

SECTION 3

POLICY MEASURES AND FRAMEWORK IN ADDRESSING MACRO-FINANCIAL IMPLICATIONS OF VOLATILE CAPITAL FLOWS

A. Macro-Financial Vulnerability Challenges of Volatile Capital Flows

The rapid growth of bond funds that reflects higher corporate dollar debt issuance since the GFC has also been accompanied by bouts of market turbulence. The severe dysfunction of even core bond markets in March 2020 seems to have given new urgency at the international level to tackling the issue of less regulated institutions intermediating cross-border capital. Central banks from larger EMs have been active in these policy deliberations at the Financial Stability Board. One specific topic of particular interest is the development of new macroprudential tools to discourage the risky borrowing strategies of non-financial companies, notably in the issuance of dollar bonds in international markets. A related issue concerns the risks taken by local institutional investors which seek to boost returns on their dollar portfolios by investing in EM corporate debt including state-owned firms.

Policy frameworks need to take the procyclicality of regulation into account. The capital and liquidity ratios imposed by regulation on banks need to consider the risk that global financial conditions could deteriorate more than expected – especially if new international rules on bond funds are introduced when US dollar yields in benchmark markets are rising. US dollar borrowing by state-owned companies requires particular attention. Corporate reports of private but listed companies need to include details of the exposures arising from their financing operations, particularly in terms of maturity or currency mismatches, off-balance-sheet exposures and so on.

The perimeter of macroprudential policies to address currency and maturity mismatches will have to be extended to capital market finance. Indeed, macroprudential policies in borrowing countries have had much success in limiting the foreign exchange exposures of domestic banks.

In principle, US dollar lending by banks to firms which do not have commensurate US dollar earnings has been discouraged by regulators. The big gap in macroprudential policies worldwide, however, is that they do not cover the risks from excessive leverage as well as currency and maturity mismatches created by capital market finance. This shortcoming has concerned policy makers for some time. A former Vice-President of the European Central Bank, for instance, warned some years ago that new financial crises would be inevitable unless macroprudential policies covered capital markets more effectively (Constâncio, 2017). New macroprudential measures, such as countercyclical liquidity buffers, and a comprehensive adjustment of existing tools could bolster the resilience of the bond fund sector (Lewrick and Claessens, 2021).

Repeated turbulence in international bond markets accentuates monetary policy dilemmas. At the onset of the pandemic in 2020, many EMs faced the classic quandary of how to ease monetary policy to counter a recession without triggering a large currency depreciation which might cripple companies with foreign currency debts. Cutting the policy rate beyond a certain point in such circumstances might be contractionary because of the damage done to corporate balance sheets. This is akin to the reversal rate of Brunnermeier and Koby (2019) whereby ever lower or negative short-term rates damage the earnings of banks and thus nullify the desired expansionary effect.

Policy responses in EMs during COVID-19 have broadened to interventions in domestic bond markets. The drawback is that the greater importance of EMs local currency bonds in the portfolios of foreign investors has also increased the foreign exchange market/bond market feedbacks, magnifying the domestic consequences of external financial shocks. Foreign investors learnt from the 2013 taper tantrum that an EMs currency crisis often goes together with a bond market crisis (Carstens and Shin, 2019). Foreign investors without foreign exchange hedges are thus doubly exposed. The strategy followed by several central banks including Indonesia and the Philippines was not to lower the policy rate in order to protect the currency, but rather to buy government bonds at the same time. In some countries, new legal charters were introduced to allow the central bank to buy public and private securities in secondary markets. Many central banks used quantitative easing (QE) without reaching the zero lower-bound on interest rates. This change in monetary policy implementation has favoured more government borrowing (Forni, 2020). The remarkable development of

local financial markets, often with a deeper local investor base, has given EM central banks new possibilities for balance sheet policies. Foreign investor demand for government bonds denominated in local currency was stimulated by a decade of low yields on advanced economy government bonds.

Measures to remove the tail risk of a bond market collapse promotes resilience in the domestic financial system because bonds serve as a safe asset for banks and as reliable collateral for borrowing. The larger stock of government bonds and other financial assets which were traded in open markets, nonetheless, means that central bank asset purchases can be more ambitious. In addition, credit easing can be supported by official measures, such as regulatory relaxation— offering investors hedges which put a floor under future bond prices, to encourage local banks and other domestic investors to buy government bonds that foreigners were selling. They also reassure foreign investors, and so support the exchange rate. This challenges the orthodox view that QE tends to weaken the exchange rate. The sharp rises in EMs bond spreads in March 2020 was decisively reversed, exchange rates appreciated, and many corporates took advantage of favourable financing conditions to issue more dollar bonds. How well QE works in practice depends on the quality of domestic macroeconomic policies. The underlying fiscal position is key. Also important is confidence that a credible central bank will keep inflation well anchored. For EMs that implemented QE measures during the onset of COVID-19 pandemic in March 2020, assessing the effectiveness of QE should, likewise, consider the impact of large-scale quantitative easing in major advanced economies (Rhee, 2022).

B. Exchange Rate Amplification and Foreign Exchange Intervention¹²

The role of the exchange rate in EM SOFIEs as an amplifier in the face of capital outflows is an important consideration towards a policy of exchange rate intervention to limit excess exchange rate volatility and to smooth

¹² Foreign exchange intervention (henceforth FXI) is any financial operation of the central bank entailing a purchase (sale) of a foreign currency denominated asset and a sale (purchase) of a local currency asset (Adler and Mano, 2021). In line with previous studies and given the limited availability of public FXI data for SEACEN economies, this section relies on a proxy based on changes in end-of-period net foreign asset (NFA) position, the data of which is made available by Adler and Mano (2021).

the impact on currency mismatches on balance sheets. Such balance sheet mismatches and financial amplification effects are due to the behaviour of market participants (both investors and borrowers in foreign currency) who do not internalise such risks that may, on aggregate, become systemic. In particular, actions by individual investors to unwind their positions during the crisis can have a significant amplifying impact on the exchange rate, worsening the balance sheet pressures.

Building FX reserves during good times, when capital inflows are strong, and drawing them down to lean against depreciation pressures during capital flow reversals can serve as an important macroeconomic management tool for EM SOFIEs. Overvalued exchange rates during cyclical booms increase the risk of a financial crisis and intervening to counter large currency misalignments can therefore reduce financial risks. This can help cushion the impact of capital flows on the exchange rate, especially when FX spot and derivatives markets are not very deep and liquid, while depreciation pressures on the exchange rate from spillovers during global risk-off sentiment can be mitigated by having adequate reserve buffers, whereby the central bank may act as a *lender of last resort* to banks with US dollar debts — to the extent that its foreign reserves are adequate to cover such drains. Combining such an FX intervention policy along with exchange rate flexibility is consistent with any necessary adjustment of the real exchange rate. In addition, preserving exchange rate flexibility serves to remind the private sector of the need to manage FX risks. This can go against incentives to unhedged borrowing in FX, while limiting currency mismatches.

The orthodox view is that FXI in the face of inflows is justifiable to accumulate foreign reserves if reserves are not adequate, the exchange rate is overvalued, and FXI can limit excessive exchange rate volatility. However, strictly adhering to such a rulebook can pose several practical challenges for policymakers. The depth and breadth of EM SOFIEs' FX markets, despite having seen rapid development, remain relatively shallow compared to the scale and leverage embedded in the capital flows from a diverse set of investors, issuers, and instruments. EM Asia SOFIE central banks often intervene during inflow surges to counteract speculative capital inflows from cyclical investors which are only loosely connected to economic fundamentals and are much more likely to lead to sudden stops or even reversals. Indeed, the financial channel of amplification through sudden stops and unwinding of unhedged exposures during periods of financial

stress, both from investors and issuers, can lead to significant volatility and sizeable depreciation of the exchange rate. Therefore, the adequacy of buffers can be easily put to the test.

FX interventions in EMs Asia are often used as part of the policy mix.

The main motivation is to build FX reserves as a buffer against shocks and to manage exchange rate volatility from global factors, given shallow FX markets. Some central banks highlight that they participate in the foreign exchange market only to ensure orderly market conditions and reduce excessive short-term volatility of the exchange rate. But traditional monetary policy tools may prove to be less effective during stress periods when tail risk materialises in the form of capital flight, including selling pressures from foreign investors who may want to exit the domestic bond market, notably through redemptions in the bond funds.

There are several potential explanations for the frequent use of FXIs among EM SOFIEs, which are:

- To build FX reserves as well as to manage exchange rate volatility from global factors;
- To counter the pass-through effects of exchange rate movements to inflation or deflation;
- To counteract speculative capital inflows which are only loosely connected to economic fundamentals and are much more likely to lead to sudden stops or even reversals;
- To mitigate exchange rate volatility, notably during times of depreciation pressures;
- To prevent a spiral of currency depreciation and expectations of further depreciation;
- To mitigate amplification from balance-sheet mismatches (i.e., currency and maturity mismatches) of the corporate sector by countering sharp movements in the exchange rate, particularly those that involve sharp depreciations; and,
- To provide liquidity to shallow FX markets.

While the debate on the effectiveness of FXI is far from settled,¹³ cross-country studies and our research work have mostly found that FXIs have transitory effect on the exchange rate. In this regard, Box 2 below provides evidence on the effect of FXI in an ASEAN economy using the case of Thailand. Other stylised facts on FXIs in ASEAN based on FXI proxy data include:

- Foreign exchange intervention has a transitory effect;
- FXIs are also driven by the objective of monetary, exchange rate and financial stability;
- FXIs are often used as part of the policy mix;
- FX currency purchases are frequent and often take place in clusters;
- Motivations could include building FX reserves as well as managing exchange rate volatility from global factors;
- While the average volume of FXI is about US\$2.3 billion,¹⁴ there is wide variation across the spectrum of countries within SEACEN economies – countries with more liquid and deeper financial markets tend to be at the higher end of the spectrum; and,
- The degree of sophistication and development of the FX market may determine the volume of FX interventions.

The benefits of FXI need to be weighed by the corresponding fiscal costs. The greater the wedge driven by the substitutability between domestic financial assets in SEACEN economies relative to financial assets sold in global financial markets because of capital flow management measures (e.g., residency and currency-based FX measures), the greater the inherent fiscal costs as investors will demand a higher premium for holding financial assets issued in SEACEN economies.

¹³ Varying results on the impacts and effectiveness of FXI intervention can be attributed to different empirical specifications including variables considered, methodologies, data sources as well as sources of shocks and country-specific characteristics.

¹⁴ Based on calculations using the FXI proxy data of Adler and Mano (2021).

Box 2: Effectiveness of Foreign Exchange Intervention (FXI) in Thailand

(Victor Pontines, The SEACEN Centre)

While the Bank of Thailand does not disclose data on its FXI operations, to the best of our knowledge, Thailand is the only ASEAN economy that makes their high frequency (i.e., weekly) data on foreign currency reserves publicly available (with a short lag). This provides us with an opportunity to empirically approximate, on a high-frequency basis, the effectiveness of FXI in Thailand using a proxy, which is the change in weekly foreign currency reserves. This comes with the caveat that the proxy will likely have a certain degree of noise mainly from valuation changes.

In conducting this exercise, we rely on the method proposed by Barnichon and Brownlees (2019), which they refer to as smooth local projections (LP). The method aims to improve the accuracy of impulse responses coming from a regular LP that was earlier introduced by Jorda (2005). As pointed out by Barnichon and Brownlees (2019), impulse responses estimated by regular LPs often have large variability. In their work, the smoothing is done using a statistical technique called B-spline base matrix, and the smoothed impulse responses are obtained using generalised ridge regression.

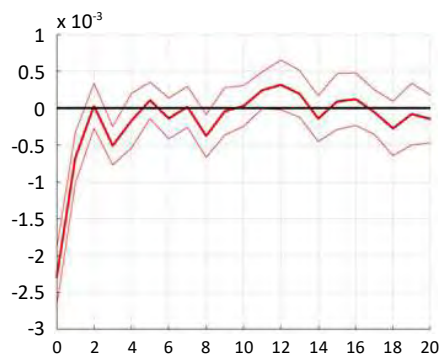
To proceed, a three-variable structural vector autoregression (SVAR) comprising of the movements in the Thai baht/US dollar exchange rate, our proxy for FXI and the policy rate was estimated in this particular ordering with the shocks identified by timing restrictions using the Cholesky decomposition, which is in line with the original proposal by Jorda (2005). The period of estimation was from 31 May 2000 to 22 January 2021. The weekly data were sourced from CEIC.

The result suggests that a significant and temporary effect of FXI on the changes in the exchange rate lasts for up to two weeks.¹⁵ Figure B2 presented below depicts the responses of the change in the Thai baht/USD exchange rate to a shock in FXI over a trading horizon of 20 weeks.

¹⁵ We do not examine here the effects of FXI on the volatility of the Thai baht/USD exchange rate.

This finding of a temporary appreciating effect is not new. In those studies that found a significant effect of FXIs on the exchange rate for individual Latin American countries, the presence of temporary effects that last for several weeks was also found (Chamon et al., 2019). Similar findings were obtained by Pontines et al. (2021) and Pontines (2018). Because our estimates are linear, FX currency purchases (to depreciate the domestic currency) have the same mirror-image effect compared to FX currency sales (to appreciate the domestic currency). Moreover, the estimated impulse responses are stable in view of their convergence to the zero line. This evidence is robust to alternative orderings of the SVAR.

Figure B2: Impulse Responses of Changes in Thai baht/US Dollar Exchange Rate



Note: The light solid red lines denote the 90% confidence interval.

Source: Author's estimates.

C. Anchoring the Policy Framework and Tools on Welfare Theoretical Arguments

The pivot towards sustainability and the paradigm shift to environmental, social, and governance (ESG) considerations is reshaping the contours of public policy making as much as it is driving global capital allocation. In the context of capital flow volatility, it reinforces the notion of mitigating the social costs from financial crises and output losses from sudden stops of capital inflows. Such dynamics are likely to reshape the debate over policy frameworks that involve capital flows, especially in emerging and developing markets whereby theory indicates that lack of actions by individuals in internalising externalities (e.g., excessive borrowing) can result in macro-financial vulnerabilities that often lead to financial crises and steep output losses. The lack of internalising externalities risks undermining support to the market system.

Public policy intervention to internalise externalities, to further promote welfare-enhancing policies, to manage trade-offs, and to adopt more flexible approaches in building resilience will likely be an integral part of overarching policy frameworks going forward, not least for the purpose of managing capital flows to emerging and developing economies. Negative externalities from such external shocks leading to crises can provide a natural rationale for countercyclical policies that lean against boom and bust cycles in international capital flows. The enormous magnitudes of output losses suggest that the non-internalised social costs of free capital flows are enormous and that countries that receive capital inflows may face stark trade-offs. These trade-offs can nevertheless be managed. In this regard, capital flows management measures (CFMs) can help mitigate the trade-offs by ushering in more flexibility to domestic policies in the face of external shocks, such as by enabling domestic interest rate policy or exchange rate intervention to address demand management and financial stability concerns.

Anchoring the policy framework on welfare-theoretic arguments leads to the following high-level thesis that may be validated by practice from policy implementation:

- Pervasive financial market constraints and imperfections in emerging and developing economies can amplify macro-financial cycles requiring insurance against the risk of capital flow volatility as well as its distributional impact [Box 3].

- It is important to incorporate social effects of capital flows in shaping policy frameworks along with clear-headed risk management that account for the magnitude of the externalities arising from capital flows and the type of capital flow management measures to be used [Box 3].
- Exchange rates are also financial variables and sensitive to imbalances in financial markets and can be shock amplifiers [Box 4].
- FX intervention policies are likely to be more effective and welfare enhancing, if used appropriately, under imperfect markets [Box 4].
- A combination of tools like macroprudential measures (MPMs) and CFMs make it easier to achieve multiple goals such as price stability, financial stability, macro-financial stability, and sustainable external position; and deal with the complex trade-offs involved [Box 5].¹⁶ Central banks in the region mentioned that one practical benefit of macroprudential measures is to keep monetary policy focused on its primary objective of maintaining price stability.
- The efficacy of managing capital flows lies squarely in an integrated perspective on monetary policy, macroprudential policy, capital flow measures, and foreign exchange intervention. But these policy measures have their associated costs [Box 6].¹⁷
- Moreover, the efficacy and conditions of using various policy measures, in the context of volatile capital flows, depend on prevailing global and domestic conditions, country circumstances, and origins of shocks.

Economies may face challenges on which policy tools to use and when to use them, given their commitment to capital account liberalisation and/or free capital movement. For instance, European Union (EU) economies are required to adhere to free capital movement within the EU single market, which extends to other European economies through the Treaty of the European Economic Area. Another example is the Organisation for

¹⁶ Box 5 focuses mostly on the institutional set-up in using macroprudential measures. Refer to Batini and Durand (2020) for additional discussion on the policy toolkit for EM SOFIEs in managing capital flows.

¹⁷ Box 6 provides a literature survey on the costs associated with FXI, MPMs, and CFMs. Future studies can include a cost-benefit analysis of each type of policies in short-, medium-, and long-term.

Economic Co-operation and Development (OECD) Code for Liberalisation of Capital Movements (OECD, 2022). Nonetheless, multilateral treaties that aim at free movement of capital tend to have escape clauses that allow exemptions under certain conditions, such as having a Balance of Payment crisis (Guðmundsson, 2023).

In this regard, dialogue between international organisations and their member economies remain important and often lead to insightful discussions in terms of improving policies aimed at preserving macroeconomic and financial stability given capital flow surges or reversals. However, confusions may arise when conditions are proposed as to when and for what purpose policy tools can be used as policy makers are confronted with their country specific conditions, challenges, and objectives. For instance, a view would be to accept the use of CFMs when a capital flow surge has been identified (not pre-emptive) and other more traditional instruments such as policy interest rate, exchange rate flexibility and FXI are unavailable. Such a view underscores that CFMs should not be used as substitute for warranted economic adjustment and policies. These conditions are deemed inflexible and incompatible with a truly integrated policy framework (Guðmundsson, 2023).¹⁸ In this regard, a key proposed change, among others, now pertains to the inclusion of a preventive use of CFMs even in the absence of capital flow surges, but under certain conditions such as when capital inflows lead to a build-up of currency mismatches, which conventional policy instruments may not effectively address during reversals.¹⁹

¹⁸ Refer to Guðmundsson (2023) and references therein.

¹⁹ See Guðmundsson (2023) for further discussions.

Box 3: Externalities, Capital Flow Management, and a Safer Global Financial System*(Anton Korinek, University of Virginia)**The dangers of free capital flows*

To motivate capital flow management, it is useful to start with the problems that excessive international capital flows may give rise to:

- Capital flows exert pressure on a country's exchange rate, driving it up or down according to the conditions in international financial markets. The exchange rate is not a purely financial variable but also determines the prices at which a country imports and exports real goods. Appreciations make it harder for domestic producers of traded goods to compete, and depreciations make it harder to afford imported goods.
- Capital flows also drive domestic financial conditions and lead to booms and busts in domestic credit creation.
- Capital flows generate aggregate demand pressures. Inflows tend to feed aggregate demand by stimulating domestic investment and consumption, and outflows depress demand.
- These financial risks translate into fluctuations in the real economy. Moreover, when outflows trigger financial crises and output collapses, the effects often leave long-lasting scars in the form of permanent output losses.

Capital flows amplify and, frequently, drive the financial and business cycles in emerging and developing market economies. It is difficult for monetary policymakers to counteract the booms and busts generated by capital flows when capital markets are fully liberalised – for example, an interest rate increase in the face of excessive capital flows raises the returns that can be earned in the country and triggers further inflows that may stimulate even more demand.

In traditional textbook models of the economy, none of these effects would matter. Exchange rate adjustments would simply be a benign equilibrating force that restores economic efficiency; demand pressures would be resolved

via instant price adjustments; financial conditions would not matter. But real-world economies do not behave like simplistic textbook models, and this is nowhere clearer than in emerging market economies where financial market constraints exist, and markets to insure against the significant risks faced by most economic actors are largely absent. And this is true even more for the poorest members of society. For example, whereas the rich and educated typically have access to a large menu of financial services, the poor are frequently left out.

Capital market liberalisation increases inequality since it is associated with greater risk of financial instability, and because booms and busts in financial markets and real economic activity hit the poorest members of society the hardest (Korinek, 2016; and Furceri et al., 2019). Moreover, emergency measures such as bailouts during financial crises often generate large redistributions of wealth that benefit the elites at the expense of the average citizen.

As policymakers around the world are increasingly paying attention to ESG metrics, it is important to include the social effects of capital flows in shaping capital flow policy. Moreover, when economic policies such as capital market liberalisation benefit global and local elites but destabilise the livelihoods of the masses, they also risk chipping away at the social contract that underlies our societies, undermining support for our system of market economies and creating future governance challenges.

The theory of capital controls

Proponents of capital market liberalisation based their case on the First Fundamental Theorem of Welfare Economics, which states that perfect markets achieve the most efficient outcome when there is no government intervention. However, markets in the real world are not perfect, and the most efficient outcome is not the most desirable when social considerations such as inequality are at stake. This provides two complementary rationales for managing capital flows:

- to correct the inefficiencies stemming from market imperfections; and,
- to facilitate a more equitable distribution of resources.

With regards to market imperfections, economic research over the past decade has shown that the booms and busts in exchange rates, credit markets, and real economic activity generated by swings in capital flows are not only costly but also inefficient. When international investors flood emerging economies with capital, and when they pull it out again, they do not internalise that their actions affect credit market conditions and aggregate demand in the recipient countries, just like individual polluters do not internalise that their actions impose pollution externalities on others. The first welfare theorem breaks down because in addition to their traditional role of signalling scarcity, market prices interact with the financial imperfections that exist in the real world, generating so-called pecuniary externalities. Moreover, the demand effects that arise in the context of booms and busts generate so-called aggregate demand externalities. **Just like environmental regulations internalises pollution externalities, capital flow regulation can mitigate these externalities from capital flows.**

The redistributive effects of capital flows provide a complementary reason for managing capital flows. In a society that cares about inequality and that spends resources on policies to curtail inequality, for example *via* a social safety net or by providing resources to the poor, policies such as capital flow liberalisation that actively exacerbate inequality are undesirable on their own (Korinek, 2016; and Furceri et al., 2019). Moreover, they also increase the cost of the social safety net, generating adverse fiscal effects.

Our newfound understanding of the externalities of capital flows as well as their adverse distributive implications suggest that the liberalisation of capital flows in recent decades has been excessive, and that **it is desirable for emerging and developing economies to re-impose regulations to manage capital flows in a way that they internalise their negative externalities and are aligned with our broader social objectives.**

The economics of capital flows offers several important lessons:

- Although capital controls are part of a broader toolkit of sensible macroprudential regulation, purely domestic macroprudential measures cannot adequately substitute for capital controls since capital controls better target the root of the problem when booms and busts are caused by volatility in international capital flows.

- Like with all macroprudential measures, the pre-emptive use of capital controls is critical when there is a risk of large capital inflows. One of the reasons is that a framework for pre-emptive capital controls provides policymakers with more experience and makes them better able to deal with excessive inflows when they arise, strengthening their credibility.
- A one-size-fits-all approach that specifies that there are only specific circumstances in which capital controls may be used by some international organisations, is too rigid and unnecessarily constrains countries' policy space and their ability to pursue domestic policy objectives.
- International capital flows – as well as the management of capital flows – by definition affect at least two countries. However, if their behaviour is driven by domestic-oriented objectives and not by beggar-thy-neighbour motives, countries should have the liberty to manage their own affairs when it comes to policies to manage capital flows. This may, at times, generate spillovers or spillbacks, but the same is true whenever we regulate externalities – for example, when environmental regulations hurt oil-exporting countries – and this should not be a reason for countries to refrain from managing capital flows.

Implementing capital controls

A crucial first step in the implementation of capital controls is to determine the magnitude of the externalities arising from capital flows. The academic literature on the topic offers some reassuring guidance on magnitudes, finding that the externalities of capital flows can reach double-digit percentages, but it involves economic models that can be quite sensitive to parameter choices (Korinek, 2017). A good practical guide is to look at the damage that unrestrained capital flows have inflicted in past financial crises: for example, during the East Asian crises of 1997/98, countries experienced output collapses of up to 12%, followed by declines in subsequent growth rates that lasted for many years and compounded the damage. Most of the resulting costs were borne not by the economic actors who borrowed from abroad but by society at large, so they represented externalities. These enormous magnitudes suggest that the uninternalised social costs of free capital flows are enormous and that countries that receive capital inflows may face stark trade-offs.

A way to simplify the trade-offs of capital flows is to differentiate capital flows by their risk-sharing and by liquidity/maturity risk. Greenfield FDI investments do not expose recipient countries to any material risks – when the sentiment of international investors turns, they cannot undo such investments – and may, in fact, provide substantial positive learning spillovers. Other types of FDI and equity inflows do carry the risk of reversal but leave all valuation risk in the hands of international investors; they are therefore relatively benign. When it comes to debt inflows, the two main characteristics that matter are their currency denomination and their maturity. Long-term local currency-denominated debts or CPI-indexed debts do not involve rollover risks and leave the risks of currency depreciations in the hands of international investors. Conversely, short-term foreign currency-denominated debts expose countries to the risk of rollover crises and pernicious feedback loops of falling exchange rates and collapsing economies that characterises emerging market financial crises, including the East Asian crises. This suggests a clear pecking order for which types of capital flows policymakers should focus their regulations on. It also suggests that it is crucial for policymakers to develop the institutional capacity to distinguish between different types of flows and to keep up with attempts at circumvention by mis-categorising flows. International institutions can play an important role in building these capacities and sharing best practices between countries.

Over time, the externalities of capital flows ebb and flow with the booms and busts of global and local financial cycles. They are smallest when risk appetite is modest and rise as risk-taking increases. Frequently, they are at their highest when everything looks perfect in an economy, and when it seems like a little more short-term dollar debt can do no harm. Even financial regulators are not immune to the cyclical nature of risk appetite when a long-lasting boom defies all predictions of collapse and just goes on and on. But nothing continues forever, and those are precisely the times when clear-headed risk management is the most important. Policymakers may be concerned about prematurely ending a boom by imposing capital flow regulations, but if they focus regulations on the types of flows that come with significant externalities and allow for long-term flows with benign risk characteristics, they should not be. If international investors only offer short-term dollar debt and are not willing to provide safer forms of capital such as equity or local currency debt, then there is probably a good reason, and the bargain is not in the interest of the recipient country once all externalities have been considered.

When policymakers decide to manage international capital flows, an important question is what type of regulations to impose – to mention just a few: bans, taxes, ratios, reserve requirements or others? Some types of flows, for example derivatives that increase the currency risk exposure of a country, may best be banned. In other cases, it may be useful to start from the existing regulatory institutions and framework, building on the expertise of financial regulators. For example, if a country has significant experience employing reserve requirements, it may be useful to build on that experience.

It is also important to consider the conceptual benefits and disadvantages of different regulatory measures. Two important dimensions are their selection effects and how regulations affect the distribution of surplus. An instrument has desirable selection effects if it is more costly for hot money than for long-term investors – for example, a reserve requirement that ties up funds may be more costly to meet for hedge funds than for FDI investors with a longer horizon. The way regulation is imposed also affects how the surplus arising from the regulation is distributed. This is most obvious in the case of taxes that financial regulators impose, which visibly generate revenue. More generally, if quantity regulations or ratios are imposed on international investors, for example in the style of Basel capital adequacy requirements, then the investors earn the surplus that is generated – just as they would earn the surplus if they restricted the supply of credit for monopolistic reasons. Conversely, if regulations are imposed on domestic borrowers, for example by imposing ratios or bans on domestic agents accessing international credit, then the extra surplus is kept in the country. From a distributive perspective, it is thus desirable to impose measures that directly raise revenue or that target domestic agents.

The best path forward for our global financial system is to ensure that international capital flows are safe and benefit all. **Asian central banks have long brought a unique perspective to the management of capital flows, frequently eschewing excessively ideological approaches in favour of practical policy frameworks that balance the risks of financial integration with pragmatic interventions that are conducive to creating a stable environment for their economies to flourish. They have not been afraid to intervene when necessary.** Among the many solutions that were successfully deployed are taxes, fees, reserve requirements and minimum holding periods for inflows; limits, reserves, increased risk weights for foreign currency positions, limits or bans on derivatives, and many more.

Box 4: New Thinking on Foreign Exchange Intervention (FXI)*(Matteo Maggiori, Stanford University)*

The last fifteen years have been dominated by three large crises: the global financial crisis of 2008-09, the European sovereign debt crisis of 2011-12, and the ongoing COVID-19 pandemic in 2020-21. In all these episodes, capital and asset prices moved abruptly, often with adverse consequences for the global economy. Traditional monetary policy quickly ran out of power due to the zero lower bound (ZLB) constraint, and policymakers resorted to alternate policies, such as quantitative easing, intervention in foreign exchange markets, and capital controls. **Understanding and improving the economics of these episodes requires a conceptual framework in which imperfections in financial markets are at the centre stage.**

On the economic theory front, this has required not only new models but also, in some cases, going back to older insights that had been largely forgotten, such as the portfolio balance theories in the 1970s. In models with imperfect financial intermediation, the exchange rate is pinned down by imbalances in the demand and supply of assets in different currencies and, crucially, by the limited risk-bearing capacity of financiers that absorb these imbalances. The demand for the assets, the resulting gross capital flows, or the financiers' risk-bearing capacity might only have a distant relation with macroeconomic fundamentals, thus contributing to generating a disconnect of exchange rates from other macroeconomic variables. By placing global portfolios at the centre stage, this line of research stresses the importance of better data to understand these financial forces and their impact on the real economy, which is an ongoing effort in the field.

On the policy front, the financial-frictions view offers a different take on exchange rates compared to their traditional role as shock absorbers.

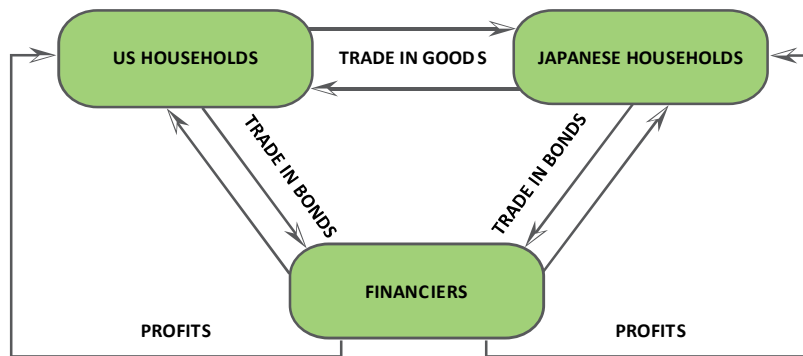
- Exchange rates are distorted by financial forces and can be a source of shocks to the real economy rather than a re-equilibrating mechanism.
- Quantitative easing and FX intervention, the purchase of domestic and foreign currency assets by the central bank, respectively, are ineffective in perfect markets but effective and, if used appropriately, welfare-enhancing under imperfect markets. Their ineffectiveness in perfect markets relies on

a combination of Modigliani-Miller logic applied to the balance sheet of the central bank and Ricardian equivalence. Under these conditions, if the central bank buys foreign currency assets while selling domestic currency assets (a sterilised foreign exchange intervention), agents in the economy simply take the opposite position since they understand that the central bank is trading on their behalf in an undesired way. Future losses or gains arising from the central bank position are passed through to the agents without distorting their actions.

- Limited financial intermediation breaks the Modigliani-Miller component because the intervention is a risk transfer between the central bank and constrained financial intermediaries. The presence of financial constraints, and/or imperfections in the goods market like sticky prices, are at the core not only of the effectiveness of interventions but also provide a deeper rationale for their optimal use. Private decisions in the presence of pecuniary and/or demand externalities are no longer optimal thus generating a role for government intervention even under the criterion of constrained Pareto optimality.

An intuitive way to visualise the conceptual difference of international macroeconomic models with segmented currency markets is illustrated in **Figure B4**, reproduced from Gabaix and Maggiori (2015). Consider a simple two country model, for concreteness, say the U.S. and Japan. These countries trade in the goods market with each other because they produce heterogeneous goods which they both enjoy consuming (in different proportions). Shocks across states of the world and time, including shocks to liquidity and asset demand, generate motives for gross and net trade in financial assets. The more traditional setup is to make these countries face each other in financial markets with a menu of assets that might be complete or incomplete. The financial intermediation view breaks this structure by introducing global financiers at the core of the model. Both countries trade in a limited set of assets, for concreteness say bonds in dollars and yen, against the financiers who absorb the currency imbalances arising from the countries' gross positions. Ultimately, the financiers are owned by the households in each country and receive the profits/losses of intermediation. If the financiers behaved optimally, then they would simply be a veil and the model would be much the same without them. The model, therefore, comes alive when financial frictions limit the ability of the financiers to take on positions.

Figure B4: Basic Structure of a Segmented Currency Market Model



Source: Gabaix and Maggiori (2015).

In this class of models, sterilised intervention is not only effective, in the positive sense that it moves the equilibrium exchange rate, but also a recommended policy tool from a normative perspective. The economic literature has highlighted several different foundations for the optimal use of FXI including: (i) the presence of sticky prices and demand externalities, (ii) constraints on monetary policy at the ZLB, and (iii) redistributive considerations among domestic households.

Large-scale currency interventions have been undertaken by the governments of Switzerland, Israel, and the Czech Republic, in addition to many emerging markets. These governments aimed to alleviate the appreciation of their currencies in the face of turmoil in financial markets. The policymakers at the respective institutions expressed the view that interventions successfully weakened the exchange rate and boosted the real economy. For example, Israel's central bank governor, Stanley Fischer remarked: "I have no doubt that the massive purchases [of foreign exchange] we made between July 2008 and into 2010 [...] had a serious effect on the exchange rate which I think is part of the reason that we succeeded in having a relatively short recession." Thomas Jordan, the governor of the Swiss National Bank, remarked in his 2020 Camdessus Lecture at the IMF that: "In Switzerland, the upward pressure on the [Swiss] franc was the main reason for at times very low inflation. Against this backdrop, for us, foreign exchange market interventions were and still are the most direct and thus the most effective instrument besides the negative interest rate."

Empirical evidence on the effectiveness of FX intervention is limited by the thorny issue of endogeneity. For example, if central banks intervene to stem appreciation, even successful interventions that prevent (further) appreciation might appear to be counterproductive in an analysis that does not account for the endogeneity. A further consideration is the size and duration of the intervention. Small interventions at high frequency might have very different outcomes from the protracted and large interventions observed in recent years by Switzerland and Israel as discussed above.

Ben Bernanke famously said of quantitative easing (QE) that “it works in practice, but not in theory.” For FX intervention, a policy in many ways like QE, we can say that it works in theory, many policy makers are convinced it works in practice, but high-quality causal evidence is still missing.

There are many open areas for future work. On the empirical side, more policy evaluation that makes progress on endogeneity is a crucial endeavour. On the theoretical side, many features that are of important practical consideration are mostly absent from the current models. Two possible directions are discussed below.

The first is the Lucas Critique and FX market depth. As FX intervention becomes part of the policy toolkit and if interventions are predictably sustained over a long period of time, the structure of the FX market will adapt endogenously. One concern is that FX intervention disincentivises private institutions from building their capacity to deal with foreign exchange risk. This concern is particularly present in emerging and frontier economies where it could slow down the development of a local FX market. At the opposite end, one could imagine that central bank interventions that prevent market breakdowns might ensure the necessary conditions for private players to enter the market and deepen its liquidity.

Second, one particularly important area is the political economy of these new tools and the possibility that they might be abused by policymakers. One might conjecture that FX intervention is less likely to be abused than capital controls to generate fiscal revenue since the revenue is uncertain and might even turn out to be negative. The potential losses of FX intervention bring up the possibility that the central bank might lose its independence. Similarly, vast reserve accumulation and management come with issues on how they are allocated, and whether the allocation should include ethical considerations in addition to pure risk and return ones.

Box 5: Macroprudential Policies and Capital Flow Measures**(Sunil Sharma, George Washington University; and Itai Agur, IMF)*

Macroprudential policy frameworks have been developed with the aim of containing systemic risk by dampening the amplitude of financial cycles and inhibiting credit and asset booms before they threaten public and financial sector balance sheets and the economy at large. However, by their very nature, systemic threats are “tail events,” and represent an agglomeration of risks from a variety of channels. Therefore, both gathering adequate data and forming consistent views is likely to be demanding, as it involves diverse sources and agencies.

The origins of systemic risk can be both domestic and external in nature. Vulnerabilities in financial systems often build up with increasing cross-border connections and exposures, and can lead to trouble if markets seize up, capital flows reverse, and balance sheets unwind (Portes et al., 2020). In view of this, IMF (2020) lays out a conceptual framework for an integrated perspective on macroprudential policy, capital flow measures, and foreign exchange intervention to discuss conditions under which pre-emptive measures can form a useful part of the financial stability policy toolkit. However, given the links and interactions of the financial sector with other sectors of the economy, an even broader perspective may be required.

1. Macroprudential policy and systemic risk assessment

Systemic risk is amorphous, arising in unexpected ways that are not necessarily informed by the experience of past crises. This can be due to the non-linearity of effects in a complex, evolving economy (Bookstaber, 2017; Haldane and May, 2012; and White, 2019 and 2020a). Some ambiguous thresholds may be crossed, instigating a move away from a seemingly stable path towards a state of crisis. Uncertainty and threshold effects inhibit the proper quantification of systemic risk and hinder the construction of effective early warning systems that could inform pre-emptive action before risks materialise.

Systemic risk quantification remains in need of a comprehensive operational characterisation. While systemic risk metrics have made progress in recent years, they have not yet produced satisfactory measures,

despite the variety of models and methods used (Benoit et al., 2017; Brogi et al., 2021; Capponi and Jarrow, 2021; and, Engle, 2018).

2. From measurement challenges to implementation challenges

The nature of systemic risk and the difficulties associated with measuring it influence the conduct of macroprudential policy (Agur and Sharma, 2015; Borio, 2011; and Stellinga, 2021). Take the construction of early warning systems as an example. Such systems must identify in advance what interventions will be taken when systemic risk rises to critical levels, otherwise policymakers have to defer decisions to when risks materialise and then determine the appropriate course of action. The latter option leaves full discretion in the hands of the regulators and depending on institutional and political structures, such discretion could open the door to resistance from the financial industry, politicians, and even the public.

Operationalising a policy that is both time-varying and rules-based is likely to be unachievable, due to the difficulty of adequately quantifying systemic risk. An effective rule must stipulate beforehand how policy will react when specific events transpire. However, in the realm of macroprudential policy such events refer to systemic risk crossing prespecified boundaries while the associated actions entail the initiation of macroprudential interventions. In view of the inherent challenges in the quantification and assessment of systemic risk and the design of appropriate macroprudential instruments, attempting to predetermine policy actions for rare events, and properly calibrating such tools based on relatively scant data, is problematic to execute and communicate. The hurdles faced in the implementation of macroprudential policy can be illustrated by a comparison with monetary policy measures aimed at containing inflation. First, the “event,” inflation in goods and services, is well-defined, as is the “act” of raising short-term interest rates. Further, there is historical experience, data, and reasonably well-founded models that tell us how interest rates affect inflation.

Moreover, the inflation gauge is a relatively simple one, which is readily available and comprehensible to the public. Instead, macroprudential regulation is bound to systemic risk measurement, which cannot be suitably represented by simple indicators. A rule that ties a multitude of indicators to a variety of tools is hard to formulate, calibrate, and communicate.

This challenge is exacerbated by the relative paucity of data on past macroprudential actions and their impact on crisis prevention, and the necessity of forming a judgment relative to a counterfactual exercise that relies more on a priori arguments than firm evidence.

In implementing macroprudential remedies, measurement problems interact with the political economy of policy formulation. If a central bank moves to raise interest rates when it finds that inflationary pressures are building up, there is less scope for a lobby to counter that inflation is not being accurately measured and no incentive for any lobby to do so since no sector is singled out and the policy applies to the public at large. In contrast, as macroprudential policy tightening is based on systemic risk measures that are open to dispute, it allows special interest groups to oppose the policy decisions. Furthermore, it is more difficult to tell only a few of the proverbial partygoers to resist the punch bowl than to take the bowl out of the room. Moreover, the focus on a single sector that is particularly well-funded and powerful is likely to lead to intense pushback.

For instance, given the diversity of economic and institutional contexts in countries comprising the European Union (EU), measurement challenges are even more difficult to surmount as in addition EU policymakers must face the problems posed by the financial trilemma — trade-offs between financial stability, market integration, and national regulatory discretion (Schoenmaker, 2011). This has hampered the evolution of an EU-wide macroprudential policy framework since the use of macroprudential instruments has been constrained by procedural requirements and limits on their intensity and scope. While national authorities must justify discretionary regulatory actions to the EU, it is hard to do so in the absence of agreed norms for measuring and mitigating systemic risk (Stellinga, 2021).

3. Institutional structures and policy implementation are likely to be country and path dependent

Some of the difficulties associated with the implementation may be alleviated by assigning central banks the mandate for macroprudential policy. Such a mandate brings together systemic risk analysis, macroprudential decision making, and communication at the central bank. However, the exclusion of other agencies from the decision-making

process has the disadvantage that financial regulators who provide the key information on the health of markets and intermediaries and implement policy are not involved in the macroprudential decisions. Also, the provision of “soft supervisory information” for decision making that may be important and not easy to convey, may suffer in such an arrangement. Legally binding powers to make regulators enact the central bank’s macroprudential decisions are challenging to formulate and this, in turn, risks eroding the credibility of macroprudential decisions and their communication (Agur and Sharma, 2015).

A joint committee where all the agencies have a say could prevent dogmatic thinking but adds to the complexity of decision making. Deliberations among officials with diverse backgrounds and experience should improve the design of policy and such a setup also limits conflict between agencies, enabling better policy. Attaining consensus on policy decisions, however, becomes more challenging and slows down the responsiveness of macroprudential policy to rapidly evolving events and may hamper coherent communication. Furthermore, the greater the diversity of agencies represented on the committee; the more entry points industry lobbies have to affect the committee’s decisions. For example, certain agencies on the committee may not have the requisite budgetary and political independence (Fullenkamp and Sharma, 2012). The demand for interagency coordination may require a substantial overhaul of the existing institutions of financial oversight, not to mention a change in regulatory philosophy to manage the transition to a digital economy (Omarova, 2017).

Since many of the potential problems in the implementation of macroprudential policy pertain to the interaction between separate agencies, it may seem attractive to unify monetary policy, bank regulation and macroprudential policy within one agency, namely the central bank. Given the overlapping nature of policy transmission channels and complementarities between policies, a joint committee may be formed to provide recommendations for coherent monetary and financial stability policies. However, whether such an institutional setup would indeed make it easier to plan and manage macroprudential interventions depends on a country’s size, history, and the evolution of its political and institutional structures (Edge and Liang, 2019). The objective of macroprudential policy is to limit systemic risk by finding ways to dampen the effects of business and

financial cycles, to handle interconnectedness and the build-up of common exposures by institutions and market players, and to catch credit and asset bubbles in their infancy rather than having to deal with them when they are considerably distended, and puncturing asset bubbles may lead to much economic and financial mayhem. But by their very nature, systemic threats are “tail events,” and represent an agglomeration of risks from a variety of channels. Hence, collecting data and views to make assessments are difficult, since in most situations these are likely to involve a multiplicity of sources and agencies. While systemic risk measurement has made progress in recent years, it has not yet produced a satisfactory measure, despite the variety and complexity of models and methods used (Benoit et al., 2017; Brogi et al., 2021; Capponi and Jarrow, 2021). The measurement of systemic risk thus continues to proceed without a comprehensive operational definition.

The creation of a super-agency with responsibilities for micro- and macroprudential regulation and monetary policy resolves the problems of inter-agency conflict. But it creates an unwieldy institution with far-reaching powers that is outside the realm of democratic accountability. In democracies, such an institutional design may not be legitimate, or politically and socially acceptable (Tucker, 2018; and Shirakawa, 2021). Conflicts of interest may also be pervasive in the decision-making process of a super-agency. For instance, where the interests of monetary policy and newly endowed prudential powers collide, central banks may be tempted to give primacy to their longstanding monetary policy objectives. One example is reputational risk: if bank failures harm the reputation of the institution, including its monetary policy credibility, the policymaker may face stronger incentives for regulatory forbearance to prevent the revelation of problems in the banking sector (Agur, 2021). There is some evidence that policy decisions in the realm of bank supervision are affected by monetary policy considerations when a central bank holds sway over both (Ioannidou, 2005).

Additionally, getting the timing and intensity of macroprudential policy measures correct is particularly challenging due to the complications associated with the identification and quantification of systemic risk, the likely pushback from industry lobbies, and the need to apply such measures preemptively before risks become fully apparent. Given these obstacles, central banks facing complex economic and political trade-offs may choose to delay decisions. For instance, central banks might defer introducing or escalating

macroprudential measures, knowing that emergency lending and liquidity provision could be used to address financial and market turmoil should it arise. Recent history does not inspire confidence.

Macroprudential policy is the dynamic component of a financial stability regime whose purpose is to ensure that concerns about financial stability do not affect the functioning of the real economy. To this end, before assessment and policy formulation, financial authorities must seriously examine whether the baseline static regime – the component of financial stability policy that is not cycle dependent – is complete, clear, and incentive-compatible (Tucker, 2021; and White, 2020b). Time-varying macroprudential policy cannot counterbalance a weak baseline prudential regime and structural deficiencies in the financial system and may not be able to pre-empt the rise in systemic risks (Agur and Sharma, 2015; and Freixas et al., 2015). While banks may have performed better during the COVID-19 pandemic compared to the global financial crisis of 2008, market-based finance had to be bailed out again to prevent a financial system breakdown. Several aspects of non-bank finance need urgent attention, such as rising credit extension by the shadow banking system based on the creation of short-term money-like instruments, redemption risk in open-end funds and its interaction with illiquidity on derivatives and securities markets, and the systemic risks posed by the expanding asset management industry (Arner et al., 2019; Kohn, 2021; White, 2020b; and Wilmarth, 2020).

Taming the credit cycle and containing rapid credit growth are key objectives if central banks and regulatory agencies are to pre-empt the build-up of risks, market distortions, and inequality (Leonard, 2022; Petrou, 2021; and White, 2020b). Recent crises have not been precipitated by rampant inflation, but by rising debt and resulting fragilities in financial intermediaries and markets, corporations, households, and governments. Time-varying macroprudential policy must negotiate the financial cycle and its interactions with the business and electoral cycles. To do this effectively, macroprudential, monetary, and fiscal policies will have to be employed in tandem so that they push in the same direction and are able to do so before the risks materialise (White, 2019).

4. Defining and evolving a panoptic perspective?

The difficulties of calibrating and implementing macroprudential policy are amplified when the systemic fragilities extend beyond the financial system. The financial sector is an intermediary in a complex evolving economy, and its health must be evaluated in conjunction with the health of the broader economy and the natural environment on which it surely depends (Alogoskoufis et al., 2021; Berner et al., 2021; Chenet et al., 2021; Florini and Sharma, 2020; and White, 2020c). More generally, for extended periods of time, macro-stabilisation and regulatory policies cannot be used as a substitute for addressing deep structural problems in financial, economic, and political systems (Sharma and White, 2022).

Systemic thinking will have to encompass the entire economy and the environment. An integrated perspective will have implications for the conduct of social, economic, and financial policies, including macroprudential policy, and the politics of democratic decision-making. Such an approach by its very nature requires a wider set of policy tools, action by many agencies at various levels of government, an international dimension, and faces more profound challenges in institutional design, operation, coordination, and public communication.

Today, financial technologies, new electronic payment systems, and the feasibility of introducing central bank digital currencies offer a singular opportunity for societies to re-examine fundamentally the nature of money, how it is created and distributed, and shape the institutional structure and functioning of the financial system and its regulation to produce greater systemic stability, efficiency, and equality (Auer et al., 2022; Gnan and Masciandaro, 2018; Kosse and Mattei, 2022; and Adrian and Mancini-Griffoli, 2019). How the system develops could transform the conduct of economic and financial policies and the institutional structure of surveillance and regulation.

* The views expressed in this box are those of the authors and should not be attributed to the IMF, its Executive Board, or its management. An earlier version of this article was released as SUERF Policy Brief No. 362 <https://www.suerf.org/suer-policy-brief/48243/on-implementing-macroprudential-policy>

**Box 6: Costs of Capital Controls, Macroprudential Measures, and
Foreign Exchange Intervention: An Empirical Survey**

(Victor Pontines and Rogelio Mercado, Jr., The SEACEN Centre)

The use of broader policy measures in mitigating the adverse impacts of volatile capital flows entail associated costs which must also be internalised and considered. This note surveys the empirical literature which quantify these costs.

On capital controls, Forbes (2005) conducted a meta-analysis based on anecdotal and empirical evidence documenting discrete impacts and distortions caused by capital controls for certain types of companies or groups of investors. Several findings are noteworthy. First, capital controls raise the cost of capital, lower the supply of credit, and increase financial constraints, particularly for small companies and firms without access to international capital markets. Second, capital controls encourage companies to engage in a variety of market-distorting behaviours designed to minimise the costs of the controls or to evade them altogether. Such measures include overstating import payments through import contracts and/or under-invoicing exports or exporting through offshore subsidiaries at significantly lower price. Third, capital controls can be difficult and costly to enforce. Once controls are placed, companies and individuals can find ways to evade the measures, thereby diminishing their effectiveness over the long-term. Consequently, further measures will be put in place to close loopholes, thereby increasing the costs of implementing control measures. Given Forbes' (2005) analysis, quantifying the findings remain a challenge. Nonetheless, recent papers provide some estimates on the costs of capital controls in the context of policy evasion or circumvention. For instance, Cerutti and Zhou (2018) find that local affiliate bond inflows increase by 1.60%, on average, when lenders impose bond outflow restrictions.

The cost for macroprudential policies is that these policies can have unintended consequences. According to Forbes (2019), one such consequence arises in the form of unintended leakages. These leakages are basically shifts in lending to other institutions or certain financial products in the same country that are not part of the regulatory perimeter of the macroprudential policy. One such case is that banks can avoid certain regulations by adjusting the type of loan, as in the case of Sweden where

banks responded to LTV limits on secured lending by increasing unsecured loans (Sveriges Riskbank, 2012; and Forbes, 2020). Aiyar et al. (2014) showed that the increased capital requirements on domestic banks in the UK caused a shift in lending whereby the lending by domestic banks in the UK fell, whereas the lending by foreign banks increased. The size of the leakage was estimated to be about one-third of the contraction in lending by domestic banks in the UK. Ahnert et al. (2021) showed that tighter FX bank borrowing rules caused companies to rely on FX debt issuance with the size of the leakage estimated to be about 10% of the initial reduction on companies' FX bank borrowings. Because there are various types of macroprudential policies, the size of these unintended leakages can vary across these instruments. In view of this, there is a need to assess the costs of this individual macroprudential tools, particularly for emerging economies.

With respect to the costs of FXI, Adler and Mano (2021) estimate the quasi-fiscal costs of FXI. For the authors, a more meaningful measure of these costs, and relevant for policy decisions, is given by the cost of FXI from an *ex-ante* perspective. This is the expected total cost conditional on the current FX position of the monetary authority/central bank, or the expected cost of carrying forward (or rolling over) the current FX position. Across 73 countries over the period 2002-13, on average, *ex-ante* total costs amounted to 0.3-0.9% of GDP per year. Countries that intervene heavily in the foreign exchange market incurred *ex-ante* total costs of about 0.3-1.2% of GDP per year, compared to 0.3-0.7% of GDP by light interveners. Overall, these estimates suggest that the fiscal costs of sustained FX intervention are not negligible, and thus should be considered when assessing the desirability of this intervention policy. We need to have further studies that quantify the cost of FXI at the individual country level.

**Box 7: Market Perspective on Policies for Dealing with
Capital Flows in EMs***
(The SEACEN Centre)

- A prominent trend has been more long-term asset allocation into Asia, primarily in interest rates, FX, and credit products.
- Fundamentals and macro-stability matter. Also, having reserve buffers and the availability of tools – notably macroprudential tools.
- Policy clarity and credibility along with clear communication of policies are very important signals for the market.
- Markets want to know why a situation is occurring, what the central bank is going to do about it and where economies are going.
- Do policymakers seem on top of things? Are there buffers in place against vulnerabilities? What is the overall policy response, and does it appear credible?
- Liquidity and the relationship between the riskiness of the market and the yield received for taking that risk relative to the same metric in other markets are very important.
- FX intervention and macroprudential measures to provide stability are becoming more widely accepted by markets. Exchange intervention on its own may not be enough, especially for small open economies. As a result, central banks have no choice but to implement additional capital flow measures.
- Investors react negatively to macroprudential measures that restrict market access in an otherwise open market. In particular, restrictions on markets with large foreign ownership were not well taken by the markets.
- The ability to get out of a position (and a country) was of paramount importance and on top of the list of variables. Investors panic when they cannot exit. Measures that inhibit market access in otherwise open markets are seen to be quite damaging for policy credibility.

- Market participants seem to agree that if some forms of restrictions were to be put in place, they should be more market based. Market-based measures such as taxes (or other price mechanisms) are more acceptable, while quotas (or other quantity mechanisms) are less so.
- Market participants believe that Asia has done a decent job in macroprudential and capital flows management measures since the Asian Financial Crisis/Great Financial Crisis.
- Market participants believe that over the medium- to long-term, the attractiveness of EM Asia will remain an important driver of capital flows to the region.

* Based on meetings with global investors/asset managers in Singapore (March 2020) and other ongoing discussions with market participants.