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Macro-financial stability frameworks and external financial conditions

Report submitted to the G20 Finance Ministers and
Central Bank Governors

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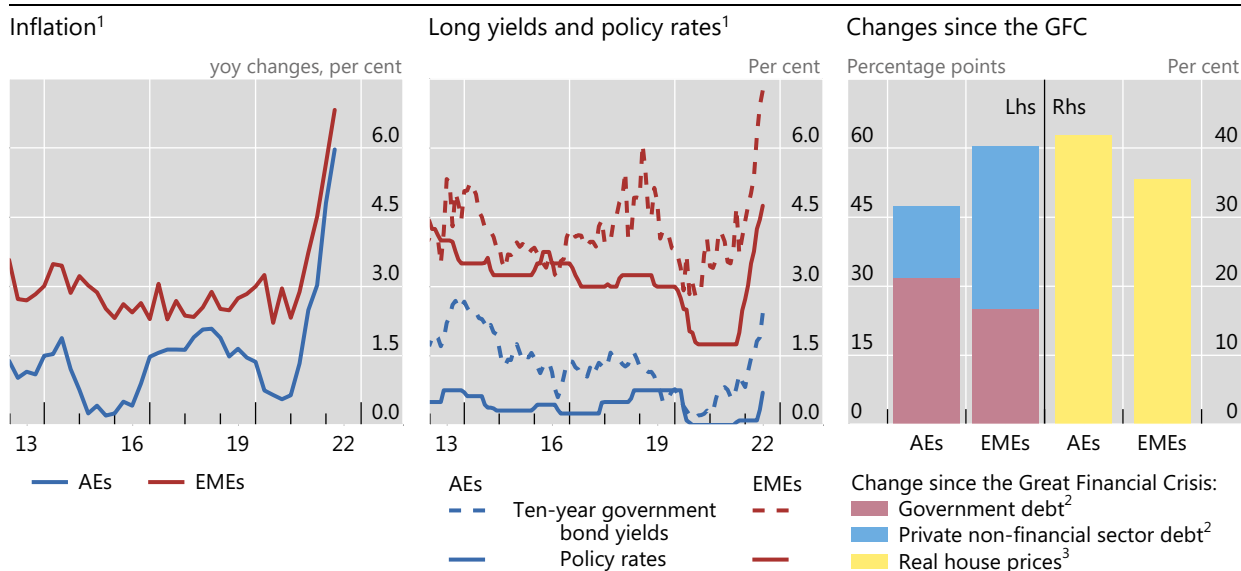
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Introduction

Economies around the world face the unique challenge of taming inflation in the context of tightening global financial conditions and significant macro-financial vulnerabilities (BIS (2022)). In both advanced economies (AEs) and emerging market economies (EMEs), inflation has surged to levels not seen in decades (Graph 1, left-hand panel), raising the risk that a high-inflation regime will become entrenched. Global financial conditions have tightened markedly on the back of higher short- and long-term interest rates as central banks have adjusted their monetary policy stance to fight inflation (centre panel). This tightening occurs against the backdrop of significant macro-financial vulnerabilities as debt levels and house prices have soared over the past decade or so, adding to stagflation risks (right-hand panel).

A perfect storm brewing?

Graph 1



¹ Median of 11 advanced economies (AEs) and 21 emerging market economies (EMEs). ² Median change in the debt-to-GDP ratio since Q3 2008. ³ Median change in real property prices since Q3 2008.

Sources: Bloomberg; national data; BIS; BIS calculations.

While attention is now focused on the challenge of managing short-term macroeconomic risks, the situation also highlights the benefits of preventive macro-financial stability policies to ward off vulnerabilities. Over the past two decades, such vulnerabilities have often built up alongside accommodative global financial conditions, with stress materialising when those conditions suddenly tightened, as in the current episode.

Against this background, this report reviews the key features of a macro-financial stability framework (MFSF) designed to durably safeguard macro-financial stability by mitigating the build-up of vulnerabilities and by accumulating policy buffers, thus

enhancing resilience.¹ The focus is on the challenges from swings in external financial conditions, which have often been a key risk factor for macro-financial stability, in particular for EMEs but also for some AEs. Reflecting these challenges and their implications for the construction of an MFSF, both AEs and EMEs commonly complement monetary and fiscal policies with macroprudential policy (MaPP). In addition, EMEs have given weight to FX intervention as an additional monetary policy tool, and some have adopted capital flow management measures (CFMs).² Also some AEs have recently used CFMs to address developments in real estate markets that were linked to external factors.

The remainder of the report discusses the nature of the challenge for MFSFs from fluctuations in global financial conditions, highlighting the root causes of EMEs' greater vulnerabilities and the resulting policy challenges and trade-offs. It then characterises the different elements of an MFSF and their interactions. The operation of such a framework is illustrated for stylised scenarios, including for the current situation of high inflation and tightening global financial conditions. The report further discusses the conceptual and implementation challenges of an MFSF. Finally, it concludes with the main takeaways.

External financial conditions: the nature of the challenge

In recent decades, external financial conditions have played an important role in driving domestic financial conditions. This is reflected in a high degree of commonality across countries in the dynamics of financial variables (Graph 2, left-hand panel). While financial liberalisation and globalisation have increased access to finance and expanded growth opportunities, they have also led to stronger global financial spillovers. Domestic boom-bust cycles, which have posed a threat to macro-financial stability over the past four decades (Borio et al (2022)), are commonly fuelled by swings in global financial conditions (Borio et al (2011), Avdjiev et al (2012)). The challenge is more acute for EMEs than for AEs because EMEs tend to have less firmly established institutional arrangements and less developed financial markets.³ These structural factors give rise to greater dependence on external funding and make the financial system more susceptible to fluctuations in external conditions.

The greater vulnerability of EMEs to gyrations in external financial conditions has traditionally been linked to unhedged EME foreign currency borrowing. In the 1980s and 1990s, many EMEs experienced financial crises due to their reliance on such borrowing.⁴ After declining substantially thereafter, foreign currency borrowing by EMEs has again surged after the Great Financial Crisis (GFC), driven mainly by corporate sector borrowing in US dollars (Graph 2, centre panel). Foreign currency

¹ For early discussions of MFSFs, see BIS (2004, 2005). Framework concepts proposed more recently include the IMF's (2020) Integrated Policy Framework and Agénor and Pereira's (2019) Integrated Inflation Targeting.

² See BIS (2019, 2020, 2021) for detailed analyses of the challenges of capital flow and exchange rate fluctuations for policy frameworks in EMEs and how the frameworks address these challenges.

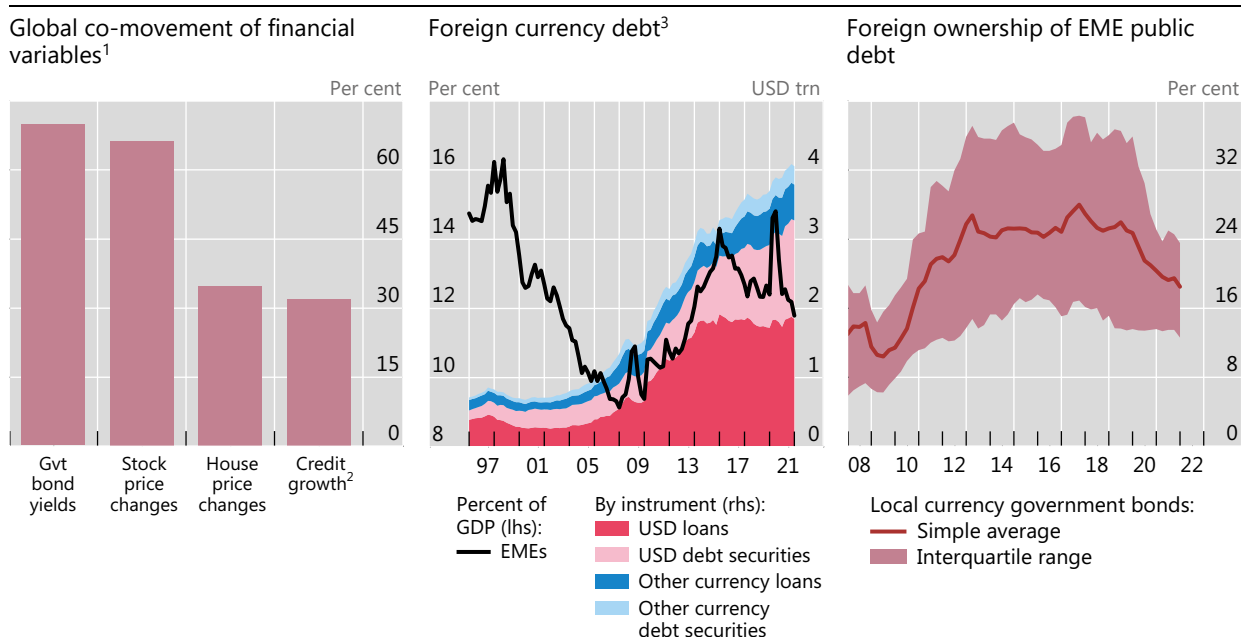
³ For more details, see CGFS (2019), which emphasises in particular the lack of a strong domestic investor base and thin FX hedging markets.

⁴ Eichengreen and Hausmann (1999) refer to this pattern as "Original Sin" because it largely reflected EMEs' inherent inability to borrow from abroad in their domestic currency.

debt transmits global financial conditions directly into the economy. Moreover, FX borrowing is often associated with unhedged currency exposures on borrower balance sheets so that exchange rate fluctuations affect borrowers' credit risk and amplify the effects of global financial conditions.⁵ The impact of fluctuations in the exchange rate is not confined to borrower balance sheets, but also works via domestic and global financial intermediary balance sheets. Specifically, exchange rate fluctuations influence financial conditions more widely by affecting global credit availability through the impact on lenders' balance sheets (Bruno and Shin (2015a, 2015b)).

Sources of EMEs' vulnerability to external financial conditions

Graph 2



¹ Fraction of each variable's variation explained by the global component (first principal component). ² Domestic non-financial private sector debt. ³ Cross-border and local bank loans extended by LBS-reporting banks to EME non-bank borrowers and international debt securities issued by non-banks residing in EMEs. Non-banks comprise non-bank financial entities, non-financial corporations, governments, households and international organisations. For local loans in foreign currency, China enters the sample in Q1 2010.

Sources: Financial Stability Board, *Global Monitoring Report on Non-Bank Financial Intermediation 2021*; IIF; IMF, *World Economic Outlook*; OECD; Datastream; Dealogic; Euroclear; Refinitiv; Xtrakter Ltd; national data; BIS locational banking statistics (LBS); BIS calculations.

Even when external borrowing is not denominated in foreign currency, EMEs remain susceptible to swings in global financial conditions. The deepening of their local currency sovereign bond markets has enabled many EME sovereigns to routinely borrow from abroad in local currency. This is reflected in large foreign investor holdings of EME sovereign bonds (Graph 2, right-hand panel), which are also typically unhedged. Large foreign holdings transmit global financial conditions to EME local currency bond markets through the credit supply from global investors. If the domestic investor base is thin, as is often the case in EMEs, global investor portfolio adjustments can have a large impact. One consequence of greater foreign investor participation in the local currency bond market is that the currency exposure migrates

⁵ While widespread US dollar invoicing in trade means that foreign currency debt servicing costs are often matched by export revenues, the private sector's stock of foreign currency debt is, in many EMEs, much larger than that of foreign assets (Chui et al (2016)).

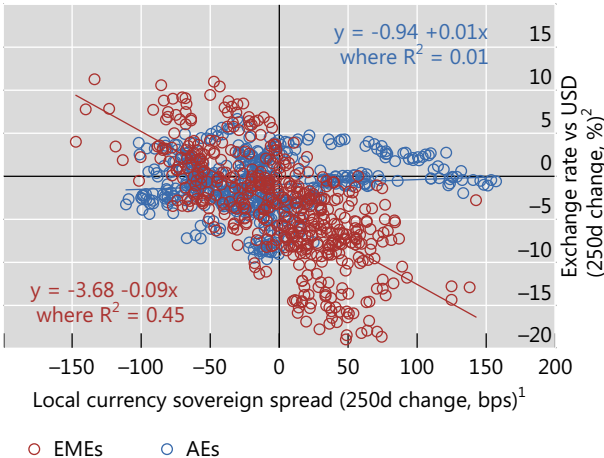
from the borrowers' balance sheets to those of investors. This is because the investors evaluate their gains and losses in their own currency or a global currency, mainly the US dollar, while the assets they hold are denominated in the currencies of the EME borrowers. Exchange rate changes, in particular those of the US dollar, therefore affect the balance sheet valuations of foreign lenders and potentially their supply of credit to EMEs. This gives rise to a broader financial channel of the exchange rate that also influences EME local currency bond markets (Hofmann et al (2020, 2022b)).⁶

These broader vulnerabilities are reflected in the links between exchange rate movements and macro-financial dynamics. In particular, given the above considerations, the US dollar exchange rate is a useful gauge of global financial conditions, with a stronger dollar indicating a tightening in conditions. There is a highly significant systematic negative correlation between changes in the value of an EME's domestic currency against the US dollar and changes in the EME's local currency bond yields (Graph 3, left-hand panel, red bubbles). Exchange rate depreciation is associated with rising EME bond yields (relative to the US Treasury yield benchmark), and an appreciation with falling EME bond spreads. This pattern is absent in AEs (blue bubbles). More generally, the link between the US dollar and EMEs' financial conditions extends to output (right-hand panel). There is a strong negative correlation between the value of the dollar, as captured by the broad US dollar index, and cyclical output in EMEs, while such a link is again absent for AEs.⁷

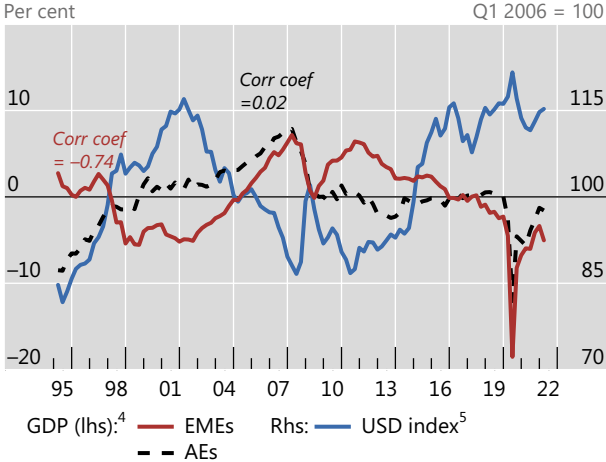
Dollar exchange rate and macro-financial conditions

Graph 3

Dollar exchange rate and sovereign spreads



Dollar exchange rate and economic performance³



¹ EMEs: JPMorgan GBI-EM Broad Diversified index yield spread over the 10-year US Treasury yield. AEs: JPMorgan GBI Global Index (excluding US) yield spread over the 10-year US Treasury yield. ² EMEs: weighted average using the country weights (excluding EG, DO, RO and UY) of the JPMorgan GBI-EM Broad Diversified index as of June 2022. AEs: weighted average using the country weights (excluding US) of the JPMorgan GBI Global index as of May 2022. ³ Correlation coefficients (Corr coef) between GDP and the USD index. ⁴ Percentage deviation from a linear trend of the log median real GDP index within each region. AEs excluding US. ⁵ Federal Reserve Nominal Broad Dollar Index.

Sources: Hofmann and Park (2020); OECD; Bloomberg; Datastream; national data; BIS calculations.

⁶ Carstens and Shin (2019) refer to this enduring vulnerability of EMEs to global financial conditions when borrowing from abroad in their local currency as "Original Sin Redux". For a model-based analysis of the spillover effects of global financial conditions on EMEs under foreign and local currency borrowing from abroad, see Hofmann et al (2022a).

⁷ See Hofmann and Park (2020) for a formal analysis of the link between EME economic performance and the US dollar exchange rate as a risk factor.

Strong susceptibility to global financial conditions creates difficulties for monetary policy, particularly in EMEs, along three main dimensions.

First, it narrows the scope for autonomous monetary policy as EME central banks need to factor the impact of their policy measures on capital flows into the calibration of the monetary policy stance. Since capital flows are influenced by interest rate differentials, this can give rise to spillovers from foreign to domestic policy rates.⁸

Second, global financial spillovers weaken the transmission of monetary policy, hampering the central bank in its efforts to steer the economy by adjusting its policy rate. The financial channel of the exchange rate adds significantly to this weakening effect. As described in the textbooks, the exchange rate ought to reinforce shifts in the monetary stance via the trade channel. For instance, a monetary policy tightening would tend to strengthen the economy's currency, thus dampening output through its negative effect on net exports. But the effects of the financial channel work in the opposite direction. An appreciation of the exchange rate tends to ease domestic financial conditions. Thus, the stronger the financial channel is relative to the trade channel, the weaker is monetary transmission acting through aggregate demand.⁹

Third, swings in external financial conditions may worsen monetary policy trade-offs. The first trade-off – an “intra-temporal” one – concerns the simultaneous stabilisation of inflation and output. It arises because global financial conditions in general, and the exchange rate in particular, could push them in opposite directions. All else equal, a tightening of global financial conditions and the accompanying exchange rate depreciation raise inflation but tend to reduce output. The required monetary policy tightening to quell inflation would shrink output further. The second trade-off – an “inter-temporal” one – is between stabilising inflation today and output tomorrow. Persistently accommodative external financial conditions, together with an appreciating currency, could push inflation below target, while possibly fuelling domestic credit expansion, higher asset prices and the build-up of domestic financial vulnerabilities. An easing of monetary policy to offset the appreciation and its impact on inflation would further fuel domestic imbalances.

Fluctuations in external financial conditions also raise trade-offs for fiscal policy. They do so by fuelling domestic financial boom-bust cycles, which affect fiscal accounts, inducing a more procyclical fiscal policy stance. Fiscal space is typically overestimated in financial booms as fiscal accounts are flattered, possibly putting fiscal policy on an unsustainable track (BIS (2016), Borio et al (2016)). During a bust, fiscal space is then more limited, precisely when it is most needed. Moreover, global financial conditions can directly hamper the countercyclical policy of fiscal policy, particularly in EMEs, by affecting conditions in government bond markets. When global conditions are loose, government financing becomes ample, possibly reinforcing a procyclical policy stance; when global conditions are tight, financing costs can soar and market access can even dry up, reducing the scope for a countercyclical fiscal stance.

⁸ A consequence can be the emergence of a “reversal rate” below which policy rate reductions become contractionary because adverse effects on capital outflows dominate (Cavallino and Sandri (2019)).

⁹ In addition, the trade channel is often further weakened through trade invoicing in a foreign currency, primarily in US dollars. Invoice price stickiness in US dollar terms means that swings in a country's exchange rate against the US dollar would affect imports but not export competitiveness in the short term.

This analysis sheds light on current conditions. For much of the period since the GFC, the main challenge was the conjunction of below-target inflation and easy global financial conditions; the result was a build-up of domestic financial vulnerabilities across many countries. Now, the world is facing strong inflationary pressures while global financial conditions tighten under more restrictive monetary policy, exposing financial vulnerabilities. This greatly complicates the policy challenges, especially in EMEs.

Elements of the framework

MFSFs are designed to safeguard lasting macroeconomic and financial stability. Their purpose is to address interactions between the financial sector and the macro-economy – macro-financial linkages – including those that reflect fluctuations in global financial conditions, capital flows and exchange rates. Going beyond the traditional pillars of macroeconomic policy – monetary and fiscal policy – the distinctive feature of an MFSF is the deployment of MaPP on a robust microprudential base. In addition, MFSFs address challenges from external financial conditions through FX intervention – an aspect of monetary policy – and CFMs.

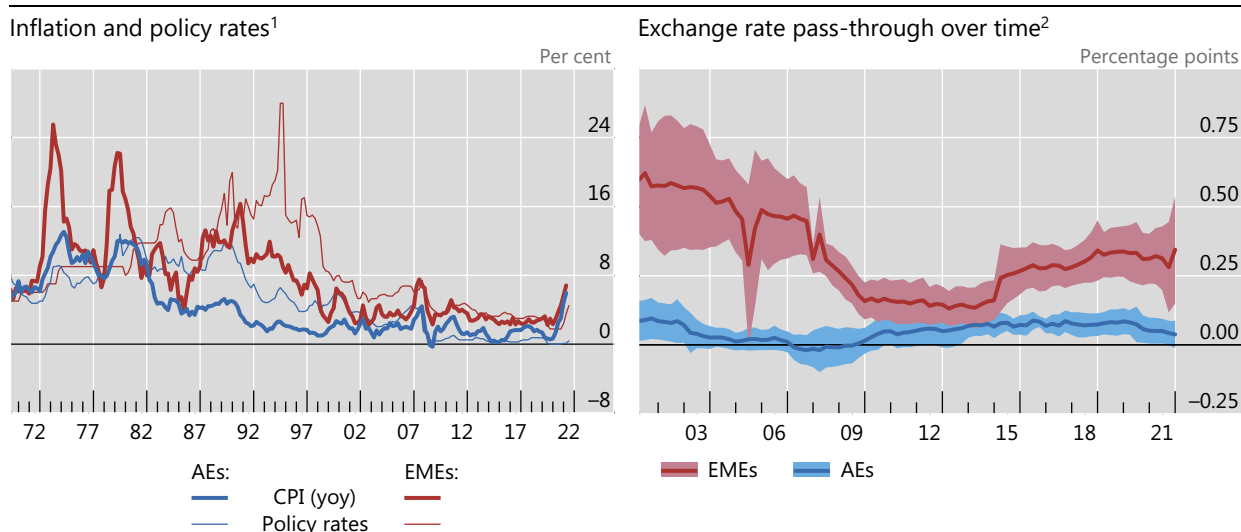
Monetary policy

A key pillar of MFSFs is monetary policy that ensures price stability and limits the incidence and duration of macroeconomic and financial instability.

Price stability in the form of low and stable inflation has characterised recent decades. It prevailed across AEs from the mid-1980s, after the high inflation of the 1970s; in EMEs, the transition to this regime happened later, around the turn of the millennium (Graph 4, left-hand panel). The conquest of inflation was, in both cases, associated with an increase in policy rates above the prevailing inflation, resulting in higher real interest rates. In many economies, the low-inflation regime was bolstered through the adoption of explicit or implicit inflation targeting frameworks, which focused monetary policy on keeping inflation stable around a target while allowing the exchange rate to float. That said, in some countries, fixed exchange rate regimes have been consistent with achieving low and stable inflation.

By safeguarding price stability, monetary policy provides an anchor that makes the economy more resilient. If inflation expectations are well anchored in a regime of stable prices, the economy is better buffered against shocks, including those from global financial conditions and the associated exchange rate fluctuations. In particular, exchange rate pass-through tends to be lower as domestic prices are less sensitive to import price fluctuations and second-round effects are limited. This is supported by empirical evidence on the evolution of the pass-through of exchange rate changes to inflation over time. It has been consistently low in AEs since the mid-1980s, and in EMEs it is lower now than two decades ago (Graph 4, right-hand panel).¹⁰

¹⁰ The pass-through in EMEs is higher than in AEs is partly due to the larger share of tradable goods in consumption baskets, particularly food, owing to lower income levels. More importantly, inflation processes in EMEs are still less anchored than they are in AEs, as reflected in the higher persistence of their inflation rates, which amplify long-run exchange rate pass-through.



¹ Group median. AEs = AU, CA, CH, DK, the euro area, GB, JP, NO, NZ, SE and US; EMEs = BR, CL, CO, CZ, HK, HU, ID, IN, KR, MX, MY, PE, PH, PL, RU, SA, SG, TH, TR and ZA. ² Coefficients are six-year rolling window long-run multipliers from the equation $Inflation_{it} = \alpha_t + \beta_t + \delta Inflation_{it-1} - \sum_{j=0}^3 \gamma_j \Delta NEER_{it-j} + \phi Outputgap_{it} + \varepsilon_{it}$. Sample starts in Q1 1995. For details, see Jašová et al (2019). The ranges indicate the 90% confidence intervals. EMEs = BR, CL, CO, CZ, HU, ID, IN, KR, MX, PE, PH, PL, RU, TH, TR and ZA; AEs = AU, CA, GB, NO, NZ and SE.

Sources: Datastream; national data; BIS calculations.

This highlights the challenge now posed by inflation. The longer the current high inflation rates persist, the greater the risk that inflation will become widely entrenched – shifting from a low-inflation to a high-inflation regime (BIS (2022)). This would again increase the sensitivity of inflation to price shocks, destabilising the economy and worsening the trade-offs faced by monetary policy. To avoid such a regime change, monetary policy needs to be clearly focused on containing inflation and thus will have less leeway to respond to other macro-financial stability risks arising from tightening global financial conditions. The latter would need to be addressed primarily by other complementary MFSF tools.

From a longer-term perspective, safeguarding sustained price stability also means taking into account risks emanating from domestic financial imbalances that often develop on the back of loose global financial conditions. This justifies a policy that has regard to the build-up of financial imbalances. In the longer term, such build-ups could undermine not just financial and macroeconomic stability, but also price stability itself – directly, through a major contraction in economic activity, and indirectly, to the extent that they narrow the room for policy manoeuvre.

The implementation of such a policy presents challenges. Financial imbalances tend to accumulate over longer horizons, often while inflation is low, making it difficult to make the case for monetary tightening. And the challenge is especially complicated in countries that are susceptible to fluctuations in global financial conditions. Raising policy rates when global financial conditions are accommodative may unintentionally loosen already accommodative domestic financial conditions by lifting the exchange rate and attracting additional capital inflows. Thus, complementary MFSF policies through MaPP, FX intervention and CFMs can play a crucial role in such situations.

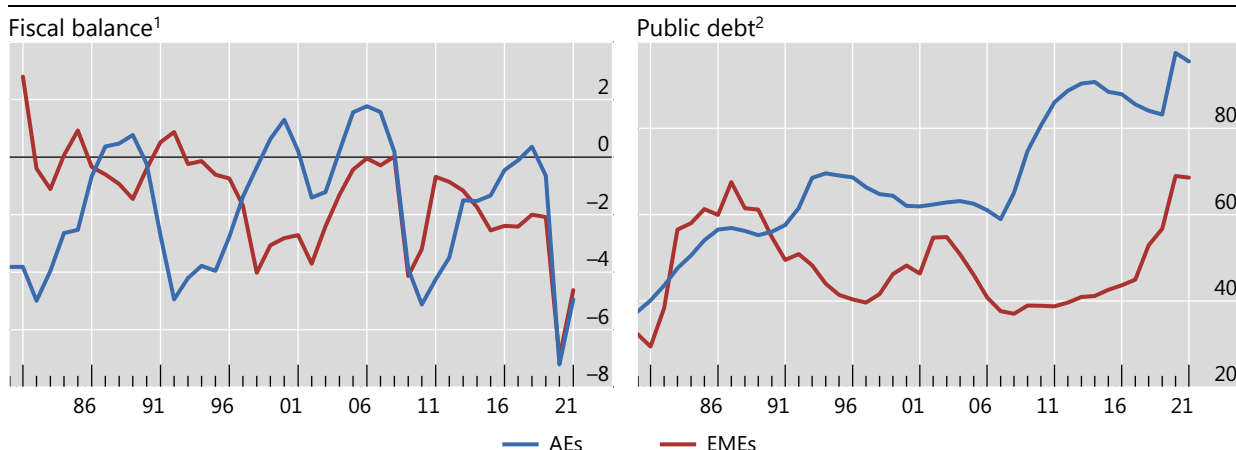
Fiscal policy

Fiscal policy to ensure fiscal sustainability and dampen cyclical fluctuations is another core pillar of MFSFs.¹¹ By ensuring fiscal sustainability, fiscal policy also provides an anchor for MFSFs, particularly for EMEs as they face the challenges from fluctuations in global financial conditions. Fiscal sustainability stabilises expectations and reduces the sensitivity of the economy to swings in global financial conditions. Sustainable public finances fend off concerns of fiscal dominance over monetary policy, helping to anchor inflation expectations and retain the trust of foreign investors. It also keeps at bay the risks of a “doom loop” developing from the two-way interaction between banking sector weakness and unsustainable public finances (BIS (2016)). By ensuring that there is fiscal headroom in the downturn, fiscal sustainability is a precondition if fiscal policy is to play a countercyclical role.

Fiscal deficits and public debt

As a percentage of GDP

Graph 5



¹ Median of 11 AEs and that of 21 EMEs. ² Median of 22 AEs and that of 27 EMEs.

Sources: IMF, *International Financial Statistics and World Economic Outlook*; national data; BIS calculations.

Susceptibility to global financial conditions reinforces the need for countercyclical fiscal policy. When financial conditions are loose, tight fiscal policy is needed to dampen the boom and to build up buffers with a view to mitigating the emergence of financial and fiscal vulnerabilities and to ensuring sufficient fiscal space when conditions tighten. Over the past couple of decades, both AEs and EMEs have displayed a countercyclical approach to fiscal policy, but not in a symmetrical way (Graph 5, left-hand panel). Deficits have often risen significantly in the wake of global business cycle downturns, but have then fallen only gradually, with very rare fiscal surpluses. In particular, EMEs in general have posted persistent fiscal deficits.

This asymmetrical pattern of fiscal deficits is reflected in rising public debt-to-GDP ratios in both AEs and EMEs since the GFC (Graph 5, right-hand panel). EME debt ratios are generally lower than those in AEs, reflecting lower levels of debt-bearing capacity. In both country groups, debt ratios are currently at or near multi-decade

¹¹ Other aspects of fiscal policy are also important from an MFSF perspective, but we do not elaborate on these for the sake of brevity. They include in particular growth-oriented fiscal spending and a tax system that does not incentivise debt financing.

highs, suggesting that significantly higher interest rates in the wake of a surge in inflation may raise concerns about debt sustainability in some countries.

Macroprudential tools

MaPP complements monetary and fiscal policies as an integral element of MFSFs. Macroprudential tools generally target the build-up of domestic financial vulnerabilities.¹² They can thus alleviate the challenges for monetary and fiscal policies by strengthening the resilience of the financial system and by constraining the build-up of financial imbalances, including those fuelled by easy global financial conditions (BIS (2018)). However, they tend to be less effective once stress materialises, especially when they were not sufficiently tightened in advance.

MaPP relies on a wide set of instruments targeting different types of credit and resilience measure. Both AEs and EMEs have implemented a large array of measures targeting specifically housing/household credit or house prices (Graph 6, left-hand panel, red bars). Typical instruments include maximum loan-to-value (LTV), debt service-to-income (DSTI) and debt-to-income (DTI) ratios, and sectoral risk weights in minimum capital requirements. More recently, to bolster resilience and in compliance with Basel III, many AEs and EMEs have introduced countercyclical capital buffers (purple bars).¹³

Some EMEs have used FX-related macroprudential measures (ie monetary, prudential and fiscal policy tools specifically calibrated to FX exposures or the FX liabilities of banks and non-bank financial institutions) mostly designed to operate in a pre-emptive manner during capital inflow periods (Graph 6, left-hand panel, blue bars).¹⁴ Specific examples include reserve requirements on FX-denominated liabilities, FX liquidity ratios and exposure limits, and levies or taxes on highly volatile types of FX balance sheet items.¹⁵

While discretionary adjustments are a typical feature of MaPP measures, the possible built-in stabiliser nature of the tools should not be overlooked (Borio et al (2001)). Discretionary adjustments require policymakers to identify the build-up of vulnerabilities and the emergence of stress; built-in stabilisers do not. For example, dynamic provisions are automatically related to past losses. Low DSTI or LTV limits reduce the elasticity of credit with respect to increases in income and asset prices, respectively. And the valuation of assets can also be made less procyclical, as in the case of the use of long-term mortgage values – as once widespread in continental Europe. The balance between discretionary MaPP measures and automatic stabilisers is an important policy question when implementing the frameworks.

¹² The term “macroprudential” originated at the BIS and was then largely developed there. Crockett (2000) defines macroprudential perspectives and dimensions of financial stability. For a discussion of the evolution of the “macroprudential” concept, see Clement (2010) and Baker (2020).

¹³ Many AEs and EMEs have also introduced systemic risk capital surcharges. These are not to address the build-up of financial imbalances, but to deal with the cross-sectional (or structural) dimension of systemic risk. Purple bars include changes in such surcharges.

¹⁴ This pre-emptive use of FX-related macroprudential measures is in line with the IMF’s recent review of the *Institutional View on the Liberalisation and Management of Capital Flows*, which recognises pre-emptive CFMs of a MaPP nature as useful to EMEs when dealing with swings in capital flows and exchange rates.

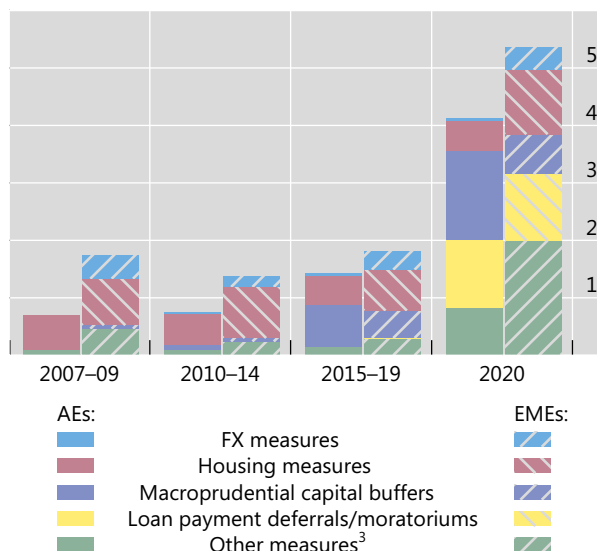
¹⁵ For further details, see Bruno and Shin (2014), Ahnert et al (2018) and Borio et al (2022).

Use of macroprudential and capital flow management measures

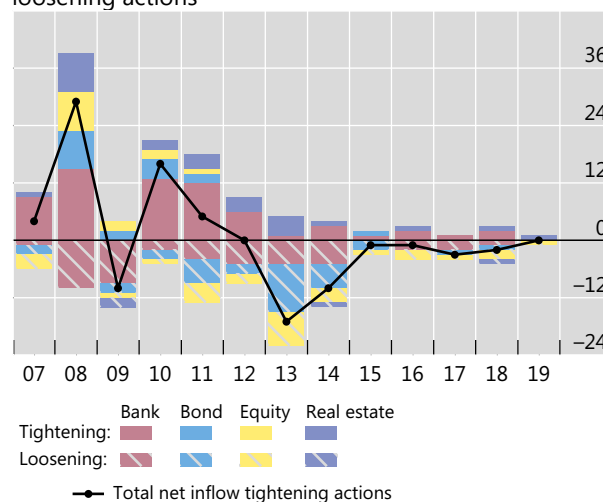
In number of actions

Graph 6

Increased use of macroprudential measures^{1, 2}



Financial stability-motivated CFMs: inflow tightening or loosening actions⁴



¹ Based on 22 AEs and 33 EMEs. ² Average number of actions per year per 10 countries. ³ Includes, among others, changes in loan loss provisioning rules on general credit, and prudential measures on corporate loans and commercial real estate loans. ⁴ Number of new/additional capital flow management measures (CFMs) on capital inflows by eight EMEs: Brazil, China, Croatia, Hong Kong SAR, Indonesia, Korea, Mexico and Singapore.

Sources: Borio et al (2022); IMF, *International Financial Statistics*; national data; BIS calculations.

Empirical studies that have evaluated the impact of MaPP on financial and real activity point to several observations. MaPP appears to have a relatively stronger impact on credit than on asset prices, while the impact of MaPP on GDP growth or inflation seems weak or uncertain. This is a further justification for using such tools to target financial stability risks (Kuttner and Shim (2016), Richter et al (2019)).

More specifically, the tools vary in their effects. Naturally, most of them have proved useful in building buffers and hence the financial system's resilience. That said, they differ in their ability to curb credit growth. In particular, maximum LTV and DSTI ratios have exerted a larger and more discernible effect than, say, countercyclical loan loss provisions or the countercyclical capital buffer (Kuttner and Shim (2016), BIS (2018), Borio et al (2022)).

At the same time, macroprudential measures are largely bank-based, so that they miss out on the growing non-bank forms of financial intermediation. More generally, as for all regulation, they are subject to arbitrage and leakage. They may also be susceptible to certain inaction bias due to the difficulty in modelling financial cycles and predicting their turning points and due to political economy pressures, among other factors (Claessens (2014), Cerutti et al (2015)).

These limitations explain why MaPP tools need to be deployed alongside other policies. As a result, they are best regarded as complements to microprudential and other macro-financial stability policies, rather than substitutes for them. Moreover, they cannot compensate for other (distortive) policies that may also drive booms (eg tax benefits for debt financing, supply restrictions in housing markets etc).

FX intervention

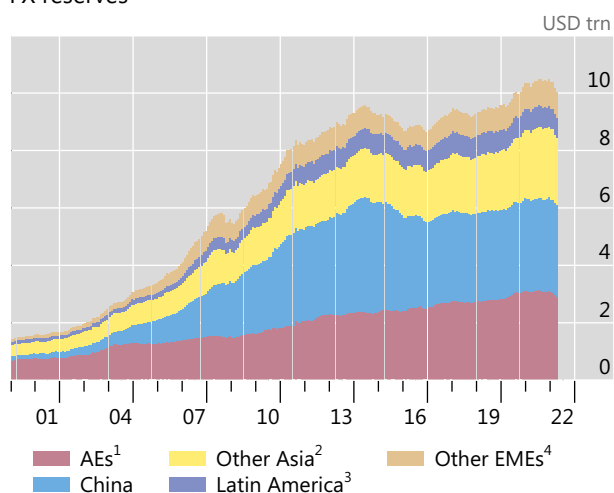
FX intervention as part of monetary policy is an important complementary element of MFSFs, especially for EMEs as they are particularly exposed to the challenges from external financial conditions. FX intervention can play a quasi-macroprudential role. It can serve to build buffers against future outflows and depreciations, as well as to lean against the domestic consequences of fluctuations in global financial conditions. Reflecting this role, FX reserves in EMEs have risen considerably over the past two decades (Graph 7, left-hand panel).¹⁶

FX intervention helps tackle the challenges from swings in global financial conditions in three main ways. First, through its effect on the exchange rate, it can directly counteract exchange rate swings that would have undesired effects on financial conditions, inflation and economic activity. In doing so, it secures a greater degree of autonomy for monetary policy and creates an additional degree of freedom by taking some of the burden off interest rate policy.¹⁷

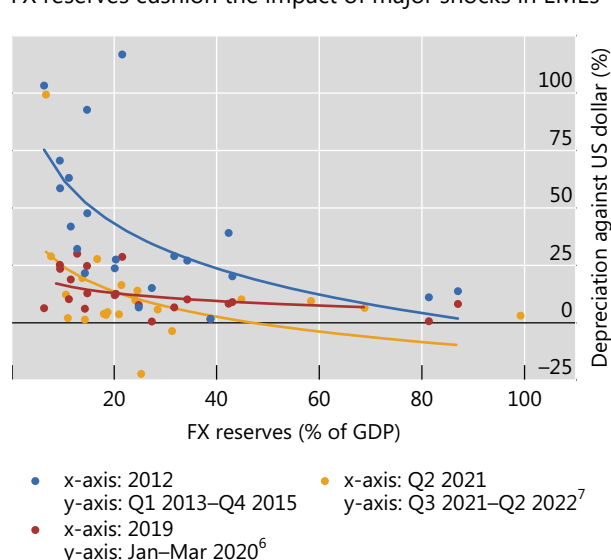
FX reserve buffers

Graph 7

FX reserves



FX reserves cushion the impact of major shocks in EMEs⁵



¹ Australia, Canada, Denmark, the euro area, Japan, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States. ² Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. ³ Argentina, Brazil, Chile, Colombia, Mexico and Peru. ⁴ The Czech Republic, Hungary, Poland, Russia, South Africa and Turkey. ⁵ Based on 21 EMEs. ⁶ 23 March 2020 versus 1 January 2020. ⁷ Latest versus 1 July 2021.

Sources: IMF, *International Financial Statistics and World Economic Outlook*; Bloomberg; BIS calculations.

Second, it provides self-insurance against potential large future depreciation, thereby serving as an integral part of a country's financial safety net. There are

¹⁶ Intervention strategies, tactics and instruments have varied considerably over time and across countries. The most common form remains intervention in spot markets. For more details, see Box II.A in BIS (2019) and Cavallino and Patel (2019).

¹⁷ Whether such FX intervention, unaccompanied by policy rate changes, can affect exchange rates at all has long been questioned. New theoretical contributions have shown that it can be effective under realistic assumptions about the functioning of financial markets (Gabaix and Maggiori (2015)). Empirical evidence is consistent with these findings (BIS (2019)).

indications that FX reserve buffers helped mitigate the effect of recent episodes of global financial stress on EME exchange rates. For instance, in the wake of the taper tantrum between 2013 and 2015, the Covid-related turmoil in 2020 and also during the recent tightening of global financial conditions, EMEs with larger reserve buffers experienced smaller currency depreciations (Graph 7, right-hand panel).

Third, FX intervention can counteract the spillovers from global to domestic financial conditions. Working through the financial channel of the exchange rate, FX purchases can limit the mutually reinforcing feedback loop between exchange rate appreciation and easing financial conditions that fuels domestic credit creation. At the same time, the sterilisation leg of FX intervention may help mute domestic credit expansion, to the extent that the sterilisation instruments on banks' balance sheets "crowd out" lending. Conversely, when global financial conditions tighten, FX sales can dampen exchange rate depreciation and its financial repercussions.¹⁸

Central banks face trade-offs when using FX intervention. The fiscal cost of carrying FX reserves can be considerable, especially when the interest rates of reserve currencies are very low and domestic rates are high. Moreover, in the longer run, such interventions may discourage the development of hedging markets and other domestic financial markets and encourage currency mismatches, making economies more vulnerable. How far to accumulate precautionary reserves and use FX intervention will depend on a cost-benefit analysis, which will vary across countries and over time.

Besides intervening in the FX market, MFSFs can also involve balance sheet operations in the domestic currency. While in AEs they have been used mainly as a tool to provide additional monetary accommodation through large-scale asset purchases, EMEs have applied them to address short-term dysfunctions in the financial system with the aim of ameliorating financial stress when global financial conditions tighten. Many EME central banks provided liquidity to domestic banking systems in response to both the GFC and the taper tantrum. Several also added targeted and temporary local currency bond market interventions to their toolkit to address the risk of market dysfunctionality as global financial conditions tightened in the wake of the Covid pandemic in 2020.¹⁹

Capital flow management measures

CFMs can also form part of an MFSF to complement MaPP and FX intervention in addressing the challenges from global financial conditions. To maintain financial stability, some EMEs have used CFMs to target banking, bond, equity and real estate inflows. For example, the right-hand panel of Graph 6 shows that, over time, the actions of eight EMEs have tended more to tighten banking inflows and real estate investment inflows than to loosen them. Moreover, these EMEs have deployed more tightening CFMs than loosening measures during strong capital inflow periods, and more loosening than tightening CFMs during strong outflow periods. Some AEs have also introduced CFMs to tame the risks from volatile foreign investment in their domestic real estate markets.

¹⁸ For formal evidence, see Hofmann et al (2019).

¹⁹ See Arslan et al (2020) for details and empirical evidence on the effectiveness of the programmes.

Empirical studies generally find that financial stability-oriented CFM tools and FX-based prudential tools are sometimes effective in slowing down the targeted flows (Bruno et al (2017)). However, they also find that these effects tend to be temporary, and leakages or circumventions abound. Therefore, CFM tools are often used when other policies do not sufficiently address the risks caused by capital flows.

From elements to frameworks

The design and operation of MFSFs is determined by structural as well as cyclical factors. Certain macro-financial fundamentals and country circumstances can give rise to a greater emphasis on specific elements of the framework viewed from a portfolio perspective.

For example, weakly anchored inflation expectations would require monetary and fiscal policies to focus more strongly on, respectively, price stability and fiscal sustainability. High household or corporate leverage would strengthen the case for deploying or activating MaPP to limit the build-up of financial imbalances and to relieve monetary policy. Where the domestic financial system is more susceptible to global financial factors, a greater role would generally be given to complementary tools such as FX intervention, MaPP and CFMs. High levels of FX debt would prompt the use of MaPP to limit FX borrowing, FX intervention to dampen exchange rate fluctuations and their associated balance sheet effects, and possibly CFMs to manage FX credit flows. Shallow local currency bond markets, in which foreign investors play a prominent part, would indicate that FX interventions should be conducted, with the aim of counteracting the financial channel of the exchange rate and more broadly the effects of fluctuations of global financial conditions on the domestic financial system. Bond purchases by the central bank could also be indicated, to preserve market functioning when global financial conditions tighten.

While an economy's susceptibility to global financial conditions is not necessarily related to the existence of a large current account deficit, such a deficit may be perceived as indicating unsustainable economic developments. This could lower the risk threshold for foreign investors and increase an economy's sensitivity to tighter global financial conditions. The resulting vulnerabilities may reinforce the scope for strong pre-emptive policies, through monetary and fiscal tools as well as complementary measures, when global financial conditions are loose.

Illustrative examples

The practical implications of the above considerations can be illustrated by three stylised country cases, to show the spectrum of options. In Graph 8, the relative weights received by elements of the MFSF are indicated by the depth of the colour of each cell, with each row corresponding to the portfolio of tools employed in the country case.


Country A has well anchored inflation expectations, sound fiscal and current account positions and deep financial markets, but has economic and financial vulnerabilities due to its high levels of household debt. Country B has well anchored inflation expectations, sound fiscal and current account positions and a moderate level of domestic debt, but its domestic bond market and the FX market are shallow. In addition, its financial sector is more susceptible to changes in global financial

conditions by displaying greater sensitivity to global factors. Country C has weakly anchored inflation expectations, weak fiscal and current account positions, high sensitivity to global financial conditions stemming from heavy foreign currency indebtedness and shallow financial markets.

Illustrative examples of macro-financial stability frameworks

Graph 8

	Illustrative country characteristics	Monetary policy	Fiscal policy	MaPP	CFM	FX intervention
Country A	Inflation well anchored; sound fiscal and current account positions; high household debt; low exposure to global liquidity; deep financial markets					
Country B	Inflation well anchored; sound fiscal and current account positions; moderate domestic debt; high exposure to global liquidity; shallow financial markets					
Country C	High inflation; weak fiscal and current account positions; moderate domestic debt but high FX debt; shallow financial markets					



 Note: darker blue indicates greater weight under the framework

The above considerations suggest the following MFSF setup for the three country examples focusing on relative weights of different tools in the framework.

In Country A, sound monetary and fiscal policies provide the basis for macro-financial stability. However, due to high levels of household debt, swings in global financial conditions can pose risks to financial stability. To address this challenge, Country A’s policy framework would put special emphasis on MaPP to mitigate the risk of domestic financial imbalances building up. Since Country A has deep financial markets that can efficiently cushion spillovers from global liquidity, there is little need for FX intervention or CFMs.

Country B’s framework is also based on sound monetary and fiscal policies. The country relies on MaPP, given that its high susceptibility to global financial conditions and associated domestic spillover effects raise the risk of financial imbalances developing, even if domestic debt levels are moderate. In the light of shallow financial markets and high exposure to global liquidity, the framework also prominently features FX intervention to counteract the financial channel of the exchange rate. Country B’s framework might also comprise CFMs to address challenges from swings in global financial conditions.

Country C is the most vulnerable to swings in global financial conditions given its high inflation history and weak fiscal positions. Its policy framework should put particular emphasis on securing sound monetary and fiscal policies since no complementary tool can substitute for them. MaPP, to address financial stability risks from currency mismatches, and FX intervention, to dampen the financial channel of the exchange rate operating through FX debt and shallow bond markets, can provide support and breathing space for monetary and fiscal policies. Country C’s framework might also include CFMs to complement the other tools.

In view of the challenging global macro-financial conditions currently, it is instructive to consider how the operation of MFSFs would help in a scenario of

surging inflation and tight global financial conditions. In such a situation, monetary policy will need to focus on maintaining price stability and avoiding a shift from a low- to a high-inflation regime. The scope for monetary accommodation to cushion the impact of tight global financial conditions would be limited as monetary policy would instead need to be tightened to contain inflation. At the same time, tighter monetary policy may help to stem capital outflows and shore up the exchange rate. Also fiscal policy would need to adopt a tighter stance to support monetary policy when reining in inflationary pressures. These considerations mean that complementary policies would have to take a more prominent role in dealing with the undesirable effects of tighter global financial conditions.

At the same time, the current situation highlights the importance of building buffers in good times. This means the holistic deployment of policies within an MFSF with a view to reducing the build-up of imbalances and mitigating the economy's vulnerability to a turn in conditions and the associated shrinkage of policy headroom. In general, when global financial conditions are loose and inflation is still at a relatively low level, national authorities can build up their fiscal and FX buffers as well as take measures to prevent financial imbalances in credit and asset markets.

Conceptual and implementation challenges

While the key elements and operational features of MFSFs are clearly identified, important conceptual and implementation challenges remain. From a conceptual perspective, a fully fledged analytical framework to guide the implementation of MFSFs is still in the process of being developed. Such a framework could provide a holistic analytical perspective to guide the calibration of the individual tools, taking into account complementarities, overlapping economic effects, and cost-benefit considerations. Efforts under way in academia and by international organisations, in particular by the BIS (BIS (2019)) and the IMF (Adrian and Gopinath (2020), IMF (2020)), focus on closing the gap. There is much common ground in the various initiatives, as reflected in a broad-based agreement on the general analytical approach.

The analytical framework should capture the broader nature of global macro-financial interlinkages and channels of financial risk-taking beyond borrower currency mismatches in global financial spillovers. The concept of risk, particularly the risk associated with swings in global and domestic financial conditions, would have a prominent role in the framework. Finally, the framework should also cover all relevant elements of MFSFs as well as their interactions. At present, the development of a full quantitative analytical framework that could be used for the calibration of the various policies is still in progress.²⁰

Conceptual challenges also pertain to the methods for assessing and identifying the build-up of risks and of vulnerabilities in real time and for linking these to models for policy analysis. This will involve refining methods to assess the sustainability of

²⁰ Cavallino and Hofmann (2022) set out a small open-economy model incorporating key features of EMEs' economic and financial structure: high exchange rate pass-through to import prices, imperfect pass-through to export prices and shallow financial markets. The interplay between financial and macroeconomic stability gives rise to intra- and intertemporal trade-offs for monetary policy, which justify the deployment of additional policy tools to address them.

private sector and FX leverage, whether FX debt is associated with widespread currency mismatches, and the sensitivity of the domestic financial system to global financial conditions. It will call for analysis on the microstructure of local currency bond markets and the role played by foreign investors. Besides methods and models to quantify the implications of observed vulnerabilities, policymakers will need to assess how adjustments in MFSF tools could impact the risk outlook. In other words, a holistic perspective is needed that cuts across both policy tools and analytical tools.

While the potential gains from integrating the different policies and tools in an MFSF can be sizeable, in practice such integration is constrained by a number of implementation challenges.

First, the different temporal dimensions of the various policies limit the extent to which synergies across instruments can be realised (Borio and Disyatat (2021)). Differences in policy horizons limit the trade-offs considered in formulating policy, and differences in the frequency of instrument adjustments limit the degree to which policies can be coordinated. In particular, macroprudential measures typically have a long policy horizon and large implementation lags. Given their regulation-like nature, instrument adjustments are generally few and far between. For these reasons, macroprudential policy can often be regarded as a given when other policies are used to deal with shorter-term challenges. Monetary policy, by contrast, is best placed to accommodate other policies. This is primarily because of the flexibility of the tools at its disposal. While its policy horizon is squarely medium-term, it can take into consideration the slower-moving developments that underlie financial stability concerns or support financial markets during crises. As the “residual policy”, the downside is that monetary policy may end up under greater pressure to compensate for other policies if they do not gain sufficient traction or are underutilised.

A second complication concerns the control over the instruments, which is generally dispersed across different authorities. For very good reasons, monetary and fiscal authorities are generally kept separate, not least to ensure central bank independence. And while central banks are typically in charge of FX intervention, they often have no direct control over prudential tools: they may or may not have responsibility for microprudential regulation and supervision and may have only co-responsibility for macroprudential regulation. It remains a challenge to design appropriate coordinating mechanisms with strong institutional safeguards that respect the assignment of different responsibilities.

Finally, operating a framework with multiple tools and multiple objectives raises major communication challenges. Clear communication about policy objectives, frameworks, rules and decisions is generally seen as a key factor boosting the credibility and accountability of policy regimes. Yet outlining a communication strategy with multiple tools and objectives is particularly challenging, especially when managed by different authorities. In such cases, authorities could benefit from frequent cross-referencing of decisions. The context, scope and objective of each decision should also be clearly explained, to lessen the risk of sending mixed signals. This is especially important when different tools are used to achieve objectives at different horizons, given that they may not always act in the same direction. In addition to boosting credibility and accountability, clear and active communication about policy rationales and intentions also matters for the effectiveness of specific measures and strategies.

Conclusion

Economies around the world currently face the extraordinary challenge of dealing with surging inflation and tightening global financial conditions amid elevated financial vulnerabilities, including high levels of private and public debt and inflated house prices. With the hands of monetary policy tied with the overriding priority of bringing inflation under control, the brunt of dealing with the financial consequences falls on other policies. The current challenge is to address the macro-financial vulnerabilities that have built up over the previous decades. It highlights the importance of an MFSF designed to limit the emergence of those vulnerabilities and their consequences.

This report has outlined the key features of MFSFs that could durably safeguard macro-financial stability, with a particular emphasis on how to deal with the risks linked to ebbs and flows in global financial conditions. These fluctuations raise specific challenges when financial systems are shallow and dependence on foreign funding is high, as is typically the case in EMEs. The vulnerabilities go beyond borrowers' currency exposures, as broader effects operate through the risk-taking capacity of global investors and lenders.

MFSFs combine monetary, fiscal and macroprudential policies with FX intervention and CFMs within a holistic framework. The aim is to prevent the interaction of macroeconomic and financial forces from derailing the economy and undermining macroeconomic and financial stability. These interactions give rise to intratemporal challenges – stabilising output and inflation simultaneously – as well as, importantly, intertemporal ones – reconciling stability today with stability tomorrow. Meeting these challenges requires preventive macro-financial stability policies to ward off vulnerabilities and to build policy buffers in good times so that they can be drawn down in bad times. Relying on the full array of policies is essential to achieve a balanced approach and to avoid overburdening individual ones. FX intervention, as well as specifically designed MaPP measures and CFMs, will be especially helpful in addressing the consequences of evolving external financial conditions.

MFSFs continue to face conceptual and implementation challenges. In forging an overarching policy decision-making process so that all available instruments are consistently set, a number of challenges remain to be tackled. In particular, a fully fledged quantitative framework that could be used for the joint calibration of the various tools and the assessment of risks is still in the process of being developed. At the same time, while integrating the various tools in a unified framework remains the ideal, constraints on the practical implementation of such a framework limit the degree of integration achievable.

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