exposures, prudential buffers would ideally be calibrated in a way to incentivize resilience investments *ex ante*. For example, they could contain a loss absorption component and a component that accounts for banks' contributions to reducing the economy's exposure to core anticipated supply shock drivers.

A functional approach to operationalizing financial resilience could be more effective than a balance-sheet focus.

Resilience is currently measured largely at institution and asset level, whereas stress typically appears in the links between institutions. A resilient financial system reduces exposures to shocks in the first place and combines the ability to absorb a shock at least cost to its users while maintaining core functions. In this sense, resilience is a property of the network of financial institutions and of the flows within it, rather than of any individual balance sheet. It is the ability of the system to maintain critical functions such as payments, credit, collateral, foreign exchange and trade finance while absorbing a shock without amplifying it.

A resilience approach that focuses on keeping core functions alive instead of saving institutions allows authorities to let unprepared institutions exit the market in an orderly way, thereby reducing the considerable costs that bailouts usually impose on taxpayers. Individual institutions might fail, but the functions for which the system exists would continue. This effectively reduces the incidence of moral hazard, which occurs when institutions believe public authorities have policies in place to bail them out in times of crisis.

As a first step, this means that stress tests might need to be updated to account for novel risks and focus on the institutional links. They should add an additional layer of core functions performed at the different nodes of the network. Furthermore, as novel risks are expected to arrive at higher frequency, with greater intensity and longer duration, stress tests would have to move beyond single stressors, including compound risks and risk cascades.

This would enable authorities to place shock absorbers more precisely where shocks likely hit and eventually unfold. The focus would potentially have to adjust, moving from protecting balance sheets to protecting critical functions.

In addition resilience through insurance availability, and insurer resilience itself, need to become part of the broader policy mix to govern supply shocks.

For some supply shocks, such as natural catastrophe and climate-related shocks, financial resilience relies very much on the availability and affordability of insurance schemes. However, for systemic risks, correlated risks and escalating losses, such insurance schemes are increasingly unavailable or come with a considerable increase in the premium.

As private households and SMEs are usually very sensitive to premium increases, once premium increases occur on top of inflationary pressures or interest rate hikes, most vulnerable economic segments might be hit profoundly. One example is the withdrawal of insurance for projects and property in areas that are particularly exposed to the global increase in more extreme weather events due to climate change.[7]

A looming insurance protection gap poses considerable risk to private and public balance sheets, further eroding fiscal space and exacerbating potential monetary policy trade-offs.

As a growing share of the economic losses of supply-side shocks might become uninsured, more losses of adverse events would have to be borne by households and businesses. With more losses on their balance sheets, their ability to withstand additional inflationary pressures or interest rate hikes is depressed. The burden of standard monetary policy in either way – accommodating or tightening – might become too large. This is why reducing the exposure to supply shocks *ex ante* can be decisive to maintain monetary policy space and sustain overall welfare.

Furthermore, insurance gaps are an implicit contingent fiscal liability. Once uninsured losses occur, the public budget is oftentimes used for emergency support. This erodes fiscal space further, again reducing the ability to deal with the next shock. A widening insurance gap is therefore a quiet erosion of fiscal space and needs to be taken into account by monetary authorities when thinking about how to address supply shocks in the future.

The looming insurance gap poses a difficult trade-off for insurance regulation, and layered public-private setups might be necessary.

A well-functioning insurance layer can preserve fiscal space with market-based risk transfer measures. It would thereby also widen the room for monetary policy by enhancing private and public financial buffers which would otherwise, if too low, constrain monetary policy space. Overall, in an era of multi-sourced and compounding supply-side shocks, building out insurance is increasingly a precondition for sustainable prosperity.

However, expanding coverage increases exposure to tail risks and systemic losses for insurers, which can threaten their own resilience. Prudential responses that protect solvency, such as higher capital requirements or restricted exposure, may in turn reduce supply and thereby widen the same insurance gap again.

One option could be layered public–private partnership architectures. Depending on the insurability of risks, it would be worthwhile for policymakers to leave the diversifiable layer to the private market, while introducing schemes for public–private backstops and pools, which could absorb the correlated or systemic tails[8]. While this would still require additional fiscal space, this approach might limit the amount of contingent liabilities for households

[7] See for example APRA (2026). Mind the Gap – An Insurance Vulnerability Assessment. Available at: https://www.apra.gov.au/news-and-publications/mind-gap-insurance-climate-vulnerability-assessment.

[8] Insurance works by pooling individual, uncorrelated risks. Such risks are diversifiable, and on average moderate. Correlated or systemic tails are extreme losses that hit many policyholders at once, such as a major flood, typhoon or earthquake affecting an entire region. If exposure to such correlated risks increases, or if structural risks shift the risk distribution and make extreme adverse events more likely, losses are no longer statistically independent and no longer moderate on average. This puts insurability at risk, making cover unavailable or unaffordable. Public backstops, such as state reinsurance, catastrophe funds or residual-market pools, can absorb this layer because governments can spread losses across time and across the whole tax base.

and businesses and the public sector, while keeping the insurance sector as a core component for resilience in the markets.

4. MAIN FINDINGS AND IMPLICATIONS

An effective policy mix needs to be implemented across institutions, but also within each institution's capabilities.

Supply shocks are expected to become more frequent, more intense, and increasingly complex. However, central banks' standard monetary response options to manage inflationary pressures, i.e., to tighten or to look through, are of limited effectiveness to manage supply shocks. With eroding fiscal space and a looming insurance protection gap, central banks might need to adjust their use of instruments to govern supply shocks effectively in the future. This would come in addition to close coordination between the country's financial authorities to reduce exposure and manage supply shocks once they hit.

Implementing a more differentiated approach to supply shocks will also require investment in institutional and analytical capacity. Authorities will need sufficiently granular data, modeling and stress-testing capabilities, appropriate legal mandates, and effective coordination arrangements to identify vulnerabilities and calibrate targeted interventions without creating unintended fiscal or financial risks.

For central banks, an updated strategy for keeping the risks manageable would ideally contain both preventive and reactive measures.

Pre-shock conditions determine post-shock options. Therefore, introducing measures to reduce exposure to shocks *ex ante* matters as much as the policy response once they occur. Reducing structural exposure to known supply shock risk drivers preserves policy space to deal with the residual effects once shocks occur, and to deal with entirely unanticipated adverse events.

Any supply shock itself and the measures adopted in response affect economic segments very differently. It is therefore important that the policy response does not disincentivize the very investments that are important for recovery and for building resilience to the next shock. This also requires moving from aggregate to disaggregated shock impact analysis, to inform differentiated policy instruments. Targeted facilities to reduce the interest burden for disproportionately affected segments of an aggregate interest rate increase could be considered. Such targeted tools could also be considered *ex ante* to reduce exposure to those shocks where risk drivers are already known.

Where targeted tools are adopted, they need to stay within clear guardrails. The appropriate mix and sequencing of such measures will differ across economies, depending on institutional mandates, financial-market structures, available fiscal space, data and analytical capacity, and stages of development. For some authorities, strengthening these underlying capabilities may need to precede the introduction of more differentiated policy instruments. Central bank facilities should address only the disproportionate effects of the aggregate policy stance, or a demonstrable contribution to reducing exposure to future supply shocks, with transparent and rules-based eligibility, predefined size limits, sunset clauses and regular review.

An updated supply shock strategy also needs to consider how technological change, eroding fiscal space, financial instability and a looming insurance protection gap affect the monetary policy space, its effectiveness and potential trade-offs.

Technological change has the potential to considerably alter the monetary transmission channel, and broadens the set of available options for households and businesses to deal with price shocks.

Eroding fiscal space and financial instability both threaten monetary policy space. This issue is likely to get worse with increasingly frequent and intense supply shocks. In addition, with less fiscal support available, monetary policy calibration to contain inflationary pressures puts potentially unbearable burden on businesses, households and the economy as a whole.

The insurance protection gap limits the absorption capacity of households and firms to deal with price shocks, and to accommodate a tighter monetary policy stance. It also contributes to eroding fiscal space once shocks occur. Building resilience via insurance availability, and insurers' own resilience, are important additional aspects to consider for managing supply shocks in the future.

Among others, the following measures could be part of a strategy for central banks to stay ahead of the supply shocks curve:

1. Preventive measures

- **Adapting economic models and monetary analysis to a world of recurring and compounding supply shocks.** It would be worthwhile to identify which risk drivers are plausible sources of future supply disruption, such as supply chain, geoeconomic, geopolitical, climate change and environmental stresses, and to integrate them as single and as compound shocks into economic models and monetary analysis. When interpreting the results, it might be helpful to deliberately add an assessment of contingency provisions for additional unknown risk drivers and unanticipated shocks, for eroding fiscal space, and for insurance gaps.
- **Reducing exposure ex ante and building an overall position of strength as an integral part of the monetary policy toolkit.** Lowering exposure to known shock drivers reduces the probability that a shock spreads across the entire economy, reduces the likelihood that compound risks and loss cascades are triggered, and keeps the size of the monetary response within manageable scope. This preserves policy space to deal with anticipated potential shocks and with additional shocks that are fully unknown. Targeted facilities and refinancing lines to support resilience investments could be one option within the current central bank toolkit. Coordinated policies across various institutions before shocks actually occur could enhance progress to achieve shared resilience goals in priority areas and thereby build positions of strength. Such coordination could be supported by common risk scenarios, information-sharing arrangements and clearly defined institutional responsibilities, complemented by joint simulation and capacity-building exercises involving central banks, fiscal authorities, financial supervisors and other relevant agencies.
- **Adjusting financial supervision and exploring the potential role of resilience-oriented capital buffers to reduce the risk of financial dominance.** Financial supervision might need to test the resilience of financial markets to supply shock

first-order effects and the monetary responses. Moving beyond balance sheet soundness, it is important that stress tests assess the ability of the financial system to continue providing critical functions, even if individual institutions fail. This would be tested by mapping critical functions onto network nodes. In addition, it would be important to move beyond single stressors toward testing compound stressors and loss cascades. Buffers and emergency tools would support critical functions to remain safe under compounding scenarios with feedback loops across multiple institutions and levers. To reduce exposure of the financial sector to stressors and not just add loss absorption capacity, authorities could explore whether appropriately designed capital buffers could incorporate two dimensions. They would have a solvency component and another component to prevent the build-up of systemic risk by incentivizing *ex ante* resilience investment. Additional targeted financial resilience measures, such as firewalls and diversification provisions, could be considered at those nodes where critical functions are performed.

- **Understanding how eroding fiscal space shapes monetary policy options and their effectiveness.** This would require defining strategies that reduce fiscal dominance, depending on the drivers of public debt accumulation. For some areas, policies could be coordinated to reduce overall exposure and vulnerability to shocks that might translate into fiscal burden. Central banks may also wish to stress test their own instruments against scenarios in which fiscal support is constrained or unavailable, and to use the insights to adopt effective instruments that keep them ahead of the curve before and during shocks, even without fiscal support.
- **Understanding how a looming insurance protection gap intensifies fiscal and financial dominance, and how it could affect monetary policy trade-offs.** When correlated and systemic risks concentrate, coverage is withdrawn or available only at a high premium. While this reduces shock exposure of insurance providers, it increases the economy's overall vulnerability. With rising premiums and coverage withdrawal, households and SMEs are oftentimes the first ones to be hit. Where losses remain uninsured, loss-absorption capacity and thereby also the ability to deal with tighter monetary policy is reduced, and the monetary stance hits harder than before. Overall, a widening insurance protection gap could directly translate into a contingent fiscal liability and therefore contribute quietly to the erosion of fiscal space. Furthermore, insurance companies themselves might be hit adversely by a shock, triggering potentially additional stress within the financial sector. Advocating for layered public-private insurance schemes might be an important step for central banks to ease issues related to a widening insurance protection gap. In addition, again, supporting resilience investments *ex ante* with specific facilities deployed by the central bank could ease some of the tensions and enhance the economy's ability to deal with supply shocks once they occur, thereby safeguarding monetary policy space.
- **Understanding the implications of financial innovation for monetary transmission and regulatory frameworks.** The expansion of fintech, blockchain-based services, digital payments, and non-bank credit is reshaping how households and firms respond to economic shocks and monetary policy. By introducing new intermediaries and financial channels, these innovations may alter traditional monetary transmission mechanisms and weaken the predictability of policy-rate pass-through. Central banks may therefore need to extend the regulatory perimeter to emerging financial service providers, not only for supervisory purposes but also to improve monetary policy calibration and effectiveness. This may require adapting existing policy instruments or developing complementary facilities to reach new

financial channels. At the same time, digital wallets, central bank digital currencies (CBDCs), and tokenized collateral could provide opportunities for more targeted monetary interventions and fiscal support, underscoring the need for coordinated and adaptive policy responses.

- **Testing and evaluating new instruments before wider deployment.** Some of the approaches discussed above – including targeted facilities, new resilience-based prudential tools and technology-enabled transmission channels – remain relatively novel. Where appropriate, authorities could use scenario exercises, pilots and ex-post evaluation to test their effectiveness, identify unintended consequences and adapt approaches to domestic institutional and market conditions before wider implementation. At the same time, learning by doing and adjustments on the go are key for successful policy implementation amidst novel supply-driven risks.

2. Reactive measures

- **Considering differentiated monetary policy responses to supply-driven price increases to avoid hitting some segments disproportionately hard.** Among the groups most adversely affected by tighter monetary policy are highly indebted households and capital-intensive segments. In the latter, maintaining investments in resilience-building activities and projects is particularly important to reduce exposure to future supply shocks. Therefore, differentiated policy instruments might be worthwhile. It would be important that any differentiation is built on evidence and on a proven disproportionate burden of the policy response. Where public data comes in with a lag, it could be complemented with on-the-ground sectoral assessments, so that differentiation remains properly targeted and effective.
- **Adopting policy bundles to enhance effectiveness and reduce adverse side effects of any single tool.** This matters for policy responses of central banks themselves, and policy responses coordinated across institutions. For single instruments, side effects rise and marginal effectiveness declines as the intensity of the instrument increases. Well-coordinated, combined instruments within central banks' toolkit and across institutions tend to reinforce each other.
- **Maintaining the price signal of the initial supply constraint.** When designing support measures and coordinating with fiscal authorities, it may be advisable to avoid untargeted demand-side price support, which sustains overconsumption relative to available supply. Such support could eventually exacerbate the price pressure problem. It might leave prices higher for longer as demand and supply do not adjust to the underlying scarcity signal. Instead, it would be worthwhile to explore how welfare and employment of most vulnerable economic segments and groups could be supported directly or via targeted facilities, rather than through subsidizing consumption of the scarce good.

Overall, an effective monetary policy strategy for governing supply shocks benefits from integrating preventive and reactive measures.

Such a strategy would complement the task of choosing the right policy stance once shocks occur with working on reducing exposure and improving the fundamentals and economic conditions on which a possible shock lands. This would preserve policy space once a shock occurs and prevent adverse side effects that work against future shock absorption capacity and prosperity.