

**ASIAN CONSULTATIVE COUNCIL
of the
BANK FOR INTERNATIONAL SETTLEMENTS**

Inflation, external financial conditions and macro-financial stability frameworks in Asia-Pacific

A report by a Working Group established by
the Asian Consultative Council of the Bank for International Settlements

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People's Bank of China

Hong Kong Monetary Authority

Reserve Bank of India

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Preface

The Asian Consultative Council (ACC) of the Bank for International Settlements (BIS) was established in March 2001 to facilitate communication between the BIS shareholding central banks in the Asia-Pacific region and the BIS's Board and Management on matters of interest to the Asia-Pacific central banking community. As of September 2023, the ACC comprised the Governors of the central banks and monetary authorities of Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand and Vietnam.

At the request of the ACC Governors during their September 2022 meeting, the BIS Representative Office for Asia and the Pacific set up a Working Group on "Inflation, external financial conditions and macro-financial stability frameworks in Asia-Pacific". The group commenced in November 2022, with a mandate of examining ACC economies' policy frameworks during the stressed period of 2022, particularly the joint use of monetary, macroprudential, exchange rate and capital flow management policies. The Working Group comprised of officials from the central banks and monetary authorities of ACC economies. This was the second ACC Working Group; the first one was established in June 2019 and published its report in November 2020.

This report is based on members' detailed responses to a questionnaire intended to gain insights into how central banks reacted to the various shocks they faced during 2022, and what factors underpinned their policy choices.

Executive Summary

The ACC Working Group on “Inflation, external financial conditions and macro-financial stability frameworks in Asia-Pacific” examined how the joint use of monetary, macroprudential, exchange rate and capital flow management policies helped deal with the stressed period of 2022. This report is based on detailed responses to a questionnaire from member central banks.

Asia-Pacific economies faced an unprecedented combination of shocks during 2022: lingering waves of the Covid-19 pandemic, supply-chain disruptions, the war in Ukraine and the attendant rise in global food and energy prices, as well as tightening global financial conditions. While supply-chain disruptions gradually dissipated, inflation remained generally high during 2022. On the financial side, most regional economies saw depreciating currencies, rising bond yields and volatile portfolio flows.

Economy-specific characteristics, including structural factors, the state of the economy and policy buffers, underpinned how sensitive regional economies were to these shocks. Higher global commodity prices were inflationary nearly everywhere, especially in economies dependent on imports of essentials. Banks had generally robust balance sheets and tended to rely on domestic funding, with any foreign currency funding either hedged or offset by liquid foreign currency assets, all of which helped to insulate domestic financial systems from external shocks. More generally, the region’s resilience was enhanced by reforms made during recent decades such as increasing banks’ capital and liquidity buffers, ensuring adequate loan loss provisions for banks, growing levels of FX reserves, strengthening monetary policy frameworks, active use of macroprudential measures and capital market liberalisation efforts. Debt, however, was generally higher across regional economies in 2022 than before the pandemic, which narrowed the policy space somewhat.

Supply-side factors played the largest role in triggering a spike in inflation in many regional economies in early to mid-2022, while demand-side factors (eg pent-up demand and expansionary policies) became more important later in 2022 in some economies. That said, labour market flexibility, wage negotiation arrangements and the degree of competition among firms, generally helped keep a lid on second-round effects. Past progress in anchoring inflation expectations also dampened the risk of such effects.

Exchange rate fluctuations affected regional economies via three channels. First, inflation was impacted via the pass-through channel. While the sensitivity of inflation to a given change in the exchange rate has been trending down over time for most regional economies, the impact on inflation in 2022 was sizeable in some economies due to the magnitude of the currency depreciations and potential non-linearities coming into play. Second, growth was buoyed via the trade channel due to weakening currencies, especially for net commodity exporters, although this channel was noted to be relatively unimportant in 2022 by some members. Finally, due to high exchange rate volatility, financial channels related to foreign currency debt and foreign holdings of local currency debt posed challenges to regional economies in 2022. However, a combination of factors assisted authorities in managing these challenges including limited external debt, well-functioning financial markets, adequate FX reserves and a deepening domestic investor base.

The core of the report examines the policy mix adopted by the regional economies along two dimensions.

The first dimension is how the use of tools varied across economies, as different characteristics required different responses. Authorities in most ACC economies tended to use one primary tool along with multiple complementary tools for each policy objective during 2022.

In the pursuit of price stability, interest rates remained the primary tool, although central banks differed in terms of *when* and *how forcefully* they raised rates. In part, this was because of cross-jurisdictional variation in terms of the strength of the economic recovery, debt profile and policy transmission. Complementary measures, such as withdrawing liquidity in advance of raising rates, FX

interventions and government subsidies on key consumer items, were also used to assist rate hikes in reducing the impact of inflation or to ease monetary policy trade-offs.

Regarding the objective of domestic financial stability, macroprudential tools continued to play the central role in many economies. Some jurisdictions tightened housing-related macroprudential measures while others loosened them depending on prevailing trends in property markets. Regulatory relief and liquidity provision measures introduced during the early stage of the pandemic complemented the use of macroprudential measures during 2022. Their use, however, tended to wane or become more targeted as economic conditions improved and the need to consolidate policy space gained prominence.

As regards external stability, many emerging market economy (EME) central banks in the region used FX interventions as the first line of defence against excessive FX volatility. They acknowledged the role of flexible exchange rates as shock-absorbers and intervened primarily to counter perceived speculative behaviour and excessive FX volatility. That said, some central banks viewed FX interventions as warranted in cases where sharp depreciations posed a risk to their inflation mandates. Some ACC economies also used FX-related macroprudential measures in support of external stability, with their frequency and/or intensity being greater where financial markets were thin or illiquid, FX exposures were poorly hedged, foreign investors played a more prominent role or FX reserves were smaller.

The second dimension is how the use of tools varied over time, ie how the policy responses by ACC economies in 2022 (a period of increasing inflation and tightening global financial conditions) differed from those used before the pandemic (a period of low and stable inflation and loose global financial conditions). In general, members' macro-financial stability frameworks (MFSFs) accommodated authorities adjusting the degree to which multiple policy tools are used jointly over time, depending on the economic environment. Indeed, before the pandemic, many central banks came close to having "one instrument used mainly for one primary objective", with other instruments being used relatively infrequently. Several central banks (especially those in EMEs) used the primary instrument more forcefully in 2022 than before the pandemic, and also made greater use of complementary tools. That is, in contrast to more normal times, in 2022 they frequently used multiple tools for an *at-risk objective*.

Working group members identified several lessons from operating MFSFs in 2022. While many lessons are common across jurisdictions, others depend on economy-specific contexts. Thus, not every lesson applies in every jurisdiction. For example, (i) new or previously scarcely used tools (such as domestic bond market intervention) may become a regular part of the toolbox in some economies, given positive experiences regarding their use; (ii) experience with how tools interact may assist in optimising their joint use in future; (iii) greater understanding of the trade-offs associated with the pre-emptive versus reactive use of tools (eg as highlighted by recent inflation experiences) and the need for flexibility in switching focus between alternative goals (eg from growth to inflation) in response to new data; and (iv) the key role of structural reforms (eg market development) in strengthening the ecosystem in which MFSFs operate and hence improving the efficacy of MFSFs.

Members underscored that, overall, the effectiveness of MFSFs hinges on taking account of the following aspects of policy actions: (i) trade-offs (eg between stabilising inflation and output or between growth and external balance, or those arising from leakages or unintended consequences); (ii) interactions or complementarities (eg one tool could help mitigate the spillovers from another); (iii) constraints or limits (such as diminishing returns to the continued use of a tool); (iv) communication with stakeholders (especially when different policies appear to be out of sync); and (v) coordination between authorities (eg between the central bank, any other financial authorities and the government).

Once inflation moves closer to central bank targets and global financial conditions stabilise, ACC central banks may wish to rebalance their policy mix and rebuild policy buffers. Some may return to a policy mix similar to the one before the pandemic. Others may adopt a different mix based on the lessons learnt from greater integration in the use of diverse policy tools during 2020–22. In either case, a pandemic-induced shift in relevant "state variables", such as increased debt levels, implies that any transition will have to be cautious and gradual.

Introduction

In 2022, Asia-Pacific economies faced unprecedented challenges: sharp rises in global energy and food prices and tightening global financial conditions amid elevated domestic macro-financial vulnerabilities. To deal with these challenges, central banks and other financial authorities in Asia-Pacific actively used monetary, macroprudential and exchange rate policies to maintain macroeconomic, domestic financial, and external stability. Against this backdrop, in September 2022, the Asian Consultative Council (ACC) Governors agreed to form a working group on “Inflation, external financial conditions and macro-financial stability frameworks in Asia-Pacific”.

This report lays out the working group’s assessment of how central banks and other financial authorities in the ACC economies operated their macro-financial stability frameworks (MFSFs) between late 2021 and the end of 2022. Based on the responses of working group members to a detailed questionnaire, the report first highlights the various **shocks** that these economies faced and the **economy-specific characteristics** that influenced their sensitivity to those shocks. Second, it outlines the **drivers of inflation** and the relative strength of different **exchange rate channels** in the member economies. The report then examines the economies’ policy responses along two dimensions.

The first dimension is **how the use of tools varied across economies**. In many ACC economies, authorities used multiple tools for each of their policy objectives in 2022. Members’ questionnaire responses help explain why the policy mixes varied, ie how the nature of the shocks and economy-specific characteristics (including structural factors, the state of the economy and policy buffers) mapped into the diverse policy mixes adopted. In pursuit of **price stability**, differences in factors such as perceived drivers of inflation (eg supply versus demand), the nature of inflation dynamics, the central bank’s historical experience with tackling inflation, and the strength of the economic recovery from the pandemic explained the diverse use of interest rates as well as supplementary tools. Regarding the objective of **domestic financial stability**, the deployment of macroprudential measures and other policy tools likewise depended on economy-specific characteristics, such as the share of bank-based finance, pressures in the housing market, debt levels and debt serviceability, as well as on the distributional effects of the shocks within an economy, across both agents and financial institutions. As regards **external stability**, the size and intensity of FX interventions – considered by many central banks to be the first line of defence but not necessarily the primary tool for external stability – depended on the perceived drivers of exchange rate volatility (eg the relative role of fundamentals versus herd behaviour in financial markets) and the availability of FX reserves. While authorities in some member economies also used various FX-related macroprudential measures or other capital flow management measures (CFMs), those with deeper and more liquid financial markets, a higher proportion of hedged FX exposures and/or domestic investors, or larger FX reserves generally used these measures less frequently and/or less intensely.

The second dimension is **how the use of tools varied over time**, ie how the policy response by ACC economies in 2022 (a period of increasing inflation and tightening global financial conditions) differed from the one used in 2019 (a period of low and stable inflation and loose global financial conditions). A common feature of MFSFs across many ACC economies is their ability to adjust the joint use of multiple tools over time. Such variation could stem, for instance, from differences in the nature of the shocks hitting an economy or from changes in both domestic and global macroeconomic and financial circumstances. Indeed, before the pandemic, many central banks came close to having “one instrument used mainly for one primary objective”, with other instruments being used only relatively infrequently, as outlined in the previous working group report (ACC (2020)).¹ In 2022, several central banks (especially those in emerging market economies (EMEs)) used the primary instrument more forcefully than in 2019, and also made greater use of secondary tools. That is, in contrast to the previous

¹ ACC, “Capital flows, exchange rates and policy frameworks in emerging Asia”, report by the ACC Working Group on Capital flows, exchange rates and policy frameworks in emerging Asia, ACC Paper, no 1, November 2020.

report, they frequently supplemented the primary instrument with other instruments for an *at-risk objective*.

Looking ahead, the report considers how central banks may want to **rebalance their policy mix** and **rebuild policy buffers** (especially for domestic financial and external stability) in the near term. Ideally, policymakers may prefer to roll back extraordinary measures (eg subsidies) once stress subsides and rebalance to a mix that is more comparable to that in place before the pandemic. That said, some members noted that a pandemic-induced shift in some of the relevant “state variables” (eg elevated debt levels or structural changes in trade patterns) matter for the rebalancing. Thus, any transition in the policy mix – from the one in 2022 which was meant to address high inflation and tight global financial conditions, to one suited for a period of lower inflation and looser global financial conditions – will have to be cautious and gradual. Members also noted that the existence of buffers enabled their respective jurisdictions to launch an effective policy response in 2022, underscoring the importance of ensuring that buffers remain sufficient in the future.

The report concludes with a discussion of how **lessons learnt** by the authorities from their policy experiences in 2022 can help further develop their respective MFSFs. Members noted that while many lessons were common across jurisdictions, others depended on economy-specific contexts. Thus, not every lesson applies in every jurisdiction. For instance, an overall positive experience with the use of some new tools (such as bond purchase programmes in some economies) may justify their more permanent inclusion in the policy toolkit. Members also noted the need for flexibility in switching focus between alternative goals (eg from growth to inflation) in response to new data. Some central banks stressed the need to focus on addressing the root cause of instabilities to the extent possible (rather than only managing the symptoms). Several noted the importance of being forward looking, especially when adopting structural policies. And almost all emphasised that communication of the policy mix and its goals with relevant stakeholders is a core element of the policy toolkit: Overall, many members’ responses reflected the view that the effectiveness of MFSFs hinges on taking account of the following key aspects of the policy actions: **trade-offs** (eg between stabilising inflation and output or between growth and external balance as well as those arising from leakages or unintended consequences), **interactions or complementarities** (eg one tool could help mitigate the spillovers from another), **constraints or limits** (such as diminishing returns to the continued use of a tool), **policy communication** (eg especially when different policies appear to be out of sync), and **coordination between authorities** (eg between the central bank, any other financial authorities and the government).

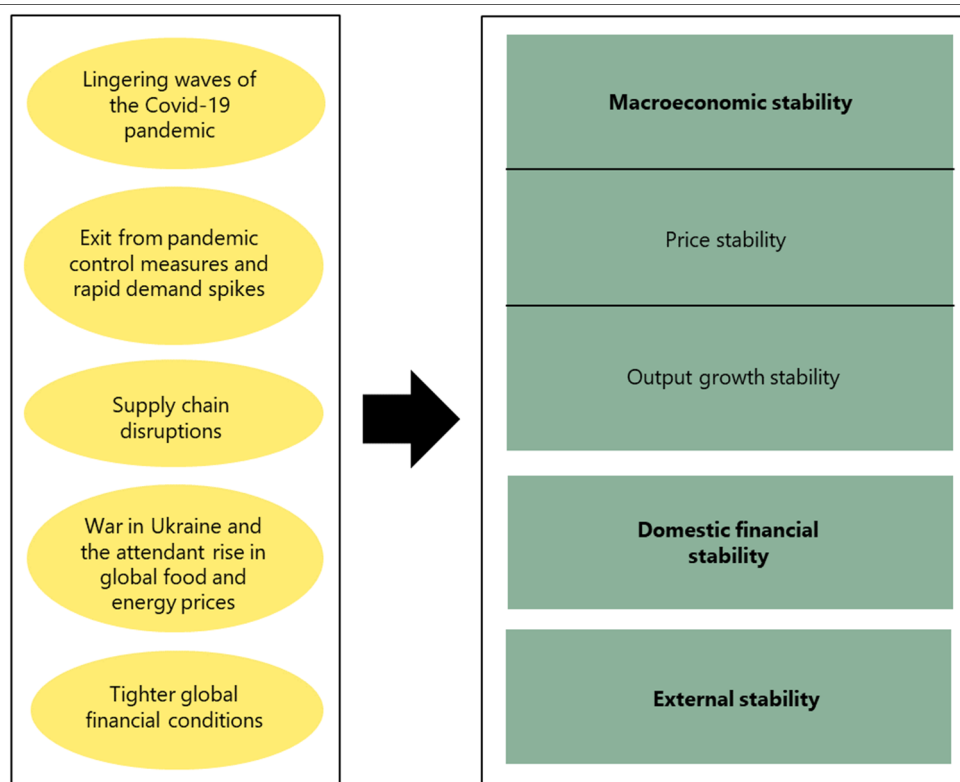
1. The nature of the shocks

In 2022, the policy objectives of ACC economies were affected by multiple domestic and external shocks, as illustrated in Graph 1.²

One was the rapid exit from pandemic control measures in late 2021 which, in many regional economies, fed a sharp rise in consumer spending because of pent-up demand. In several cases, the inability of supply chains to scale proportionally contributed to bottlenecks. Part of the problem was lockdown-induced disruption of supply chains. This resulted in shipping delays as well as higher shipping costs, which only slowly dissipated as the pandemic ended. The coincidence of resurgent demand on the one hand, and domestic and external supply-side constraints on the other, added to inflation pressures in several economies.³ In a smaller set of economies lingering pandemic waves, and/or ongoing lockdown measures, continued to pose a threat to economic growth into 2022 (eg China and Hong Kong SAR).

² Shocks are unanticipated events that are outside the control of the central bank and other financial authorities and yet have an impact on the economy. The unexpected outbreak of the pandemic is an example of a domestic shock. A surge in global commodity prices or a change in the monetary policy stance in a major economy (such as the United States) can constitute an external shock, the latter being especially relevant in the case of EMEs.

³ Singapore noted that this coincidence led to a perfect storm in its economy in 2022. Malaysia also noted that the pass-through from prolonged elevated global costs coincided with a recovery in domestic demand, which aggravated inflation.



Meanwhile, the war in Ukraine led to a surge in global commodity prices (especially fertilisers, energy and cereal crops such as wheat) that was felt in all economies.⁴ Geopolitics aggravated inflation globally by perpetrating protectionism and de-globalisation sentiments (as noted by New Zealand). Relatedly, a deterioration in sentiments impeded economic activity (as noted by China). That said, while all regional economies faced elevated energy prices, none experienced energy shortages.

Energy prices peaked around the middle of the year. However, global food prices remained elevated. Even economies that were largely self-sufficient in food saw higher domestic food prices due to increased costs of inputs, including fertilisers. In some cases, export restrictions – prompted by concerns about food security – softened domestic inflation somewhat, although these restrictions tended to exacerbate food inflation for others who were dependent on imports.⁵

The services sector, already suffering disproportionately through the pandemic, continued to lag in 2022 relative to pre-pandemic levels. In part, this was driven by ongoing restrictions on human movement in some economies. Another reason was the accumulation of capital losses in this sector, which reduced their ability to scale output (eg airlines seeking to restore previous travel routes or employees in the service sector taking time to return). All of this contributed to a sluggish recovery in tourism and affected some economies severely (eg Hong Kong SAR and Thailand). More generally, high-contact activities remained affected (as noted by Indonesia).

Some economies experienced large fluctuations in housing markets. In some cases, house prices surged and then corrected over the course of 2022 (eg Australia, Korea and New Zealand). Drivers of the surge included low mortgage rates due to expansionary monetary policy in 2020–21, a change in

⁴ Some economies faced domestic shocks affecting specific commodities too. For instance, the Philippines and Thailand experienced pork shortages due to swine flu, and various crop prices surged in Australia, India, Indonesia and New Zealand due to weather events (such as extended periods of above-average rainfall and, in some cases, flooding).

⁵ India experienced this from both sides: temporary export bans by Indonesia and Malaysia affecting oils and fats initially added to inflation pressures, while its own restrictions on exporting wheat and rice helped to stymie domestic cereal price inflation.

housing preferences due to the pandemic-driven “work-from-home” choices, and investors turning to real-estate investment as a hedge against inflation. In other cases, prices declined early in the year due to weak demand, followed by a partial recovery (eg the Philippines).

Another major shock to the ACC economies was an increase in policy rates in some major advanced economies (AEs) outside the region, which tightened global financial conditions. In many cases, the speed of AE rate hikes was faster than had been anticipated. At the same time, there was a global transition in investor behaviour from risk-on to risk-off, in part due to the war in Ukraine. These shocks manifested in various ways. For one, they led to a sharp depreciation in regional economies’ currencies against the major AE currencies, especially the US dollar. At the same time, economies experienced portfolio capital outflows for most of 2022.⁶ And while domestic financial markets in regional economies remained generally resilient, in a few cases the external shocks contributed to dislocations in asset markets in the form of surges in bond yields or episodes of bond and equity market volatility (eg Japan⁷). That said, in some cases, domestic factors also played a role (eg Korea⁸).

The next two sections discuss, respectively, why economy-specific characteristics matter for the channels through which these shocks affect objectives, and how strong these channels were in 2022.

2. Economy-specific characteristics

Economy-specific characteristics play a central role in determining the sensitivity of an economy to the shocks that it faces. This section takes a relatively timeless perspective in discussing *why* these characteristics matter. To facilitate the discussion, we classify these characteristics into three (potentially overlapping) categories: structural factors; the state of the economy; and policy buffers. We also highlight the status of these characteristics across ACC economies in the lead-up to 2022.

Structural factors are those that tend to be deep-seated or highly inertial, and hence change only slowly over time.

One is **commodity trade dependence**: this varies widely across ACC economies, from major food and coal/metals exporters (eg Australia), energy exporters (eg Malaysia), exporters of food but importers of energy (eg New Zealand and Thailand), importers of energy (eg China and India⁹), importers of energy but self-reliant in food (eg Vietnam¹⁰) and those heavily dependent on imports of both food and energy (eg Japan, Korea and Singapore). The nature of dependence matters for both inflation (via the pass-through channel) and growth (via the trade channel). Economies that rely heavily on both food and energy imports are very likely to see a strong inflationary effect when global food and energy prices rise quickly. Exporters may likewise experience this effect to the extent that their prices are set in world markets. But net exporters also benefit from increased export revenues under these circumstances. More generally, the impact of trade on inflation and output also depends on the stage of participation in

⁶ For example, during 2022, the Malaysian ringgit depreciated 5.4% against the US dollar (while the maximum year-to-date depreciation was 12%); the Indian rupee depreciated 6% and India saw portfolio outflows of USD 18.5 billion; similarly, the Chinese yuan depreciated more than 10% against the US dollar at one point and China experienced portfolio outflows. By contrast, the Philippines generally experienced both foreign direct investment (FDI) and foreign portfolio investment (FPI) inflows in 2022, partly due to their strong economy recovery, as did Vietnam, despite being adversely affected by international developments.

⁷ In Japan, bond market functioning deteriorated in 2022, particularly in terms of relative relationships among interest rates of bonds with different maturities and arbitrage relationships between spot and futures markets.

⁸ In Korea, concerns over insolvencies related to Project Financing-Asset Backed Commercial Paper (PF-ABCP) escalated in late 2022, worsening liquidity conditions in the commercial paper market.

⁹ For example, China’s dependence on crude oil and natural gas exceeds 70% and 40%, respectively, although its overall energy self-sufficiency rate exceeds 80%. India imports around 85% of its crude oil requirements.

¹⁰ Relatedly, Vietnam noted a long-term shift in its export composition, from raw or semi-processed materials to more processed and manufactured goods of higher value.

global value chains (GVCs, whether upstream or downstream) and the degree of diversification of import sources and export destinations.¹¹

Another structural factor is **financial market depth**, which helps determine the degree of resilience of an economy to external demand for domestic debt (in either local or foreign currency) via financial channels. Depth includes aspects such as the size and composition of the domestic investor base and the degree of liquidity in various market segments, including foreign exchange (FX) spot and derivatives markets. For instance, economies with deep and liquid FX spot and derivatives markets, like Australia, have less need to respond when external shocks hit the economy. Strengthening domestic financial markets has been an objective for policymakers in many jurisdictions in the region.¹²

Relatedly, the **nature of external financial flows** also matters. For instance, Thailand and Vietnam noted that the capital flows they face are primarily longer-term in nature (such as foreign direct investment). Since such flows are sticky by nature, this makes the domestic economy less vulnerable to fluctuations in global financial conditions.

Another related factor is the **dominant mode of financing**. Here there is less variation: the financial systems in most ACC economies are bank-based rather than market-based.¹³ In addition, banks are mostly domestically funded,¹⁴ which means that banks' funding costs are primarily determined by domestic policy rates. This can provide some insulation against external financial conditions to the extent that monetary policy is set independently. Moreover, the dominant form of financing is retail deposits, which tend to be more stable than wholesale funding.¹⁵

Various structural factors are especially relevant to inflation. One is the **degree to which cost shocks tend to pass through to inflation**. This depends on the purchasing power of consumers as well as various aspects of firms: the amount of competition they face, their revenue buffers and cost markups, and hence their eagerness and ability to raise prices. Another is **labour market characteristics**: the degree of labour market flexibility, the share of informal workers, the share of wage earners versus those who are self-employed, the share of wage costs in production, the composition of the labour force (such as the share of migrant or foreign workers that may have lower bargaining power than long-term residents), the strength of labour unions, and wage indexation and negotiation arrangements. All of these can play an instrumental role in the risk of second-round inflationary effects (such as wage-price spirals) when inflation rises.¹⁶ A final factor is the **degree to which inflation expectations are anchored**, which can be assessed in terms of the resilience of long-term inflation

¹¹ For example, Singapore's upstream participation in research and development (R&D), innovation and design, and well diversified import sources, provided resilience against external shocks. By contrast, the Philippines noted that its downstream participation in GVCs and dependence on imported inputs meant that production disruptions and rising inflation in its trading partners negatively affected domestic output. For similar reasons, automobile manufacturing in Korea was hit hard. In Japan, semiconductor shortages restrained automobile production which involves complex GVCs. And while Malaysia has traditionally experienced a commodity surplus, it has diversified away from this model over time by developing its manufacturing sectors and gaining a competitive edge in their exports.

¹² For example, authorities in Indonesia are taking steps to deepen their FX markets and thus reduce hedging costs. Vietnam noted that reforms on FX derivatives regulations, however, can take time to gain traction due to inertia in market practice.

¹³ For example, in Australia, less than 10% of housing credit and around 20% of business debt relies on market-based finance, while the share of banking system financing of total financing in the Indonesian and Malaysian economies were 57% and 79%, respectively, in December 2022. In New Zealand, while total assets of banks and non-banks amounted to around NZD 685 billion, the size of the domestic corporate bond market was only NZD 17 billion. In Thailand, close to 90% of financing for businesses and households comes from banks. In Singapore, the outstanding amount of bank loans to resident corporates and households stands at more than seven times that of corporate bonds.

¹⁴ For instance, in both India and Indonesia, the share of external funding of banks was only around 6% in 2022. Relatedly, domestic deposits constitute around 60% of total bank funding in Australia.

¹⁵ For example, retail deposits constitute around 90% of total bank funding in Thailand. In Hong Kong SAR they constitute 56% of total liabilities. In Vietnam, as of November 2022, retail deposits accounted for 77% of total deposits. In Japan, retail deposits far exceed total loans outstanding. In the Philippines, deposits constitute 77% of banks' total funding.

¹⁶ For example, the informal sector makes up more than 70% of the employed population in India, and wage indexation and strong labour unions are generally absent in Malaysia. Both of these factors help to dampen the risk of price-wage spirals becoming established.

expectations against shocks. Anchoring had seen considerable improvement across most regional EMEs in recent decades and was generally solid across the region in the period leading up to 2022.

Next are factors related to the **state of the economy** – ie characteristics that vary over time and can make an economy more or less vulnerable to shocks. These characteristics include the level and composition of debt, housing prices, the role of foreign investors in local markets, and banks' exposure to liquidity and solvency risks.

In terms of level, **debt was generally higher** across regional economies in 2022 than before the pandemic. The increase in public and private debt-to-GDP ratios can generally be explained by three factors: support measures adopted during the pandemic (eg liquidity provision to households and corporates that raised private debt), the very low interest rate environment (that also facilitated more debt), and a decline in nominal GDP.¹⁷ Private debt overhangs can serve as a drag on household consumption and corporate investment and can be a source of sharp slowdowns. Higher debt levels can also place a constraint on monetary policy.

In terms of sectoral composition, **mortgages made up a large share of household debt** in some regional economies (eg Australia, Korea, New Zealand and Singapore). This was more common in jurisdictions where property prices were rising concurrently. That said, property prices in some markets were stable (eg China¹⁸ and Indonesia) or falling (eg Hong Kong SAR¹⁹ and India) already before 2022.

Another aspect of debt composition is the **share of floating-rate debt**, as opposed to that issued with fixed interest rates. The share matters for how borrowers' debt service costs evolve with interest rates. This share varied widely across economies. In Malaysia, for instance, a majority (about 80%) of all outstanding loans were floating rate,²⁰ while in the Philippines the bulk of corporate loans were fixed rate.

Regarding **currency composition**, most regional economies generally had only a small share of debt issued in foreign currencies, which helped to reduce financial stability risks (via the original sin channel, see Section 3). In economies where there was a material degree of reliance on foreign currency funding, banks' or corporates' foreign currency debt was often well hedged.²¹ Hedging can be achieved naturally (ie the borrower has assets and/or revenues in the same currency as the debt, as was common in Malaysia for example) or via derivatives (which is easier in economies with deep and liquid FX markets, as in Australia and Singapore). There was also variation in the maturity structure of foreign currency debt. The Philippines, for instance, noted that their foreign currency debt tended to be longer term, which helped to limit its sensitivity to short-term financial market developments. That said, even if most of the debt is in domestic currency, sizeable holdings by foreign investors can leave domestic markets

¹⁷ For example, domestic bank credit increased in Hong Kong SAR from 254% of GDP in Q4 2019 to 275% in Q3 2022. Similarly, in Thailand, private debt increased from 155% of GDP in Q4 2019 to 176% in Q2 2022. Exceptions include Singapore, where the resident credit-to-GDP ratio rose from 176% in Q1 2020 to 189% in Q1 2021 before *declining* to 169% by Q3 2022 (leading to a negative estimated credit-to-GDP gap), primarily due to a rebound in economic activity, and Indonesia where household debt to GDP was 17% in 2021, below the level before the pandemic.

¹⁸ In China, property prices rose by 2.9% from January 2021 to August 2021, but decreased by 3.3% from September 2021 to December 2022, thus remaining at a similar level over a longer horizon.

¹⁹ In Hong Kong SAR, flat prices fell 15% during 2022, although housing affordability remained stretched: the housing price-to-income ratio had reached 19.8 in the fourth quarter of 2021. In India, house prices have been declining year-on-year since 2013 in both real and nominal terms.

²⁰ This is based on the *value* of outstanding loans. In terms of the *number* of loans, the share of floating-rate loans is around 50%.

²¹ In Australia, after hedging, the banking sector has no significant currency mismatches. In New Zealand almost all FX exposure is hedged. In Thailand, the hedging ratio is around 80%. In Indonesia, the required hedging ratio is 20% of net FX liability exposures. In India, more than 57% of external commercial borrowings are either hedged or do not require hedging (because they are either denominated in domestic currency or represent FDI flows from a foreign parent company).

vulnerable to shifts in global investors' risk appetite (via the "original sin redux" channel, see Section 3).²² Nonetheless, the share of foreign investor-held debt was generally low in regional EMEs.

Coming into 2022, bank balance sheets were generally sound and **banks' exposures to liquidity and solvency risks** in the region were limited. With a few exceptions, bank balance sheet measures, such as the size of capital and liquidity buffers, showed robustness (in large part due to the reforms adopted after the Great Financial Crisis (GFC) of 2007–08). Stress tests in some economies, such as India and the Philippines, also indicated bank resilience. In addition, banks' disclosures indicated low levels of non-performing loans (NPLs) in early- to mid-2022,²³ although these were starting to rise in many cases (and may rise further in 2023 and 2024 due to interest rate increases and rising debt servicing costs).

Finally, **policy buffers** reflect stocks available to policymakers that can be run down, if necessary, in response to negative shocks. One is the level of FX reserves, which can not only help deter currency attacks in the first place, but also serves as a buffer in the event of destabilising exchange rate dynamics.²⁴ Additional FX buffers include access to foreign currency liquidity in a crisis via arrangements that make up the global financial safety net (including bilateral swap arrangements, regional financial arrangements and multilateral arrangements). Capital flow-related macroprudential measures – which can be lowered or removed as necessary – had also helped build buffers in some EMEs in the region.

Another set of policy buffers have to do with the banking system – the so-called **regulatory buffers**. These include countercyclical or conservation capital buffers, liquidity buffers (such as those supported by liquidity coverage ratios (LCRs)), systemic risk buffers for globally and domestic systemically important banks (G-SIBs and D-SIBs), and housing-specific macroprudential buffers (eg prudent loan-to-value (LTV) ratio limits, which have a long history of use in many EMEs in the region, and debt service ratio (DSR) limits).²⁵

3. Drivers of inflation and exchange rate channels

Focusing first on **inflation**, working group members' responses to the questionnaire indicate that **supply-side factors** – especially cost-push pressures – played the largest role in triggering a spike in inflation in many regional economies in early to mid-2022.²⁶ This reflected sharp rises in global food and energy prices and, in some cases, restrictions due to the pandemic. Government support measures, such as targeted subsidies or reductions in tariffs and duties, helped to reduce the pass-through to measured inflation in several economies including India, Indonesia, Korea, the Philippines, Thailand and

²² Non-resident participation in Thai bond market is around 9% while the share of foreign holdings in Indonesian government debt declined significantly, from around 39% at the start of 2020 to 14% at the end of 2022. In regional AEs like Australia, non-resident (foreign) investors are large holders of domestic bonds.

²³ For example, the NPL ratio of banks in Hong Kong SAR, the Philippines (for universal and commercial banks) and Singapore remained low at around 1.4%, 2.9%, and 1.8% in late 2022, respectively.

²⁴ The level of FX reserves also has a structural component in the sense that reserves have been consistently adequate across much of emerging Asia for an extended period, following their rebuilding in the aftermath of the Asian Financial Crisis, as emphasised by the Philippines. And while there is no strict formula to determine the optimal amount of FX reserves, authorities use a variety of reserve adequacy measures, such as import cover and the International Monetary Fund's "Assessing Reserve Adequacy" metric in Malaysia, and an internally determined range of 65–75% of GDP in Singapore. China's FX reserves, the world's largest, were USD 3.11 trillion at the end of 2019 and USD 3.13 trillion at the end of 2022, and cover more than one year worth of imports, while those of India and Indonesia are equivalent to more than 9 and around 6 months of imports, respectively. Hong Kong SAR's reserves amounted to USD 424 billion at the end of 2022, about 1.7 times Hong Kong SAR's monetary base.

²⁵ Since 2009, the Hong Kong Monetary Authority (HKMA) has implemented eight rounds of tightening macroprudential measures on property mortgage loans. Extra stamp duties on non-permanent-resident property buyers have also been imposed. The average LTV for new mortgages was 56% in 2022, versus 64% before the measures were first introduced, while the DSR remained at a relatively low 37%.

²⁶ For example, in Singapore, imported inflation was understood to be the biggest contributor to core inflation, followed by excess wage growth and then aggregate demand.

Vietnam.²⁷ That said, broad-based measures may have contributed to demand and hence inflation. China and Hong Kong SAR were outliers in terms of their inflation experience – they did not see material increases in inflation despite sharp rises in global food and energy prices. Hong Kong SAR’s experience partly reflected the comparatively low share of food and energy items in its consumer price index (CPI).²⁸

In those economies experiencing sharp rises in inflation, **demand-side factors** (reflecting pent-up demand, and higher savings buffers following the expansionary monetary and fiscal policies during the pandemic) came to play a more important role over time, especially later in 2022. This contributed to keeping inflation high in some economies, even as supply-side factors began to subside. The rotation of demand to services, which tend to have stickier prices, also made inflation more persistent.

The level of competition faced by firms, and hence their ability to raise prices in response to rising costs, also mattered for the rise of inflation in several jurisdictions. For example, Malaysia, the Philippines and Vietnam noted that higher global food and energy prices, combined with resurgent domestic demand, enabled businesses to pass on higher costs to consumers more easily.

As higher inflation persisted, the risks of **second-round effects**, including wage-price spirals and the de-anchoring of inflation expectations, grew. However, economy-specific factors, discussed in Section 2, generally helped to keep a lid on these risks during 2022.

For example, in several economies, labour market characteristics helped lower the risk of wage-price spirals. The risk was smaller in economies where firms prioritised market share, or labour market flexibility encouraged adjustment along other dimensions (eg Indonesia). In Vietnam, business owners have relatively more bargaining power than workers, which reduced wage pressures. In Australia and the Philippines, the labour supply increased during the pandemic, partly due to a rising labour force participation rate, with similar effects. And in Malaysia, despite an increase in minimum wages in 2022, the risk of excessive wage increases was limited by factors such as the continued slack in the labour market, low wage bargaining power, and well-anchored inflation expectations.

By contrast, in some other economies, tight labour markets added to the risk of wage-price spirals. For example, in Singapore, impediments to the return of non-resident workers during the pandemic led to labour supply shortages. In Japan, signs of changes in price and wage setting behaviours were noted. That said, sustained wage-price spirals did not seem to take hold in most economies.²⁹

Relatedly, in most jurisdictions, long-term inflation expectations remained anchored. Structural reforms (such as strengthening inflation targeting regimes over time, especially in regional EMEs) contributed to this outcome. For instance, in India, while sustained higher fuel prices (which are particularly salient for consumers) raised the risk of expectations becoming de-anchored, 5- and 10-year inflation expectations of professional forecasters did not breach the inflation target range. Similarly, in Australia, inflation expectations generally increased, but medium- and long-term expectations remained within the inflation target range. In Singapore, while 5-year inflation expectations rose from an average of 3.8% pre-pandemic (2015–19) to a peak of 4.8% in March 2022, it had eased to 4.2% in December 2022.

²⁷ For example, in Vietnam, the government used several supportive measures to minimise the impact on cost-push inflation. These included the use of a petroleum stabilisation fund to soften the impact of petrol price rises, tax reductions (eg VAT and environmental protection tax) and a series of tax postponements. These measures helped reduce costs for manufacturers and supported consumers, thereby limiting the impact of commodity price increases. Relatedly, in the case of Indonesia, authorities subsidised prices of certain types of fuels. While subsidies were eventually lowered and prices were allowed to rise in September 2022 to reduce demand and support fiscal sustainability, other forms of social assistance were provided to offset the negative effects on specific sections of the society. In India, the government proactively took several supply-side measures, such as excise duty cuts on petrol and diesel, and lower import duties to stabilise prices of key items in the food basket.

²⁸ In Hong Kong SAR, energy accounts for only 3% of the CPI basket, compared with rent of around 37%, and all non-tradable services about 75%. In addition, the appreciation of the Hong Kong dollar alongside the US dollar helped tame inflation pressures in 2022.

²⁹ Nonetheless, second-round effects turned out to be larger than expected in New Zealand.

Moving on to the **exchange rate**, most regional economies faced depreciations. Exchange rate depreciation affected various aspects of the regional economies – inflation, economic activity, and financial stability – through three main avenues: the pass-through, trade and financial channels of the exchange rate. The relative importance of the different exchange rate channels during 2022 is summarised in Table 1. The table is based on the relative strength of the different channels as reported by working group members, averaged across ACC economies. A higher number in the range of 0 to 1, and correspondingly a darker shade of red for a given cell, shows that the corresponding exchange-rate channel (row) is more important for the corresponding macro variable (column). A lower number and a darker shade of blue indicate the opposite.

The table shows, not surprisingly, that the most relevant effects for each of the channels (ie looking along the rows) are from the inflation pass-through channel to inflation, from the trade channel to output, and from the financial channels to key financial variables: domestic credit and long-term interest rates.

The relative strength of different exchange rate channels for macro variables Table 1

Exchange rate channels	Macro variables impacted			
	Inflation	Output	Domestic credit	Long-term interest rate (or bond price)
Inflation pass-through	0.69	0.23	0.00	0.12
Trade	0.35	0.50	0.15	0.08
Financial	0.12	0.19	0.35	0.46

Colour codes and cell ranges:

0 – 0.1
 0.11 – 0.2
 0.21 – 0.3
 0.31 – 0.4
 0.41 – 0.5
 0.61 – 0.7

The heatmap shows the average of economy responses for each cell, normalised on a scale of 0 to 1. Each cell shows the sensitivity of a given macro variable to a chosen exchange-rate channel. A response of 1 indicates that the channel was most important; 0.5 that the channel was moderately important; and 0 that the channel was least important.

The **pass-through channel** in regional economies is either structurally weak (for example, due to a small share of import content in the CPI basket in Thailand³⁰), or has generally been weakening over time.³¹ However, during 2022, because the size of the depreciation was substantial in many cases, the inflationary impact was often large.³² In addition, the pass-through channel may have been non-linear, with the larger depreciations having had disproportionately bigger effects on inflation, or the degree of pass-through may have been correlated with the level of inflation. In some cases, firms absorbed the increased costs of imported inputs, leading to a widening wedge between wholesale and retail price indices. In contrast to most other regional economies, exchange rate pass-through in Japan has been increasing from a longer-term perspective, reflecting increased import penetration, particularly for durable goods.

Regarding the **trade channel**, growth rates in some economies were initially buoyed as weakening currencies (notably vis-à-vis the US dollar) offered a competitive advantage, a process that partially reversed in the final months of 2022 when the US dollar depreciated. On top of this, net commodity exporters tended to see a current account boost on account of rising commodity prices in US dollars, reinforced by a stronger US dollar, while importers experienced the opposite effect.³³ However, some

³⁰ In Thailand, for example, empirical estimates suggest that a 1% appreciation of the Thai baht against the US dollar results in a 0.03 percentage-point decrease in headline inflation on average, while a 0.06 percentage-point increase in the case of a 1% depreciation.

³¹ For example, the estimated pass-through coefficient for Indonesia has fallen over time as monetary policy has helped to anchor inflation expectations.

³² There were exceptions. For instance, in Australia, the trade-weighted exchange rate, which is relevant for their pass-through, was little changed, even as the Australian dollar depreciated against the US dollar.

³³ For instance, in the case of Indonesia, receipts from exports of both coal and oil rose on account of rising prices of each, and rising volumes of coal exports. (Volumes of oil exports shrank, although by less than prices rose, as production shifted

jurisdictions (including Korea) reported that the trade channel was a less important exchange rate channel in 2022, partly on account of weak global trade growth. For Japan, export trade gains from a depreciating currency were limited by factors such as supply constraints, including a shortage of semiconductors.

For both the pass-through and trade channels, some members noted that, because of the dominant currency pricing and invoicing paradigm, the US dollar exchange rate mattered more than the trade-weighted exchange rate. In addition, the dominance of US dollar invoicing for traded goods³⁴ tended to boost exporters' margins but limited the impact on export volumes arising from local currency depreciation (as noted by Australia, Korea and the Philippines).

Finally, despite some volatility, the **financial channels** were perceived to be relatively manageable in 2022 due to a combination of structural factors. In the past, the financial channels might have been expected to be especially strong for regional EMEs. However, the "original sin" channel has been weakening as foreign currency debt issuance, including by banks, represents a declining share of total debt issuance in the region. The same is true for the "original sin redux" channel: while there is some variation in the degree to which foreign investors hold local currency debt in regional economies (see Section 2), domestic bond markets have become relatively more robust to the actions of foreign investors over time.

While relatively low dependence on external financing (ie foreign currency debt or foreign investor holdings) is clearly a factor, and notably so for some jurisdictions (eg China and India³⁵), additional factors also play a role in cushioning potentially destabilising outflows. These include well-functioning and deep domestic markets and high credit ratings (as noted by Australia), robust policy frameworks, strong regulatory and institutional arrangements, the availability of hedging instruments to foreign investors (as noted by Malaysia), the presence or deepening of the domestic institutional investor base as a stabiliser (as noted by Indonesia³⁶ and the Philippines) and, more generally, the role that foreign investors play in diversifying funding sources (as noted by Singapore).

That said, even in economies with relatively deep and developed financial markets, like Australia and New Zealand, close integration between domestic and global capital markets meant that increases in term premia in the United States or shocks to global risk aversion led to higher domestic rates and rising risk premiums.³⁷ However, in economies with net foreign currency asset positions, domestic currency depreciations increased the valuation of foreign currency assets, and thus strengthened balance sheets in domestic currency terms (as seen in Australia and Korea). Finally, policy buffers – notably sufficient levels of FX reserves – provided a degree of insurance, especially in EMEs in the region.

The strength of these channels mattered for the mix of policy responses, ie how forcefully the primary policy for a given objective was used to mitigate the impact of shocks on that objective, and whether additional policy tools are also useful in the pursuit of that objective, as explored in Section 4.

to meet domestic demand). That said, Malaysia noted that global demand plays a more important role for the trade channel as compared to the role of the exchange rate. This is reflected in the fact that, when the ringgit depreciated vis-à-vis the US dollar, while exporters benefitted due to stickiness of prices quoted in US dollars, they were not incentivised to raise production, investment and hiring because of the expectation of a slowdown in global demand and elevated uncertainties around the global economic outlook.

³⁴ For example, 96% of Indonesian exports, and 81% of imports, were invoiced in US dollars in 2022.

³⁵ The scale of foreign-owned RMB-denominated bonds has been rising in China, but they constitute only 4% of total bond issuance. China's external debt-to-GDP ratio in 2021 was only 15.5%; India's external debt as a share of GDP was 19% at the end of December 2022; external debt makes up less than 25% of total financing in Indonesia.

³⁶ For example, when foreign investors dramatically reduced their holdings of Indonesian government bonds between 2019 and 2022, domestic investors absorbed the sales.

³⁷ Despite the risk of this pass-through, a floating exchange rate and independent monetary policy are viewed on net as helping to offset any capital flow shocks in these economies.

4. The policy mix: the variation across economies

This section examines the cross-sectional heterogeneity in regional economies' policy mixes in 2022. Specifically, it discusses how aspects of the policy mixes across economies (eg differences in usage of tools, interactions between tools, constraints and trade-offs) depended on the nature of the shocks that the economies faced, varying economy-specific characteristics, and the strength of the inflation drivers and exchange rate channels summarised above in Table 1.

Table 2 documents the policy mix adopted by regional economies on average. For each objective (the columns), it shows the relative importance in the use of various policy tools (the rows). A higher number in the range 0 to 1, and correspondingly a darker shade of red, reflects greater or more intensive use of a given tool for a given objective (a lower number and a stronger shade of blue indicates the opposite).

The role of different tools for different objectives

Table 2

Policy tools used during 2022	The objectives for which they were used			
	Macroeconomic stability		Domestic financial stability	External stability
	Price stability	Output growth stability		
Policy rate	0.75 (0.41)	0.58 (0.41)	0.31 (0.30)	0.22 (0.38)
Intervention in domestic bond and money markets	0.31 (0.41)	0.17 (0.30)	0.25 (0.41)	0.14 (0.33)
Domestic currency liquidity provision	0.19 (0.30)	0.19 (0.30)	0.36 (0.36)	0.14 (0.33)
Domestically oriented macroprudential measures	0.06 (0.19)	0.19 (0.33)	0.47 (0.41)	0.06 (0.19)
Capital flow management measures including FX-related macroprudential measures	0.11 (0.30)	0.06 (0.19)	0.08 (0.21)	0.28 (0.34)
FX liquidity provision	0.08 (0.21)	0.08 (0.21)	0.08 (0.21)	0.33 (0.45)
FX intervention	0.22 (0.41)	0.11 (0.26)	0.06 (0.19)	0.61 (0.45)

Colour codes and cell ranges:

0 – 0.09 0.1 – 0.19 0.2 – 0.29 0.3 – 0.39 0.4 – 0.49 0.5 – 0.59 0.6 – 0.69 0.7 – 0.79

The heatmap shows the average response, across the 12 economies that provided input, in each cell, normalised on a scale of 0 to 1. The number in brackets indicates the standard deviation of these responses. Each central bank assigned a score to indicate how important a tool was, and how heavily it was used, for each objective. A response of 1 indicates that the tool was most important and most heavily used to achieve the objective; 2/3 that the tool was important and intensively used to achieve the objective; 1/3 that the tool was least important and used only lightly in pursuit of the objective; and 0 that the tool was unimportant for the objective. Note that while members also indicated the direction of use of the tools in the questionnaire (via a plus or minus sign), the direction of use is not accounted for in this table. That is, a response of either +1/3 or -1/3 is counted as 1/3.

An overarching takeaway from the heatmap is that **while there was one primary tool for achieving each policy objective, several supplementary tools were also used.** The policy rate, on average, was the primary tool for achieving the price stability objective in 2022. Intervention in domestic bond and money markets, FX interventions and domestic liquidity provision were also used to maintain macroeconomic stability, albeit less frequently or intensely. Meanwhile domestically oriented macroprudential measures were the primary tool for domestic financial stability objectives in 2022, often supported by domestic currency liquidity provision, the policy rate and intervention in domestic markets. Finally, FX intervention was the first line of defence with respect to external stability objectives (FX volatility in particular). FX liquidity provision and capital flow management measures (CFMs,

including FX-related macroprudential measures) also played a role towards meeting this objective. Notably, these tools played almost no role for the other objectives.

Table 2 also underscores the dispersion in policy approaches across economies. The standard deviation in the use of the tools is generally high (numbers given in brackets).³⁸ This variation stems from a host of factors, including economy-specific contexts and characteristics, as explored below. In the three subsections that follow, the report considers each policy objective in turn.

4a. Macroeconomic stability

Macroeconomic stability is generally associated with price stability (as measured by inflation relative to some target) and growth stability (as measured by sustainable GDP growth), although the relative weights on these can vary by economy.

As noted in Section 1, a variety of shocks perturbed macroeconomic stability – price stability in particular – in 2022. The **nature of the shock** was one of the main determinants of the policy response adopted. In particular, it mattered for the policy response whether the central bank deemed inflation to be rising primarily because of supply or demand factors, and whether due to domestic or external factors.³⁹

As the heatmap in Table 2 shows, the policy rate was the primary tool for achieving the price stability objective in 2022 in most regional economies.⁴⁰ However, its use was more forceful in economies where domestic **demand** was deemed the primary driver of inflation. In economies where **supply** factors were believed to be more important in 2022, the policy response was more likely to be delayed. Indeed, while many central banks in the region have a flexible inflation targeting regime that accommodates looking through transient increases in inflation due to supply shocks, differences in the *perceived* degree of transience of inflation led to differences in the response. For example, Australia, Thailand and Vietnam did not initially respond. Some central banks further noted that non-monetary intervention measures, such as subsidies, vouchers and the lowering of tariffs, could mitigate some inflationary effects. Several central banks, however, did respond in such circumstances, or noted the circumstances under which they might do so. One was to curb “excess demand”, ie to bring demand in line with constrained supply (as noted by the Philippines). Another was to limit second-round effects that could pose a threat to the central bank’s ability to control inflation (eg India, Indonesia and New Zealand⁴¹). For example, wage-price spirals can be triggered when wages (or prices) increase in order to recover previous losses in real wages (or profits). Relatedly, many central banks noted that the risk of de-anchoring of inflation expectations, which could harm central bank credibility, also rationalised prompt action.

Economy-specific characteristics played an important role in underpinning central banks’ *modus operandi* of monetary policy actions, ie **whether they acted pre-emptively or waited**. Faced with shocks, some hiked rates as soon as the *risk* of second-round effects and rising core inflation became

³⁸ This takeaway is robust to using the average absolute distance of the responses from the mean as the measure of dispersion in place of the standard deviation.

³⁹ A useful analogy is that, in medical practice, it is important to distinguish between the symptom and the disease. When body temperature rises (a symptom), it could be because of a viral or bacterial infection or something else. Without knowing the source of the disease, we do not know whether antibiotics should be prescribed or not. In this case, rising inflation was a common symptom, but the underlying disease varied.

⁴⁰ Hong Kong SAR and Singapore are exceptions by design. In Hong Kong SAR, the Linked Exchange Rate System (LERS) implies a stable exchange rate vis-à-vis the US dollar that is maintained through an automatic interest rate adjustment mechanism. This also implies that interbank rate movements in Hong Kong SAR generally track those of the United States due to arbitrage. In Singapore, where gross exports and imports of goods and services exceed 300 percent of GDP and domestic expenditure has a high import content, the exchange rate has a strong influence on inflation. Monetary policy is thus centred on managing the Singapore dollar nominal effective exchange rate (SGD NEER) within a policy band. The central bank formulates monetary policy by setting a path for the SGD NEER policy band to ensure price stability in the medium term.

⁴¹ The fact that the labour market in New Zealand was quite tight alongside high inflation meant that the central bank did not face a trade-off in terms of meeting its dual mandates (of maintaining price stability and ensuring maximum employment).

apparent to them, while others chose to wait to see more convincing evidence of inflation's rise becoming self-sustaining.⁴² The Bank of Japan (BOJ) has continued to wait.⁴³ Notably, pre-emptive actions did not always mean pre-emptive rate hikes, but also took the form of the withdrawal of other forms of accommodation (see below on asset purchase programmes). Characteristics such as the nature of inflation dynamics in the jurisdiction,⁴⁴ the central bank's historical experience with tackling inflation, and the level of inflation prior to 2022 played a role in underpinning central banks' policy choices in this regard. The expected growth trajectory and the use of other policies to cushion supply-side shocks also mattered for monetary policy decisions.

Central banks also differed in terms of whether they **hiked rates gradually or front-loaded** their responses. Those with a higher proportion of floating-rate debt in the economy (especially among households) or with more debt in general stressed that these factors were considered when determining the speed with which they hiked policy rates (eg Korea). A few central banks also took into account financial stability risks that stemmed from the impact higher interest rates would have on households that took on large mortgages during recent housing booms (eg New Zealand). Relatedly, those who perceived inflation to be primarily driven by supply-side factors (eg Thailand) tended to adopt the gradual route. By contrast, the RBI frontloaded rate actions by increasing the policy repo rate by 190 basis points in the first five months of the hiking cycle (out of a total increase of 250 basis points between May 2022 and February 2023). Those that placed more weight on potential frictions in monetary policy transmission (including the fact that it can take a few quarters for a monetary policy action to have its maximum effects) or observed clear signs of second-round effects (for example, as reflected by an increase in petitions for minimum wage increases and hikes in transportation fees in the Philippines) acted more aggressively. Some central banks in this camp acknowledged that such an approach was justified even though it may have hurt growth and raised financial stability risks. This is because central bank credibility in terms of combating inflation may be undermined, and any policy response can become less effective if inflation rises sharply later. Further, members noted that complementary policy tools were used to address some of these challenges (see below).

An overarching theme across economies was that **a mix of policy measures**, including from authorities other than central banks, **was used to support rate hikes** in the pursuit of price stability in 2022. In the Philippines, for instance, a temporary reduction in import tariff rates, time-bound increases in permitted import volumes and diversification of import sources were used to fill short-term supply gaps in food commodities and relieve price pressures. In economies with an asset (eg bond) purchase programme in operation during 2021, policymakers reduced the rate of purchase in 2022 in order to support policy rate increases in taming inflation (eg Australia and the Philippines⁴⁵). In some other economies, tools such as reserve requirements were tightened to withdraw liquidity ahead of policy rate

⁴² For example, the Bank of Korea (BOK) started raising rates in August 2021, earlier than other major economies, as it considered there to be a possibility of a prolonged period of high inflation (an additional motivation was to deal with the build-up of household debt since 2020). The Reserve Bank of India (RBI) started policy tightening pre-emptively in an off-cycle meeting in May 2022. This was after having stressed in April 2022 that the situation was dynamic and fast changing, and policy actions would be tailored accordingly. By contrast, in April 2022, the Reserve Bank of Australia (RBA) reported that it would wait to see "actual evidence that inflation is sustainably within the 2 to 3 per cent target range" before it increased interest rates.

⁴³ The BOJ continued large-scale monetary easing. Under "Quantitative and Qualitative Monetary Easing with Yield Curve Control", the shape of the yield curve for government bonds remained consistent with the central bank's guideline for market operations throughout 2022, in which the short-term policy interest rate was set at minus 0.1 per cent and the target level of 10-year JGB yields was centred around zero per cent.

⁴⁴ These inflation dynamics were underpinned by factors such as the structure of the labour market, the size of the informal sector, the degree of competition firms faced, and the import content of and the food and energy share in the CPI basket.

⁴⁵ The RBA ceased purchases of bonds under its bond purchase programme in February 2022. Subsequently, in May 2022, it announced that it would not reinvest the proceeds of maturing government bonds purchased during the pandemic. In the Philippines, the reduction in daily purchases of government securities (a process that began in September 2020) continued through most of 2022. This was consistent with a tightening monetary policy stance, as well as the reconfiguration of the government security purchase programme from a crisis response facility to a regular facility under the central bank's interest rate corridor framework.

rises (eg India and Indonesia⁴⁶). While a flexible exchange rate was generally seen as a shock absorber for external price shocks, some authorities used FX interventions to minimise the risk of excessive exchange rate movements (especially depreciations) and thus dampen the pass-through to inflation (eg the Philippines and Vietnam). Relatedly, exchange rate intervention also helped anchor expectations and facilitated the overarching objective of maintaining macroeconomic stability and market confidence (eg in India).⁴⁷ This motivation was particularly applicable in economies with greater dependence on imports of essentials like food and energy. That said, some nuances were noted. For instance, in Korea, while the exchange rate is not a nominal anchor, it was a *consideration* for monetary policy because of the destabilising effect that a volatile exchange rate can have on domestic inflation (and on the financial system via capital flows). Some central banks also noted that longer-term efforts towards increasing exchange rate flexibility, which can serve as a shock absorber, allowed greater policy rate autonomy in 2022 (eg China and Vietnam⁴⁸).

Several central banks also noted the use of **communication policy**. In many cases, regular communication as part of the monetary policy process helped keep inflation expectations anchored (eg India and Malaysia). Some respondents further noted that targeted communications to stakeholders such as businesses, investors and bankers helped explain to the public the rationale and objectives of the policy actions (eg Indonesia and Thailand). Effective policy communication helped anchor inflation expectations and thus assisted in maintaining stability. In India, apart from forward guidance, communications were also used to explain the rationale for the measures being taken by the RBI, while also seeking to inspire confidence and optimism for the general public during the pandemic.

The mix of tools was also often intended to help address the limits of higher policy rates in curbing inflation in the near term. Indeed, central banks acknowledged the lag with which rate hikes tend to have an effect. In such cases, fiscal measures (such as electricity or fuel subsidies in the Philippines, Thailand and Vietnam, or rental waivers for public housing tenants and consumption vouchers in Hong Kong SAR) helped ease the *short-term burden* of inflation on households (especially those with low incomes).⁴⁹

In addition, while central banks often prioritised monetary policy in the pursuit of the price stability objective in 2022, they noted that other tools can help address any negative spillovers for domestic financial stability or growth. Indeed, central banks used various tools to manage the impact of higher policy rates on borrowers, banks and the flow of bank credit. These included measures such as lowering the cash reserve ratio or countercyclical capital buffers (eg in Hong Kong SAR⁵⁰), maintaining previously introduced loan restructuring measures, preserving a previously relaxed LTV ratio (eg Indonesia) or macroprudential measures more generally (eg India and the Philippines), providing additional incentives to lend to specific sectors (eg Indonesia), increasing limits for external funding (eg India), and encouraging banks to continue to assist customers with financial difficulties by rescheduling or restructuring loans (eg India and Malaysia). In some cases, the expiry date of previously announced measures was delayed with similar objectives in mind, and to support growth more generally (eg India).

⁴⁶ Bank Indonesia (BI) started normalising monetary policy in 2022 by gradually absorbing excess liquidity through higher reserve requirements, ahead of raising policy rates, while the RBI migrated surplus liquidity from the overnight window to longer tenors from January 2021, well ahead of policy rate rises.

⁴⁷ A few economies used additional FX-related prudential measures such as foreign exchange position limits, risk weights for non-deliverable forwards and rules on asset cover for foreign currency deposits as a complement to interest rate policies in the pursuit of macroeconomic stability in 2022, as reflected in Table 2.

⁴⁸ In Vietnam, the central bank allowed for greater exchange rate flexibility to absorb external shocks by widening the exchange rate band from +/-3% to +/-5% in October 2022.

⁴⁹ Such measures, which keep demand elevated, may be seen as going in the opposite direction as rate hikes intended to control inflation. But to the extent they are temporary and targeted, the welfare benefit of alleviating the burden of inflation for low-income households can dominate the welfare cost of seemingly acting against monetary policy.

⁵⁰ The HKMA has lowered the countercyclical capital buffer twice, by a total of 1.5 percentage points, which is estimated to have released around HKD 800 billion of lending capacity.

4b. Domestic financial stability

Domestic financial stability is generally associated with adequate functioning and stability of the financial system, including asset markets (such as government and corporate bond markets, money markets and housing markets), alongside stable and healthy banks and non-bank financial institutions.

Financial stability remained largely intact over 2022 in most regional economies. Nonetheless, spillovers or trade-offs arising because of other policy measures or external factors led to dislocations in some financial markets and posed challenges. This prompted various types of responses by policymakers (as shown in Table 2).

In many economies, measures introduced in 2020 or 2021 to deal with the impact of the pandemic were either **allowed to expire naturally, discontinued or made more targeted** in 2022 (eg in India, Japan, the Philippines and Thailand⁵¹). One of the reasons cited was to mitigate the potentially undesirable consequences of prolonged use of relief measures that were intended to deal only with a temporary shock. For example, favourable lending terms can lead to excessive debt accumulation, ie beyond what is consistent with fundamentals. Another reason was to preserve policy space and, relatedly, to shift the focus back to building policy buffers.

Some economies experienced **asset market stress** in 2022. This prompted interventions such as repo transactions (eg in Korea) and reducing restrictions on bank participation in securities markets (eg by increasing limits on hold-to-maturity securities in India). In general, the primary goal of these interventions was to support market functioning. In some cases, an alternative objective was to maintain the attractiveness of bond yields (eg Indonesia and Korea⁵²). In general, central banks were cautious about paring back the assets they had acquired as part of prior interventions to minimise asset market volatility. Some central banks also either used or stood ready to deploy appropriately designed and targeted macroprudential measures intended to limit excesses in specific segments that were prone to price misalignments. In addition, some adopted sector-specific stress tests for banks, or adjusted stress-test scenarios, to monitor risks.

Fluctuations in the housing sector were also a general source of financial instability in some regional economies. Economies that experienced **rapid growth in house prices and/or real estate credit** in 2021 and early 2022 adopted tighter macroprudential measures such as tighter LTV limits (eg New Zealand) or DSR rules that took into account expected interest rate increases (eg Singapore). At the same time, some authorities benefitted from existing prudential measures in ensuring the resilience of banks amid housing market stress. For example, in Vietnam, risk factors for real estate loans are higher than for other loans. Conversely, economies that experienced house price declines or corrections in late 2022 following previous surges (partly due to rising rates) adopted looser measures or unwound previously tightened measures respectively.⁵³

Several regional authorities also **adopted measures to support borrowers**. For example, in Korea, a fiscally funded package was issued to convert floating-rate loans – which constituted a high proportion of household loans – to fixed-rate loans and thus mitigate the impact of rate hikes on borrowers (and therefore, ultimately, on the health of banks). In Hong Kong SAR, existing principal payment holidays

⁵¹ As an example of natural expiration, unconventional liquidity injection measures announced in India during the pandemic typically included sunset clauses that facilitated their natural and orderly unwinding. As an example of measures becoming more targeted, in Japan the government raised the limit for the Special Guarantee to meet firms' demand for funds for initiatives such as business restructuring to allow for a gradual transition away from the pandemic era.

⁵² In Indonesia, as a result of operation twist, government bond yields rose in line with the policy rate, boosting portfolio investment inflows and hence contributing to exchange rate stabilisation without compromising the government's ability to issue longer-term bonds. In Korea, a different approach was taken to ensure the attractiveness of bonds: starting in October 2022, non-residents were made exempt from any tax on the interest or capital gains on government bonds or monetary stabilisation bonds.

⁵³ In Korea, policymakers eased LTV ratio rules in late 2022, while in Hong Kong SAR, the stress test associated with DSRs for property mortgage lending featured a lowered interest rate requirement (from 300 to 200 basis points above current rates) from September 2022, which was considered to be sufficient to ensure that banks' mortgage business risks were properly managed. In the Philippines, credit limits for single borrower, real-estate and consumer loans were eased.

and loan guarantee programmes were extended a few times.⁵⁴ In Thailand, asset classifications and provisioning guidelines were relaxed to encourage financial institutions to restructure borrowers' debt, while credit card minimum monthly payments were reduced to help vulnerable segments of the population during the transition period. In India, measures aimed at individuals and small businesses included a temporary period of loan moratorium on payment of instalments, easing of working capital financing, and allowing lenders to restructure borrower accounts under a special resolution framework.

Other regional authorities **adopted measures to ensure that the banking sector maintained adequate room for manoeuvre**, thus enabling the banking sector to better support economic growth.⁵⁵ Vietnam used open market operations to support the short-term liquidity needs of credit institutions. In addition to open market operations, India also put in place a scheme committing upfront to a specific amount of open market purchases of government securities with a view to ensuring a stable and orderly evolution of the yield curve.⁵⁶ China worked to reduce banks' exposure to the real estate sector, which was deemed to have been subject to over-investment. And a few central banks used programmes like funding for lending (FFL) to incentivise the flow of credit generally or to specific sectors (eg India).

But not all economies saw policy measures instituted related to domestic financial stability. For example, while authorities in Australia regularly assessed the effects of inflation, rising interest rates and falling housing prices on households, businesses and the financial system, no related measures were implemented or adjusted during 2022.

A host of economy-specific characteristics mattered for how authorities strove to maintain domestic financial stability. For example, the focus on initiatives to keep banks safe (and thus mitigate any spillovers to the real economy) was more prevalent in economies with a larger share of bank-based finance (as opposed to market-based finance). Naturally, for regional economies with relatively developed bond markets (such as Korea), market stabilisation efforts were especially important. Higher private debt levels, especially among households and SMEs that tend to be more vulnerable to interest rate shocks than large corporates, rationalised a more gradual exit from pandemic-relief focused macroprudential measures.

4c. External stability

External stability is generally assessed in terms of the stability of the exchange rate and/or capital flows.⁵⁷ Regional economies faced substantial stresses on both these fronts, which in turn had repercussions for domestic financial stability as well as macroeconomic stability.

Most EME central banks used **FX interventions as the first line of defence against excessive volatility in exchange rates**.⁵⁸ As Table 2 indicates, this is the most commonly used tool for external stability. A typical feature of these interventions was that central banks did not aim to resist changes that reflected economic fundamentals, nor to impair the role that exchange rate changes can play as a shock absorber. Instead, their objective was to enable the exchange rate to find its new equilibrium in a gradual and orderly fashion. FX interventions were a more important component of the policy

⁵⁴ Under the "Pre-approved Principal Payment Holiday Scheme" for small and medium-sized enterprises (SMEs), Hong Kong SAR banks had granted over 101,000 applications for loan tenor extension and other forms of relief by the end of September 2022, involving an aggregate amount of HKD 1 trillion.

⁵⁵ At the same time, pre-existing measures such as LCRs and net stable funding ratios (NSFRs) supported banks' short-term and long-term resilience against liquidity shocks, as noted by India and the Philippines, for instance.

⁵⁶ The scheme was termed as the Government Securities Acquisition Programme (G-SAP).

⁵⁷ A related aspect of external stability is current account stability, which is approximately the mirror image of capital account stability.

⁵⁸ For Hong Kong SAR and Singapore, managing the exchange rate within a target band reflects explicit mandates on external stability and price stability, respectively. FX intervention is the primary tool used for these purposes. In Hong Kong SAR, FX intervention took place on multiple occasions when the weak-side Convertibility Undertaking (CU) under the LERS was triggered, with the HKMA purchasing a total of HKD 242 billion in exchange for US dollars at a rate of HKD 7.85 per USD in 2022, upon requests from banks.

response in those economies where outsized exchange rate movements posed a threat to the inflation outlook and to public confidence in the domestic currency (as stressed by, for example, Indonesia, the Philippines and Vietnam). Among AEs, FX intervention was used in Japan for the first time since 2011 to deal with unprecedentedly sharp one-sided movements in the Japanese yen against the US dollar.⁵⁹

The **size and intensity of the interventions** depended on several factors. First was the perceived effectiveness of the measure. Central banks generally acknowledged that interventions were less effective against fundamental drivers of exchange rate movements (such as broad strengthening of the US dollar) and were primarily intended to deal with volatility driven by factors such as speculative or herd behaviour or market dysfunction (eg due to a lack of FX liquidity). Second was the level of FX reserves. While smaller reserves obviously (and mechanically) imply less policy space, the *de-facto* policy space was affected by the threshold below which foreign investors become uncomfortable and may wish to withdraw their funding.

Not all regional central banks reported exchange rate movements in 2022 as concerning. Some with floating exchange rates viewed their depreciating currencies as serving to insulate their economies from these external shocks (eg Australia and Korea⁶⁰). More generally, **FX intervention is becoming less common** in the region, even across very different exchange rate regimes. For example, China has sought to improve its managed floating exchange rate system to minimise the need for FX intervention.

Relatedly, some central banks stressed that while FX interventions were the first line of defence against FX volatility, **FX interventions were not necessarily the primary tool to deal with external stability** more broadly. Instead, FX interventions were generally seen as part of a toolkit that accommodates synchronous and flexible use of the tools inside the central bank to deal with unfavourable global financial shocks (as noted by India, Indonesia, Korea and Vietnam for instance).⁶¹ This toolkit had diverse components.

A key component of the toolkit was **capital flow management measures** (CFMs). Many CFMs have a macroprudential focus and strived to reduce the systemic risks posed by capital flow and FX volatility – so-called **FX-related macroprudential measures**. That said, some other CFMs focused on managing specific types of flows or flows to specific sectors – ie flows that tend to pose only limited systemic risk.⁶² During 2022, many regional economies saw the use of FX-related macroprudential measures or other CFMs. A selection of these measures included increasing the limit for external commercial borrowing and relaxing restrictions on foreign investment in debt markets (India), increasing FX position limits and risk weights for NDFs (the Philippines), having in place limits on domestic currency lending or borrowing by non-residents without an underlying trade or investment (Thailand), limits on foreign investment in certain sectors (Vietnam), and registration requirements when borrowing for the medium and long term from abroad (Vietnam). Other measures aimed at attracting inflows, for example, by relaxing foreign portfolio investment rules (especially those with a long-term view), relaxing interest-rate caps on FX deposits by non-residents at banks and expanding end-uses of foreign currency borrowings by banks (India), and granting tax exemptions to non-residents on their interest income from and capital gains on specific bond investments (Korea). India announced several measures to liberalise capital flows in July 2022 while taking steps to ensure overall macroeconomic and financial stability.

⁵⁹ Australia and New Zealand did not use FX interventions in 2022. In fact, they have rarely intervened in recent decades. That said, New Zealand sees a need to increase the level of its FX reserves in order to have the room to pursue interventions in extreme circumstances, and thus support its policy objectives, in future. This strategy will be implemented over the next few years to reduce market impact.

⁶⁰ In Korea's case, a move to a free-floating exchange rate system has authorities only occasionally using FX intervention, on a limited basis, to alleviate any financial market instability caused by unduly rapid fluctuations in the exchange rate.

⁶¹ In Indonesia, FX interventions are part of their "triple intervention strategy" that involves intervening in the FX spot, domestic non-deliverable forward (DNDF) and secondary government bond markets.

⁶² FX-related macroprudential measures can be deployed by using prudential, monetary or fiscal policy tools. A key feature of these measures is that they accommodate cyclical adjustments. Distinguishing between FX-related macroprudential measures and other forms of CFMs is not always straightforward and can be controversial. We do not differentiate between the different forms of CFMs in this report.

Policy rate hikes were also (directly or indirectly) a part of the external stability toolkit. For some, there was a direct link between policy rates and the need to realign interest rates vis-à-vis those in AEs in Europe or North America (ie by limiting changes in interest rate differentials), and thus to respond to tightening global financial conditions and monetary policy spillovers (eg Indonesia, the Philippines and Vietnam). Relatedly, Thailand noted that FX interventions can help take the pressure off monetary policy in dealing with the impact of external financial conditions on the domestic economy. In some other economies, the link was indirect, as noted above in the case of Korea. Relatedly, while policy rate changes in Malaysia were not carried out with the objective of strengthening the local currency, rate hikes helped mitigate capital outflows and temper the impact on the ringgit, which was a welcome by-product. In Japan, monetary policy is assigned to price stability while exchange rate stability is outside the remit of the central bank.

Additional tools were also used to deal with external stability. One was **FX liquidity provision**. For example, China lowered the reserve requirement ratio for FX deposits to release FX liquidity, while foreign currency deposits were temporarily exempted from reserve requirements in India. Another tool was **domestic market intervention**, which was used in a few economies (eg operation twist in Indonesia to affect the yield curve/term premium and thus attract capital inflows). Some central banks also used **intensive communication** with investors, rating agencies and other domestic and international stakeholders more generally to build optimism and support exchange rate stabilisation policy (eg Indonesia). Relatedly, some used **forward guidance** to manage expectations (eg India), while some others used moral suasion to keep speculative trades in check (eg the Philippines).

A number of economy-specific characteristics had a bearing on the response that the authorities adopted. Several members noted that the development of deeper and more liquid FX markets in the past facilitated efficient price discovery during 2022 and reduced the need for FX interventions or CFMs (including China, Indonesia and Malaysia). In addition, minimum hedging requirements on corporates' net liability exposure in the past helped build firms' resilience and also mitigated the need for (or intensity of) an ex-post policy response in 2022. In a similar vein, improved FX reserve adequacy helped maintain investor confidence and improved policymakers' room for manoeuvre (eg in India).

5. The policy mix: the variation over time

This section examines how, across the region as a whole, the policy response during the stress period in 2022 differed from the one typically adopted during non-stressed times, such as prior to the pandemic.

The 2022 period was one of heightened stresses, with both demand and supply factors leading to rapidly rising inflation, increasing policy rates nearly everywhere and a stronger US dollar tightening global financial conditions.⁶³ In contrast, the period up until 2019, which was the main focus of a previous working group report, tended to be characterised by relatively low inflation and stable or loose global financial conditions.

In general, working group questionnaire responses indicate that the regional central banks' **MFSFs accommodated policy tools being used in a concerted manner to varying degrees**, depending on the domestic and global macroeconomic and financial environment. As outlined in the previous working group report, in non-stressed times MFSFs generally entailed (i) each tool being focused on one primary objective (with other instruments being used only relatively infrequently) and (ii) building buffers in defence against future periods of volatility. In 2022, a stressed period with heightened uncertainty due to large and complex shocks, some policymakers – especially in EMEs – used the primary instrument relatively forcefully for an *at-risk* objective, and more frequently supplemented it with other instruments.

⁶³ By contrast, the previous working group report by ACC central banks (ACC (2020)) had envisaged a *different* stress period in which inflation is low but global financial conditions are tight, as was seen during the taper tantrum, for example. Relative to that, the year 2022 turned out to be exceptional with a combination of high inflation as well as tight global financial conditions.

To be sure, this is not to say that there is no policy integration during non-stressed times. The key is that MFSFs accommodate a time-varying degree of policy mixes and integration.⁶⁴

Comparing the policy mix over time

Table 3

Policy tools used	2019 survey			2022 survey			
	Macro stability (including price stability)	Domestic financial stability	External stability	Macroeconomic stability		Domestic financial stability	External stability
				Price stability	Output growth stability		
Policy rate	0.78	0.22	0.33	0.78	0.67	0.67	0.33
Intervention in domestic bond and money markets	0.00	0.00	0.11	0.33	0.22	0.44	0.22
Liquidity provision (domestic or FX)	0.00	0.11	0.33	0.28	0.28	0.50	0.39
Macroprudential measures	0.22	1.00	0.44	0.11	0.44	0.78	0.11
Capital flow management measures (including FX-related macroprudential measures)	0.00	0.00	0.33	0.22	0.11	0.22	0.56
FX intervention	0.11	0.00	1.00	0.33	0.22	0.11	0.89

Colour codes and cell ranges:
 0 – 0.09 0.1 – 0.19 0.2 – 0.29 0.3 – 0.39 0.4 – 0.49
 0.5 – 0.59 0.6 – 0.69 0.7 – 0.79 0.8 – 0.89 0.9 – 1

Both heatmaps are based on the average responses reported across the nine economies included in the 2019 ACC working group (China, Hong Kong SAR, Indonesia, India, Korea, Malaysia, the Philippines, Singapore and Thailand). Some policy tools are absent in one or the other survey and are omitted from both heatmaps. For some tools, the interpretation may be slightly different across the two surveys. In each panel, the use of the tool in a given economy (regardless of the intensity of its use) is counted as 1, while no use is counted as 0. Some quantitative differences between the right-hand panel of this table and Table 2 result from the inclusion of three additional economies in the latter.

Table 3 illustrates this point visually, by comparing the questionnaire responses from the current and previous working groups, for the nine economies covered in the 2019 survey. While the design of the questionnaires is not identical (in terms of the coverage of economies, the set of policy tools examined and how policy responses were reported), the heatmaps illustrate the general idea.

The table shows that, on average, the primary instrument for each objective remained the same in 2019 and 2022 – ie for each column, the row with the highest number (or the darkest shade of red colour) is the same in the left-hand panel for 2019 as in the right-hand panel for 2022. Specifically, that translates into emerging Asian central banks primarily using policy rates for macroeconomic stability, domestically oriented macroprudential measures for domestic financial stability and FX intervention for external stability, in both 2019 and 2022.

Regarding the use of supplementary tools, however, the two panels differ. Shades of blue predominate in the left-hand panel for 2019, indicating relatively low use of supplementary tools, especially in pursuit of macroeconomic and domestic financial stability goals. In contrast, in the right-

⁶⁴ For example, in Singapore, while the Monetary Authority of Singapore (MAS) sets monetary policy and it is always focused on securing price stability, there is policy coherence with fiscal and macro-financial policies due to close consultation with the respective policy-making bodies through crises, and more broadly across economic and financial cycles. The Ministry of Finance (MOF) determines the stance of fiscal policy with the objective of promoting macroeconomic stability, sustained economic growth and social equity while maintaining a balanced budget. Macro-financial policy mostly comprises macroprudential measures aimed at promoting a sustainable property market. These measures are co-ordinated across the MAS, the MOF and the Ministry of National Development. The macroprudential toolkit comprises loan-to-value limits, debt servicing limits, buyers' and sellers' stamp duties and adjustments in land supply.

hand panel for 2022, light pinks prevail in many of the same cells supporting the notion that supplementary tools came to be more commonly used.⁶⁵

There are several examples of the more forceful use of the primary tool in pursuit of an at-risk objective in 2022 than in previous periods of low inflation and loose global financial conditions. For instance, in Australia, where the policy interest rate is the primary tool for maintaining price stability, the size and persistence of inflationary shocks during 2022 warranted a series of policy rate rises from May 2022. Singapore provides a similar example: the MAS re-centred the exchange rate policy band upwards three times within a six-month period during 2022, a much more frequent use of this primary policy tool than before.

Other economies – including some EMEs – provide examples of greater use of supplementary tools in pursuit of policy mandates in 2022 (as highlighted in Section 4) than in the years up to 2019. For example, the BOK used lending facilities and market stabilisation measures to supplement interest rate policy in 2022. In the Philippines, the interest rate remained the first line of defence when dealing with threats to the inflation outlook in 2022, but persistent external shocks that threatened to spill over to inflation saw the Bangko Sentral ng Pilipinas turn to other tools in fighting inflation, such as FX intervention. Similarly, the Bank of Thailand reported using supplementary measures alongside monetary policy normalisation, but working in the opposite direction of rate rises, in order to help vulnerable groups that were hard hit by policy rate changes. By contrast, none of these three economies mentioned using tools other than policy rates to support macroeconomic stability in the previous report focused on pre-pandemic policies.

Sometimes the deployment of additional tools took advantage of policy buffers built up over time. For example, in response to higher inflation amid greater external pressure, BI and the RBI raised reserve requirement ratios and the policy rate, but also used previously built buffers (ie loosened macroprudential policy). By contrast, the previous report indicated that, in general, only policy rates were used for macroeconomic stability goals, and macroprudential measures were only used for domestic financial stability, suggesting limited relevance for policy buffers in the assignment of *supplementary* tools.

6. Lessons learnt and the way forward

Going forward, once inflation moves closer to central bank targets and global financial conditions stabilise, there are three dimensions that central banks may wish to take into account while plotting the way forward.

One is **rebalancing the policy mix**. Ideally, policymakers may prefer to shift to a mix that is more comparable to the one in place before the pandemic: monetary policy focusing on macroeconomic stability, macroprudential measures defending against the unwinding of financial imbalances and a mix of tools to ensure external stability. However, the rebalancing process faces challenges that stem from high debt levels (in most regional economies), weak real estate markets (in some regional economies) and the risk of new shocks. In this regard, one of the strategies authorities in several economies have been following is to adjust some of the measures used from being broad-based to being more targeted. That said, some members noted that a pandemic-induced shift in some of the relevant “state variables”, especially debt levels, can make the transition to a “pre-pandemic” policy mix (ie one that is more suited for when inflation becomes low and stable and global financial conditions loosen) slow or uncertain. Vulnerabilities also mean that the transition will have to be gradual and smooth in order to avoid any

⁶⁵ In principle, the need for multiple tools for each objective can arise either because a large shock dislodges the objective to a major extent, or because multiple or different types of shocks perturb the same objective in numerous ways. While it is difficult to pin down the exact rationale for each objective in every economy, in general, a combination of both the rationales is likely to have applied in 2022. Moreover, the experience gained by policymakers in terms of executing multiple policies in a synchronised manner during 2020 and 2021 (as necessitated by the pandemic) is also likely to have facilitated the greater use of supplementary tools during the stress period.

spillovers and unintended consequences. Moreover, the transition will need to be mindful of developments elsewhere (eg the global policy cycle) as well as renewed risks (eg any intensification of the war in Ukraine or deglobalisation).

Another dimension of the way forward is the need to **rebuild policy buffers**. Several central banks noted that the existence of buffers enabled them to launch an effective policy response in 2022. Rebuilding buffers if necessary, and ensuring that they remain sufficient, is the key to maintaining policy space in the future. Rebuilding macroprudential buffers may be especially important in economies where household debt is at high levels. Similarly, restoring FX reserves is likely to be most relevant in jurisdictions that used interventions materially when their currencies were depreciating in 2022.

Last is taking **lessons learnt while operating MFSFs during the recent volatile period** to further develop MFSFs for the future. Members noted several common lessons but also underscored that, since economy-specific characteristics vary, not every lesson will apply in every jurisdiction.

First, new (or previously scarcely used) tools may become a more regular part of the toolbox in some economies because of a net positive experience regarding their use. For example, intervention in domestic government and/or corporate bond markets, or even announcement of such programmes, was perceived to have beneficial effects on market functioning in some jurisdictions.

Second, while members mentioned already practicing some degree of flexible integration in the use of policy tools before the pandemic, they acknowledged that their experience in 2022 – when numerous shocks of relatively large magnitudes perturbed multiple objectives – offers additional lessons on how tools interact. These lessons can help policymakers further optimise their joint use.

Third, members noted lessons in terms of the trade-offs associated with the pre-emptive versus reactive use of tools. For instance, while the Reserve Bank of New Zealand’s monetary policy tightening had been ahead of many peers, it noted that high inflation outcomes point to having waited too long to see conclusive data.

Fourth, members noted that the nature, intensity and transmission of shocks to the domestic economy matter for the optimal policy response. In particular, New Zealand stressed that it is more effective to address root causes of instabilities, where feasible.⁶⁶ Relatedly, some central banks noted that monitoring, surveillance, and/or stress-tests are key in this regard.⁶⁷

Fifth, a preference for price-based instead of quantity-based policies and operational readiness were also noted as aspects of an effective policy framework.

Sixth, members noted that the efficacy of MFSFs depends in part on the ecosystem in which they operate, which may be beyond their control. This underscores the important roles of domestic structural reforms and other non-central bank policies in influencing the ecosystem and thus the efficacy of MFSFs.

Overall, many members’ responses reflected the view that the effectiveness of MFSFs hinges on taking account of the following key aspects of the policy actions: **trade-offs** (eg between stabilising inflation and output or between growth and external balance as well as those arising from leakages or unintended consequences), **interactions or complementarities** (eg one tool could help mitigate the spillovers from another), **constraints or limits** (such as diminishing returns to the continued use of a tool), **policy communication** (eg especially when different policies appear to be out of sync), and **coordination between authorities** (eg between the central bank, any other financial authorities and the government).

In terms of **objective-specific lessons**, with regards to ensuring **macroeconomic stability**, several members underscored the importance of flexibility in terms of switching focus between alternative goals

⁶⁶ Related to an analogy drawn previously, this is equivalent to treating the underlying disease rather than focusing on the symptoms.

⁶⁷ For instance, in Singapore, stress tests were conducted on corporates and households using scenarios that took into account (i) the trajectory of rising rates; (ii) the impact of inflation on rising production costs for corporates; and (iii) the fall in earnings and income for corporates and households due to a negative demand shock.

in response to new data, while maintaining price stability as the primary objective. In some economies, the room for monetary policy to support growth narrowed in 2022 as the emphasis was instead on ensuring external stability and controlling inflation. Members also emphasised a medium-term orientation for monetary policy for several reasons. First is its limited ability to deal with the root cause of cost-push inflation (although it can address any second-round effects). Second is its lagged transmission. Third is its relationship with financial stability over the medium term. Some members also noted a more symmetric view of monetary policy formulation, which can help avoid issues such as those related to low-for-long. Finally, some noted that while dependency on certain types of imports and exports cannot be overcome in the short run, diversification of trading partners and investing in industries to improve domestic production in the medium run can help fend off attendant risks to price stability and economic growth.⁶⁸

In terms of maintaining **domestic financial stability**, the importance of measures to curb excessive new debt, to avoid over-indebtedness more generally, and to mitigate the persistence of debt across the entire debt "journey" (ie before debt creation, when the economy enters a debt trap and during debt distress and resolution) was emphasised in the response from Thailand.

In terms of maintaining **external stability**, some members noted that efforts to keep the value of the currency in line with fundamentals is one of the ways to manage capital flows. Several members also acknowledged that excessive stabilisation of the FX market may reduce incentives for the development of hedging markets. Relatedly, certain CFMs may deter foreign investment. This is because foreign investment is a repeated game, and some types of CFMs can send negative signals to prospective investors and also hinder financial market development. Moreover, there are implementation challenges in the sense that, if specific CFMs such as taxes are not universally implemented, they can create arbitrage and circumvention opportunities. Such occurrences might become more likely due to advances in financial technology.

Finally, cutting across all objectives, almost all central banks emphasised that **communications** are a key part of the policy toolkit. They noted the following characteristics of effective communications: they (i) are regular; (ii) engage with all relevant parties (eg the media and market participants); (iii) are clear; and (iv) utilise various channels (eg TV, education programmes, social media and central bank websites). Members also noted that it is important to convey not only policy actions, but also the intent behind those actions, how those actions are likely to work, and the way forward (including when they are meant to expire).

⁶⁸ In the Philippines, for example, despite decades-old quantity restrictions on rice imports, domestic rice farmers remained poor while rice prices were high and volatile. These restrictions were abolished in 2019. This allowed liberalised rice imports, which in turn reduced and stabilised rice prices for Filipino consumers.

Working Group participants

Members

Reserve Bank of Australia	Andrea Brischetto
People's Bank of China	Chengjun Zhou
Hong Kong Monetary Authority	Lillian Cheung
Reserve Bank of India	Rajiv Ranjan
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Bank of Japan	Hitoshi Sasaki
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Representative Office for Asia and the Pacific	Ilhyock Shim James Yetman Tirupam Goel
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Annex: Questionnaire for the Working Group on “Inflation, external financial conditions and macro-financial stability frameworks in Asia-Pacific”

Following discussions at the September 2022 meeting of the Asian Consultative Council (ACC) of the BIS, the BIS Representative Office for Asia-Pacific launched a working group of ACC central banks on “Inflation, external financial conditions and macro-financial stability frameworks in Asia-Pacific” focusing on the joint use of monetary, macroprudential, exchange rate and capital flow management policies.

This questionnaire is intended to review how ACC central banks and other financial authorities have operated their macro-financial stability frameworks (MFSFs) since late 2021 and could further refine them. Specifically, the survey hopes to develop a unified understanding of the following four aspects of MFSFs: (1) shocks affecting inflation, output and domestic financial conditions; (2) economy-specific characteristics such as structural features, debt levels and policy buffers; (3) drivers of inflation and transmission channels of exchange rates (ie pass-through, trade and financial channels); and (4) how these aspects mapped into the set of policies deployed by ACC economies.

In responding to the questions, impressionistic answers are welcome. Where practicable, please feel free to include key statistics, quantitative estimates or references to central bank statements or publications in support of your answers. In case a question is of little or no relevance to central bank policy actions in your jurisdiction, please feel free to skip that question (briefly mentioning why, if necessary). You are expected to answer questions on a best-effort basis rather than providing definitive answers. Fact-based statements about the use of tools that are not available to your central bank are welcome. Please address any questions to Tirupam Goel (tirupam.goel@bis.org) or James Yetman (james.yetman@bis.org), and return the completed questionnaire to them by **31 January 2023**.

1. The nature of the shocks

This section examines the shocks and their effects that ACC economies have experienced since late 2021.

- 1.1 **Pandemic:** To what extent do pandemic-related restrictions or their after-effects continue to be a drag on your economy? (*Eg is the current level of output close to its potential level? If not, by when is any negative output gap expected to close?*) Has your economy experienced economically significant supply chain disruptions during the pandemic?
- 1.2 **Commodity prices:** Global energy and food prices spiked in response to the conflict in Ukraine. How exposed is your economy to these price shocks? (*Eg to what extent are the effects cushioned by domestic supply (and perhaps even exports) of the affected commodities? Do you fear instances of energy shortages?*)
- 1.3 **External financial conditions:** Monetary policy tightening in the United States (and other major advanced economies) has resulted in strengthening of the US dollar relative to most ACC economies’ currencies as well as capital outflows from many ACC economies. At the same time, global financial markets have shifted between “risk-on” and “risk-off” phases. How exposed are your economy’s domestic financial conditions to these interrelated external shocks?
- 1.4 **Other:** Which additional shocks, if any, have played a significant role in your economy since late 2021?

2. Economic-specific characteristics

This section reviews the various characteristics of your economy that determine how vulnerable it is to macro-financial shocks.

- 2.1 **Commodity trade dependence:** How dependent is your economy on trade in food and energy? (*Eg how dependent is it on imports of essentials? Are commodity exports a core driver of economic growth? Data on the ratio of total exports to GDP and the ratio of total imports to GDP broken down*

by eg (i) food, (ii) energy, (iii) other commodities (like metals) are welcome; impressions of how (much) they matter for your economy are even more welcome.)

- 2.2 **Financial market depth:** Are FX spot and derivatives markets for your currency large enough to weather strong volatility in capital flows and exchange rates? To what extent is external debt hedged (approximately)? Does this vary depending on the financial cycle? *(Eg are FX hedging costs reasonable during periods of market stress, so that they do not create disincentives for investor inflows?)*
- 2.3 **Bank- versus market-based financing:** What is the share of bank-based versus market-based finance in your economy? Do banks primarily rely on domestic deposits and funding, or do they source substantial amounts of funding from abroad?
- 2.4 **Debt level and composition:** Household, corporate and government sector debt levels swelled in the years leading up to the pandemic in most regional economies. Were the respective credit growth rates consistent with the evolution of the broader economy? *(Eg as measured by the credit-to-GDP gap or persistence in credit growth?)* What factors contributed to the respective credit growth rates? *(Eg low interest rates, fiscal support packages in the case of government debt?)* Do you assess current levels of debt to be worrying? *(Eg how high is the risk of a surge in non-performing loans/distressed debt? How sensitive are debt servicing costs to short-term interest rates?)* In terms of composition, how dependent is your economy on foreign currency-denominated debt? How important are foreign investors in domestic currency (government and corporate) bond and equity markets? *(Eg how deep is the domestic investor base? If foreign investors sold local currency assets in 2022, to what extent have purchases by domestic institutional investors helped to stabilise markets?)*
- 2.5 **Real estate prices:** Did residential and/or commercial real estate prices in your economy increase rapidly in real terms in the several years leading up to late 2021? Were there signs of over-heating *(eg historically high prices)*, of an imminent drop/crash in house prices and/or of fragility *(eg rising delinquencies or defaults of housing or development loans)* as of late 2021?
- 2.6 **Inflation anchoring:** Were inflation expectations believed to be well-anchored in your economy in the period leading up to the pandemic? Is there a sense that this has changed materially since then? *(Eg have long-horizon inflation expectations started to rise?)* How strong was the pass-through of exchange rate fluctuations and food/energy prices to inflation in your economy over the past decade?
- 2.7 **FX reserves:** How do you assess your jurisdiction's FX reserves adequacy, both prior to and during the pandemic? Did your FX reserve position at end-2021 help pre-empt the impact of tighter global conditions in 2022? *(Eg did it improve the confidence of foreign investors and thus reduce incentives to withdraw funding?)*
- 2.8 **Macroprudential buffers:** Did your jurisdiction use macroprudential measures before the pandemic in response to credit and real estate booms? How effective were they? *(Eg did their use help to build solvency or liquidity buffers on the balance sheet of financial intermediaries? Did they affect asset prices?)* Did your jurisdiction also use capital flow management measures (CFMs) or FX-related macroprudential measures (ie monetary, prudential and fiscal policy tools calibrated to FX exposures or FX liabilities of banks or non-bank financial institutions (NBFIs))? If so, why? *(Eg was it because macroprudential measures were insufficient to deal with externally driven booms in credit or asset prices?)*
- 2.9 **Other:** What other economy-specific characteristics (if any) play a role in the choice of policy tools in your economy in response to the current combination of shocks?

3. Drivers of inflation and the relative strength of exchange rate channels

This section examines the channels that determine how the various shocks have transmitted to macroeconomic and financial outcomes since late 2021.

3.1 **Inflation drivers:**

- 3.1.1 What have been the important demand factors? (*Eg pent-up demand from the pandemic and expansionary fiscal or monetary policy [including quantitative easing] adopted during the Covid-19 pandemic?*)
- 3.1.2 What have been the important supply factors? (*Eg rising global prices of imported food and energy items or other inputs, Covid-related supply chain disruptions and bottlenecks, constraints on labour supply or strong labour demand?*)
- 3.1.3 Are there also any structural factors which have aggravated inflation during this period or mitigated inflation from increasing further? (*Eg changes in global trade patterns, labour market flexibility or the government's supply-side policies?*)
- 3.1.4 How would you rank the various factors (listed in 3.1.1-3.1.3) in terms of their relative importance?
- 3.1.5 Which of the following can best describe the evolution of inflation in your jurisdiction in the last year: (1) a large shock; (2) repeated or multiple shocks; and/or (3) amplification due to second-round effects (such as unanchoring of inflation expectations or wage-price spirals)? Relatedly, when inflation started to rise, how transient/persistent was it expected to be in your jurisdiction?
- 3.1.6 In most ACC economies, inflation has increased substantially, with wage increases lagging those of prices. How large do you think is the risk that price-wage spirals become entrenched in your jurisdiction, establishing a higher inflationary regime? If the risk is small, why?

3.2 **Exchange rate channels:** The previous working group concluded that there are three main exchange rate channels (pass-through, trade and financial), with their relative importance evolving over time (eg the financial channel becoming more important) and varying with the phase of the economic cycle (eg the financial channel is more important in volatile times). With that understanding in the background, which of the three channels have been most important during the recent period (from late 2021), and for which economic outcomes in your jurisdiction (eg inflation, output and/or domestic financial conditions)?

- 3.2.1 **Pass-through channel:** How strong is this channel, and how does it relate to the economy-specific characteristics in Section 2? Has the strength of the channel changed under recent large depreciation pressures? Or is any increase in the amount of pass-through simply related to the size of the depreciation and the share of tradable goods in consumption? Between the US dollar bilateral exchange rate and the nominal effective exchange rate, which one is more important in explaining the intensity of pass-through? (*Eg what is the role of invoicing currency?*)
- 3.2.2 **Trade channel:** How sensitive are your exports vis-à-vis the bilateral US dollar exchange rate and vis-à-vis the real effective exchange rate? How about imports? How do these sensitivities relate to the characteristics in Section 2? What factors are important in determining the sensitivity in each case? (*Eg the choice of invoicing currency? The location where production takes place?*)
- 3.2.3 **Financial channels:** "Original Sin" refers to the situation that an economy is unable to gather sufficient interest in local currency debt by foreign investors, and thus the economy's borrowers have to issue foreign currency debt. "Original Sin Redux" refers to the situation where large foreign holdings of domestic currency debt can destabilise local

currency bond markets because exchange rate returns are positively correlated with interest rate returns. Are these two channels relevant to your economy? If so, why? (*Eg did the availability of hedging instruments play a role?*) Which channel was more important in determining domestic financial conditions in 2022? (*Eg as reflected in local currency bond yields and credit provision to the economy?*) What other financial channels, if any, have played a role?

- 3.2.4 Based on your responses to the above questions in Sections 3.2.1–3.2.3 please fill in the below table by adding figures in each cell as relevant to indicate how important each of the channels (rows) has been since late 2021 for each outcome (column).

Relative strength of the three exchange rate channels since late 2021

Channels \ Variables	Inflation	Output	Domestic credit	Long-term interest rate (or bond prices)
Inflation pass-through				
Trade				
Financial				

Notes: For each outcome variable (ie column), please enter one of the following figures in each cell: 3 for most important; 2 for moderately important; and 1 for least important. Each column can be considered separately; there is no need to compare entries across columns. If you think that multiple channels are equally important for a macroeconomic or financial variable, please enter the same number multiple times.

4. The policy response

This section explores how authorities in the ACC economies have responded to the shocks they have faced by deploying interest rate policy, liquidity provision, FX intervention, intervention in money and capital markets, macroprudential measures and CFMs during 2022. A key aspect is to understand how the policy mix depends on the nature of the shocks (Section 1), economy-specific structural characteristics (Section 2) and the strength of the various drivers and channels (Section 3).

As context for this section, please see the [BIS report on MFSFs to the G20](#), and the previous ACC [Working Group \(WG\) report](#) (in particular Table 5). A key aspect of the previous WG report was that a majority of WG member central banks come close to the Tinbergen principle with one primary instrument focused on each objective.

- 4.1 **Macroeconomic Stability:** Previously, most WG members reported primarily using policy interest rates in pursuit of “macroeconomic stability (including price stability)”. To what extent did that remain the case in 2022?
- 4.1.1 For economies where inflation started to rise (eg in late 2021), would you consider your institutions’ monetary policy actions to have been front-loaded/pre-emptive, or did you prefer to wait for more conclusive data? What trade-offs were considered? How has the relative importance of the objectives shifted, if at all? (*Eg has the importance of inflation control increased?*)
- 4.1.2 What other tools in addition to interest rates (if any) were used for domestic macroeconomic stability? How did your jurisdiction use these tools? What was the modality of their use? (*Eg, the same direction as interest rate policy [eg tightening as interest rates rise], or the opposite direction [eg loosening]?*)
- 4.1.3 Which economy-specific characteristics (outlined in Section 2) have been important in determining the tool choice? Why? (*Eg are high levels of private/government debt or government budget deficit a constraint on raising interest rates or tightening macroprudential measures because of the financial stability implications? Does the relative importance of bank-based versus market-based financing, or formal versus informal*

financing, play a role? Relatedly, which economy-specific characteristics improve or reduce the efficacy of the monetary transmission mechanism?

- 4.2 **Domestic financial stability:** In the previous WG report, most members reported primarily using macroprudential measures and financial institution policies (see Section 4.2.4 below) in pursuit of “domestic financial stability”. To what extent did that remain the case in 2022?
- 4.2.1 What was the nature of financial sector stress (if any) that your economy experienced in the past year? Which macroprudential measures were used to address those stresses? (*Eg bank-related, NBFi-related, or FX-related?*) What measures were most effective at addressing market stress?
- 4.2.2 In particular, has your jurisdiction used domestic currency liquidity provision or intervention in money / capital markets (such as local currency bond and equity markets)? What were the main goals? (*Eg restore market functioning, alleviate funding stress, support borrowers?*)
- 4.2.3 Relatedly, were macroprudential measures tightened in your jurisdiction in response to a residential and/or commercial real estate boom? Were they subsequently loosened to revive real estate credit or support real estate prices? What were the considerations behind these policy choices?
- 4.2.4 What other tools (if any) have also been used for domestic financial stability purposes? (*Eg these could include financial institution policies such as temporary relaxation of credit risk classification and debt holidays introduced in 2020, if these are not listed under macroprudential measures.*) Were there tools that were considered but not used?
- 4.2.5 Which structural characteristics of your economy (outlined in Section 2) have been important in determining the tool choice? Why?
- 4.3 **External stability:** Most previous WG members reported primarily using FX intervention to ensure “external stability (including stability of exchange rates and capital flows)”, supplemented by a mix of other tools (including policy rates, CFMs, macroprudential policy and FX liquidity provision). For advanced economies in the region, by contrast, FX intervention was reported to be rarely, if ever, used.
- 4.3.1 Was FX intervention used in your economy since late 2021? If so, what were the main objectives? (*Eg reduce volatility, curb depreciation, other?*) What determined the space to pursue this policy? (*Eg the size of FX reserves?*) What determined the size of the intervention? (*Eg what was the relative importance of effectiveness (in influencing exchange rates), timing, and preserving space for future intervention?*)
- 4.3.2 Was FX intervention the primary tool to deal with external stability? Did policy rates play a (possibly complementary) role? Relative to the past, was there a change in the joint use of FX interventions and policy rates? If so, what was the nature of the change, and why?
- 4.3.3 Did your jurisdiction also use CFMs, FX-related macroprudential measures or other tools to mitigate capital outflows or FX volatility? If so, which specific measures were used and why? (*Eg because FX intervention and/or policy rate changes were insufficient?*)
- 4.3.4 Among the set of possible supplementary tools (listed in 4.3), which ones have not been used but are currently under active consideration in your economy? Which tools are NOT likely to be used? Is this choice related to the structural characteristics in your economy (see Section 2)? If so, how?
- 4.4 Based on your responses to the above questions in Sections 4.1–4.3, please fill in the below table by adding figures in each cell as relevant. This is intended to summarise the most important components of policy responses outlined above.

Deployment of various tools for different objectives between January 2022 and December 2022

Tools \ Objectives	Price stability	Output growth stability	Domestic financial stability (credit or asset price growth)	External stability (exchange rate / capital flows)
Policy rate				
Domestic currency liquidity provision				
FX liquidity provision				
Intervention in domestic bond and money markets				
FX intervention				
Domestically oriented macroprudential measures				
Capital flow management measures or FX-related macroprudential measures				
Remarks (if any):				

Notes: Please enter up to two inputs in each cell. The **first** input has to do with how **important** a tool (row) is for an objective (column): 3 means that the tool is most important and most heavily used to achieve the objective, 2 means important and used extensively, 1 means least important and used lightly. In case a tool was not used or is unimportant for a given objective, please input 0. The “use” can be by your central bank or other financial authorities in your jurisdiction depending on the legal arrangements for the control of different tools. Differences in the degree of importance and usage of a tool can stem from, eg, the fact that tools can have a primary, complementary, or supplementary role, or there may be constraints in their usage (say due to lack of policy space). If a tool does not exist or has never been used in your jurisdiction, please input N/A. If a tool was used, please enter a **second** input that states the **direction of use**: – for loosening, and + for tightening. For the purpose of this table, “tightening/loosening” means a change in policy stance that tightens/eases the real and financial conditions in the economy. Examples of tightening include an increase in policy rates; a reduction in domestic or FX liquidity provision; selling bonds and money market instruments (hence raising yields or interest rates); purchasing foreign currency with local currency (hence increasing FX reserves, consistent with the effect of FX intervention on financial conditions); macroprudential measures aiming to reduce credit supply or lower asset price growth; and capital flow management measures aiming to reduce capital inflows or FX exposures. Please feel free to add any clarifying remarks on your tabular responses.

- 4.5 When thinking about the ordering and intensity of use of different policy tools are there any general principles that apply? (*Eg do diminishing returns necessitate the use of additional supplementary tools in the face of larger shocks?*) Does this vary with the nature of the shock or the state of the economy? (*Eg US monetary policy tightening, commodity price shocks or the easing of pandemic-related restrictions?*)
- 4.6 Sometimes, policies that work in seemingly opposite directions may be economically desirable (eg loosening macroprudential tools in a targeted and temporary manner while raising rates). Managing the perceptions of market participants with such a policy mix can be challenging. How can this challenge be managed? Does it affect the choice of tools used? If so, when and how?
- 4.7 In light of the policy mix deployed during the last year, what would be the preferred choice of policy mix when the cycle turns towards lower inflation and easier global financial conditions? (*Eg is the focus likely to be on rebuilding policy buffers or leaning against financial imbalances?*)