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Capital Flow Management and Macroprudential Policy Measures in the ASEAN+3: Initial Recommendations

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Capital Flow Management and Macroprudential Policy Measures in the ASEAN+3: Initial Recommendations

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Executive Summary

The role of capital flows and how they are managed have been controversial issues for ASEAN+3 emerging market economies (EMEs) since the Asian financial crisis. The region has been a recipient of increasingly large capital inflows over the past two decades amid intensifying financial globalization, namely, direct investment, portfolio investment and bank loans. However, it has also been exposed to sudden stops and reversals in capital flows, with attendant spillovers and contagion. Unsurprisingly, the resumption of capital flows into the region in the aftermath of the global financial crisis has reignited debate on their impact on financial stability and economic growth.

Two key international frameworks on the liberalization of capital flows and their management have been published by the Organisation for Economic Co-operation and Development (OECD) and the International Monetary Fund (IMF). Recognizing the need to remain relevant, amid a fast-evolving international monetary system, these international financial institutions (IFIs) commissioned reviews of their existing positions on capital flow management and macroprudential policy measures (CFMs and MPMs), with resulting recommendations to calibrate existing policies for dealing with capital flow volatility. Nonetheless, the use and classification of CFMs and their relationships to MPMs to manage volatile capital flows continue to be hotly debated.

ASEAN+3 members acknowledge that IFI positions on CFMs and MPMs have evolved over time. However, members note that there is a need to better understand their use—the motivations, rationale, effectiveness, and cross-country experiences. Members disagree with the "one-size-fits-all" IFI policy guidance, which, in their view, should be sensitive to country-specific circumstances and cognizant of the complexities and uncertainties facing policymakers. In particular, some members see the need for improvement in the following areas: (1) the role of country-specific factors; (2) the definition and classification of measures; (3) the objectives and applications of CFMs and MPMs; and (4) the timing of implementation and removal of measures.

This AMRO Policy Position Paper assesses whether the use of CFMs and/or MPMs (CFMs/MPMs) may be justified for the ASEAN+3 region, and develops a "regional position" on their application. It analyzes the existing international rules, norms, and expectations on CFMs/MPMs in the ASEAN+3 context, drawing on evolving views on the topic, and undertakes empirical analysis on the impact of various types of capital flows on members' financial stability and growth prospects. Specifically, the paper focuses on more

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volatile capital flows—namely, portfolio investment and bank lending—and member economies with open capital accounts that actively utilize CFMs/MPMs.

AMRO staff's empirical findings validate member's concerns over the impact of capital flows on financial stability and growth. They appear to confirm the country-specific nature of those effects, notably, the influence of the different types of capital flows, and the extent and the duration of that impact. Consistent with recent IFI reviews, AMRO staff support the need for pragmatism in managing volatile capital flows. Specifically, staff recommend greater flexibility in terms of: (1) the types of capital flows that needs to be managed and the tool(s) to be applied; (2) the timeframe during which CFMs/MPMs should be in place; and (3) the ability to utilize CFMs/MPMs in a pre-emptive manner, to safeguard financial stability and medium-growth prospects.

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Abbreviations

AE	advanced economy
AFC	Asian financial crisis
ASEAN	Association of South-East Asian Nations
ASEAN-4	Indonesia, Malaysia, Philippines, Thailand
ASEAN-5	Indonesia, Malaysia, Philippines, Singapore, Thailand
ASEAN+3	ASEAN plus China; Hong Kong, China; Japan; Korea
BIS	Bank for International Settlements
CFM	capital flow management measure
CGFS	Committee on the Global Financial System
CLMV	Cambodia, Lao PDR, Myanmar and Vietnam
CMIM	Chiang Mai Initiative Multilateralization
COVID-19	coronavirus disease 2019
DI	direct investment
EME	emerging market economy
ERPD	Economic Review and Policy Dialogue
FSB	Financial Stability Board
FX	foreign exchange
G20	Group of Twenty countries
GaR	growth-at-risk
GFC	global financial crisis
IEO	Independent Evaluation Office of the International Monetary Fund
IFI	international financial institution
IMF	International Monetary Fund
IPF	Integrated Policy Framework
IV	Institutional View
MPM	macroprudential policy measure
OECD	Organisation for Economic Co-operation and Development
OI	other investment
PI	portfolio investment
RFA	Regional Financing Arrangement
TFEU	Treaty on the Functioning of the European Union

I. Introduction

1. **The role of capital flows has been a controversial issue for the ASEAN+3 economies since the Asian financial crisis (AFC), especially the region's emerging markets economies (EMEs).** Volatile capital flows were blamed for triggering the crisis that devastated these economies and caused widespread suffering and massive losses. Tight monetary and fiscal policies prescribed by the IMF at the time were also excoriated for exacerbating the situation. Malaysia disagreed with IMF policies and took the unorthodox step of imposing capital controls to stem capital outflows, which helped to stabilize its external position, allowed the central bank to regain control over its monetary policy and the government to implement the necessary reforms. With the robust recovery of the region's economies in the late 1990s and early 2000s, policymakers focused their efforts on reforming and strengthening policy and regulatory frameworks, and building up foreign exchange (FX) reserves to buffer against external shocks. However, concerns over the risks posed by volatile capital flows and the controversy over the policy measures needed to mitigate those risks remain unresolved.

2. **The revival of capital flows into the ASEAN+3 region in the aftermath of the global financial crisis (GFC) has reignited debate on their economic impact.** In particular, the region's EMEs have experienced significant volatility in the ebb and flow of capital through several market events since then, most recently, during the heightened uncertainties posed by the COVID-19 pandemic. While capital inflows help to deepen and broaden financial markets and provide additional financing for economic development, they can also lead to a build-up of financial vulnerabilities and excessive indebtedness, with medium- to long-term implications for financial stability and, consequently, economic growth.

3. **Two consequential frameworks in the international sphere on the liberalization of capital flows and their management have been published by the Organisation for Economic Co-operation and Development (OECD) and the International Monetary Fund (IMF).** The OECD's Code of Liberalisation of Capital Movements (hereafter "the OECD Code") was introduced in 1961 (subsequently revised) to provide a framework for the gradual liberalization of the capital account, while affording flexibility to address situations of economic and financial instability. Separately, the IMF published its Institutional View (hereafter "IMF IV") in 2012 (IMF 2012), with the objective of adopting a *"comprehensive, flexible, and balanced approach for the management of capital flows,"* and highlighting the trade-offs between policy options for dealing with capital flows, benefits from capital mobility, and the impact of capital flows on global economic and financial stability.

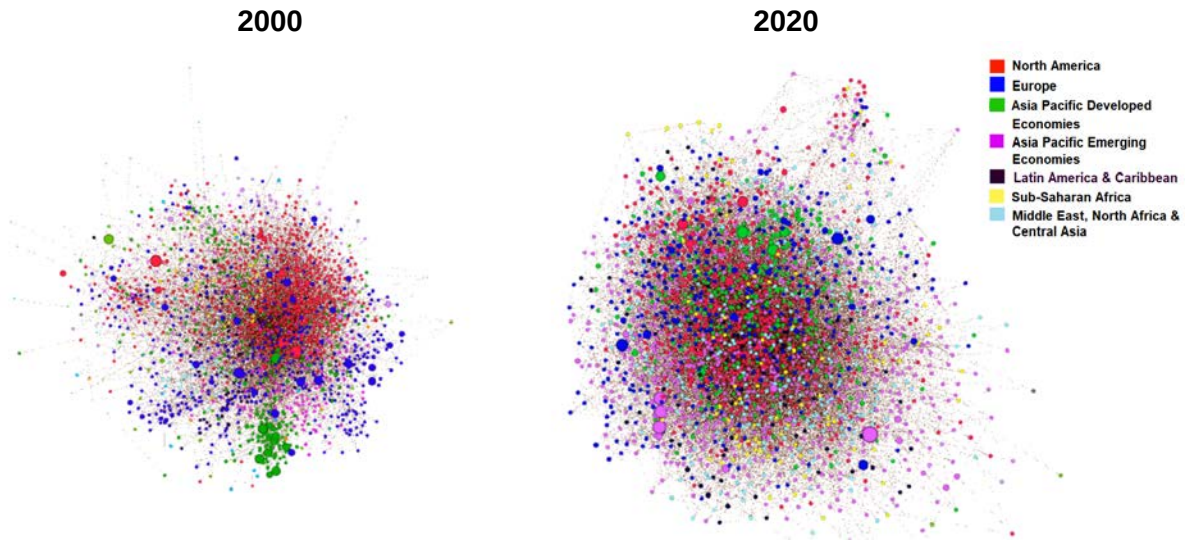
4. **Nonetheless, the use and classification of capital flow management measures (CFMs) and their relationships with macroprudential policy measures (MPMs) to manage volatile capital flows continue to be intensely debated.** ASEAN+3 member authorities have historically deployed CFMs and/or MPMs (CFMs/MPMs) as part of a comprehensive policy mix to address risks stemming from the external sector and maintain economic and financial stability. One of the main criticisms of the existing positions held by IFIs is that they do not sufficiently take into account the country-specific circumstances of the ASEAN+3 region (ASEAN 2019)—arguably the region with the most dynamic and open EMEs in the world, and a recipient of huge global capital flows.

5. **Unsurprisingly, traditional positions are being challenged.** Much of the literature has focused on global capital flows, sudden stops and crises, and the effective management

of those flows.[1] With global financial networks evolving to become increasingly more integrated and complex (Figure 1), tools to manage attendant capital flows also need to be commensurately more sophisticated, and "best practice" policies more nuanced. Ongoing work at international financial institutions (IFIs) is taking these developments into account, including reviewing the use of such tools to determine when and how they should be applied. Mindful of the changing environment, the OECD undertook a review of its Code and corresponding user guide between 2016–19, and published revised versions thereafter (OECD 2019a, b). In 2020, the IMF's Independent Evaluation Office (IEO) conducted an assessment of staff's advice to member authorities on capital flows during the period following the approval of the IMF IV (IEO 2020).

6. **Among ASEAN+3 members, views and practices on CFMs and MPMs converge in terms of general principles, but also differ in some areas.** Members generally agree that consistency with international standards and domestic institutional arrangements play an important role in the implementation of CFMs and/or MPMs. However, not all agree that the "best practices" recommended by IFIs are necessarily relevant, suitable, or feasible for all economies, in particular, small, open ones. In particular, ASEAN members underscore the importance of country-specific factors and the definition and classification of measures in any policy guidance (ASEAN 2019).

Figure 1. Global Financial Deepening and Integration



Sources: Credit Research Initiative of the National University of Singapore; Sun (2020); and AMRO (2021).
Note: Each node represents a listed financial institution (FI). The size of the node represents the magnitude of the FI's liabilities. The color of the node denotes its economy/region of domicile. Two nodes are connected with an edge if there is a non-zero correlation between the default risks of the two institutions. The thickness of the edge represents the strength of the default correlation.

7. **This policy position paper will assess whether the use of CFMs/MPMs may be justified for the ASEAN+3 region, and develop a "regional position" on their application.** Rather than reinvent the wheel, this paper refers to existing international rules, norms, and expectations on the management of capital flows, and analyzes them in the ASEAN+3 context, drawing on evolving views on the topic. AMRO staff's empirical analysis corroborates member concerns over the country-specific nature of the impact wrought by

[1] See Kawai and Lamberte (2010) for an overview; and Ghosh, Ostry, and Qureshi (2017) for a policy guide.

volatile capital flows. Staff recommend greater flexibility and pragmatism in managing such flows going forward, to better safeguard financial stability and medium-growth prospects.

8. **This paper is organized as follows.** Section II considers trends in capital flows into the ASEAN+3 region, and their potential spillover effects. Section III provides an overview of international positions on CFMs/MPMs, recent reviews of those positions, and ASEAN+3 members' corresponding views, based on the results of staff's survey of members. In Section IV, AMRO staff analyze the impact of the various types of capital flows on members' growth and financial stability to assess the merits of members' concerns, and offer recommendations on the use of CFMs/MPMs. The analysis is supported by background material prepared by staff (Box 1). Section V puts forward AMRO staff's proposal on the use of CFMs/MPMs for endorsement by the Executive Committee, and suggests some areas for future study on related country-specific issues.

Box 1. List of Background Papers

- "Capital Flow Management and Macroprudential Policy Measures in the ASEAN+3: Summary of Members' Survey Responses" (AMRO 2022a)
- "Capital Flow Management and Macroprudential Policy Measures in the ASEAN+3: A Database" (AMRO 2022b)
- "Do Volatile Capital Flows Put ASEAN+3 Growth at Risk?" Draft AMRO Working Paper (Oeking and Gabriella 2022)

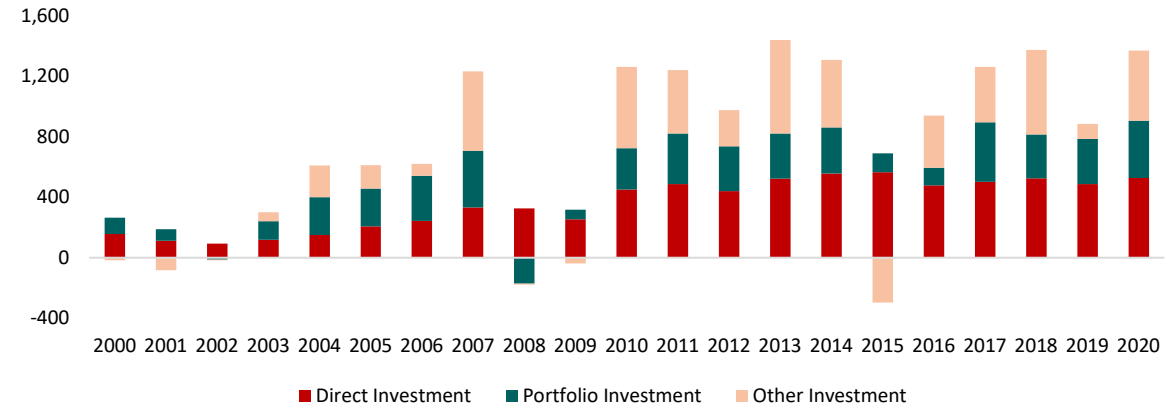
II. Capital Flows and Spillovers in the ASEAN+3

9. **The ASEAN+3 region has been a recipient of large capital inflows over the past two decades, amid intensifying financial globalization.** The patterns of non-resident capital inflows show that the region has benefited from the three main types of inflows: direct investment (DI), portfolio investment (PI), and other investment (OI), typically represented by bank loans and IFI loans (Figure 2). One salient feature is the significant increase in DI since the early-2000s, reflecting the region's attractiveness as a favored destination for longer-term, more stable investments and its important role in global value chains, notably, the EMEs and the CLMV (Box 2). Bank inflows have remained dominant, in part attributable to the two international financial centers in the region, Hong Kong, China (hereafter "Hong Kong") and Singapore, while portfolio inflows have declined in recent years, compared to the periods just prior to and after the GFC.

10. **Although capital inflows can drive significant positive outcomes for growth and financial development, they also expose an economy to the risks of sudden stops and reversals in capital flows.** As evidenced during the AFC and GFC, such shocks can be devastating for recipient economies. The relative size of the recipient versus source markets is important, especially given that imbalances and vulnerabilities could build up during extended periods of capital inflows, and magnify the impact of any reversal in those flows. Excessive capital inflows could also cause domestic currencies to overshoot and become overvalued, especially where markets are not sufficiently deep and liquid to absorb such shocks, leading to disorderly market conditions that pose risks to economic and financial stability.

11. **Global risk factors have been found to exert significant influence on capital flows.** Contagion and spillovers through trade, financial linkages, and regional proximity are strongly associated with sudden stops and retrenchments (Forbes and Warnock 2012). The continuing development of EME financial systems and strengthening policy frameworks have not insulated them from sudden stops, although their improved resilience has reduced the severity of disruptions caused by such events (CGFS 2021). For example, Asian EMEs had built significant policy buffers to absorb the shocks from the GFC and the COVID-19 pandemic crisis, in contrast to the AFC, when several countries had to approach the IMF for support.

Figure 2. ASEAN+3: Non-Resident Capital Flows
(Billions of US dollars)



Sources: IMF via Haver Analytics; and AMRO staff calculations.

12. **At the same time, financial globalization has greatly increased spillover risks.** In particular, financial spillovers have increased dramatically during crisis periods, attributable to volatile capital flows. Portfolio investors typically shift their funds from risky assets in EMEs to safe assets in advanced economies (AEs) during risk-off periods, but tend to return especially to ASEAN+3 EMEs because of their strong fundamentals and attractive growth prospects. The region saw strong gross capital inflows from 2004–07, during the risk-on period prior to the GFC, but portfolio and other (bank lending) inflows came to a sudden stop and reversed during the crisis. The subsequent recovery in AEs, supported by the massive injection of liquidity through both conventional and unconventional monetary policies, led to the resumption of capital inflows to the ASEAN+3 region.

13. **Aggregate market spillovers into the ASEAN+3 region from the rest of the world have been increasing gradually over time.** Vu (forthcoming) shows that such spillovers have been trending upward (Figure 3), evidence of growing international financial interconnectedness. Similarly, spillovers into the individual equity, FX and bond markets of selected ASEAN+3 economies show a general upward trend over time, with equity markets most affected—and typically peaking during crises—while the short-term impact on bond and FX markets have been more subdued. Accordingly, the risks of sudden stops and reversals in capital inflows have also been rising and hence, policies to strengthen macro-financial fundamentals and the design of appropriate measures to mitigate such risks have become ever more crucial.

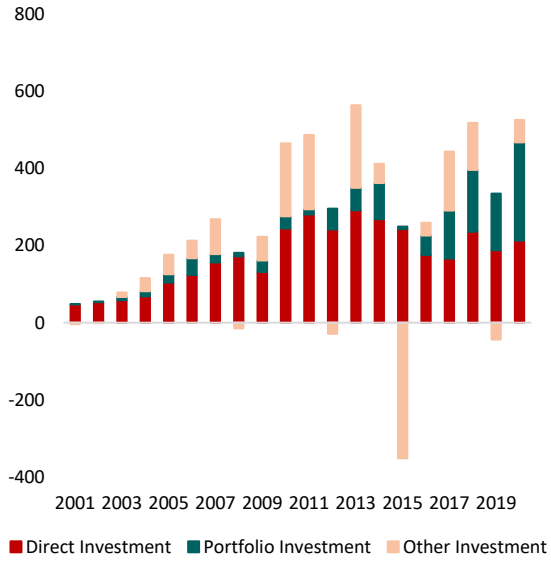
Box 2. Capital Flows to the ASEAN+3 Emerging Markets and Developing Economies

Capital flows to the region's emerging market and developing economies are analyzed in several separate groups to capture their differing characteristics. They comprise China, which is distinguished from the other ASEAN+3 emerging market economies (EMEs), given its sheer size, relatively closed capital account, and central role in regional and global trade; the ASEAN-4, with their open economies, plus Korea, an advanced economy but still with some EM characteristics; and the CLMV, fast-developing economies that are continuing to benefit from their growing importance within the regional and global value chains.

China has recorded a sharp increase in portfolio inflows in recent years, driven by its efforts to open its capital markets gradually and in an orderly manner. Annual portfolio investment (PI) inflows amounted as high as USD 254 billion in 2020 compared to USD 43 billion in 2006 just prior to the global financial crisis (GFC) (Box Figure 1). In 2015, the Chinese economy recorded large outflows in other investments (OI)—mainly in the form of bank flows—attributable in part to the turbulence in its financial markets that year. However, direct investment (DI) inflows have been dominant over the past two decades, albeit somewhat lower over the past 5 years compared to levels seen over the 2010–15 period.

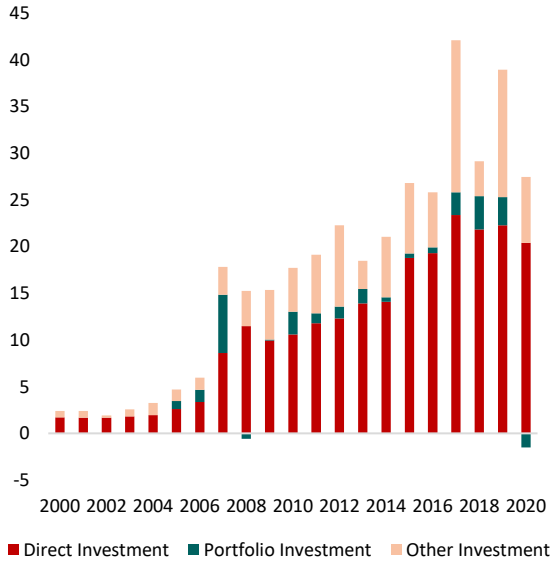
DI has become an increasingly important source of financing for the CLMV group of countries. There was a marked jump in DI in 2007, to USD 9 billion, which continued to grow in subsequent years to more than double the amount by 2020 (Box Figure 2). This trend reflects the rise of the CLMV countries as producers of intermediate goods exports, as they take advantage of their comparative advantage in low-cost but increasingly skilled labor and step into niche industries vacated by the region's emerging market economies (EMEs), which are themselves moving up the value chain (AMRO 2020). The CLMV have been successful in attracting DI and have benefited from technology transfer as they pivot from agriculture and natural resources to the manufacturing-for-exports strategy that had previously been employed successfully by the EMEs. At the same time, the CLMV are also receiving OI flows in the form of official development assistance, while the relatively small amount of portfolio inflows have largely been into Vietnam.

Box Figure 1. China: Non-Resident Capital Flows
(Billions of US dollars)



Sources: IMF via Haver Analytics; and AMRO staff calculations.

Box Figure 2. CLMV: Non-Resident Capital Flows
(Billions of US dollars)

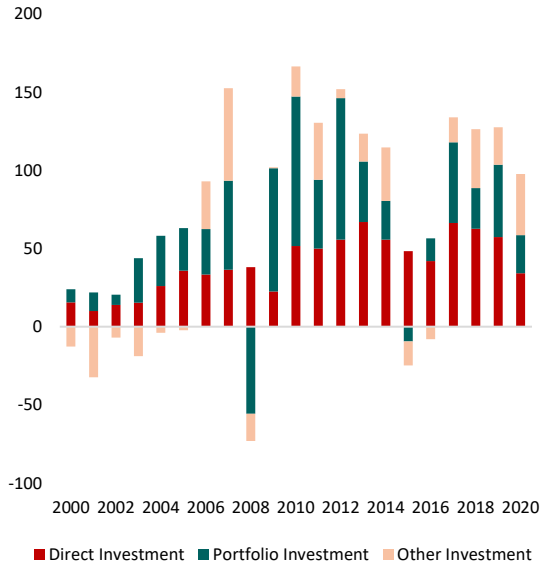


Sources: IMF via Haver Analytics; and AMRO staff calculations.

Within the ASEAN-4 plus Korea group, PI and DI inflows have been equally important but the latter's share of total flows has declined in recent years, following a rebound at the nadir of the GFC. Over the past 8 years, DI flows have become the most important source of external financing for this group of economies (Box Figure 3). This component of capital has accounted for around half of aggregate gross inflows, reflecting their growing roles in global value chains and the moderation in PI flows. Although bank credit remains the most important source of financing in the region, it tends to be domestically sourced, with OI posting net outflows during 9 out of the past 20 years.

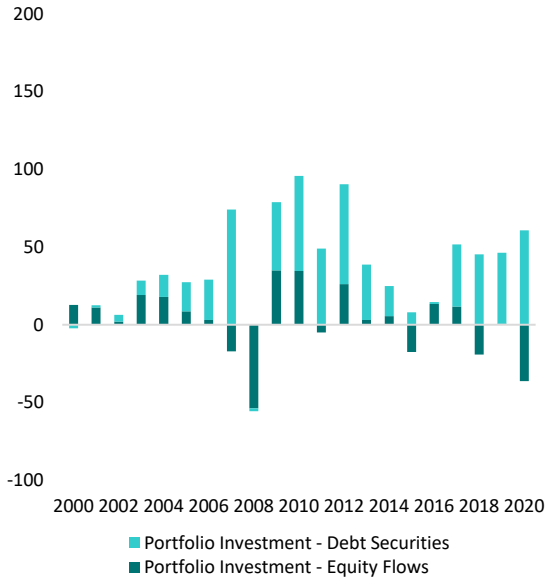
A salient feature of PI inflows into the ASEAN-4 plus Korea post-GFC is the significant increase in inflows into local currency debt securities. ASEAN-4 plus Korea governments have been putting a great deal of effort into developing local bond markets to diversify their financing sources and reduce their exposures to exchange rate risk. The region's attractive fixed income differentials vis-à-vis AEs have drawn international investors searching for yields in a protracted globally low interest rate environment. In addition to private investors, these bonds have also attracted public sector investors, such as sovereign wealth funds, public sector pension funds, and central banks (Preqin 2018). While the ASEAN-4 and Korea have benefited from the debt inflows, they also face rising risks of spillovers. PI flows are volatile, as evidenced by that of equity flows, and the inflows are vulnerable to sharp retrenchments during turbulent episodes, such as the GFC, the emerging market volatility in 2015, the US-China trade tensions in 2018, and the COVID-19 pandemic crisis in 2020 (Box Figure 4).

Box Figure 3. ASEAN-4 plus Korea: Non-Resident Capital Flows
(Billions of US dollars)



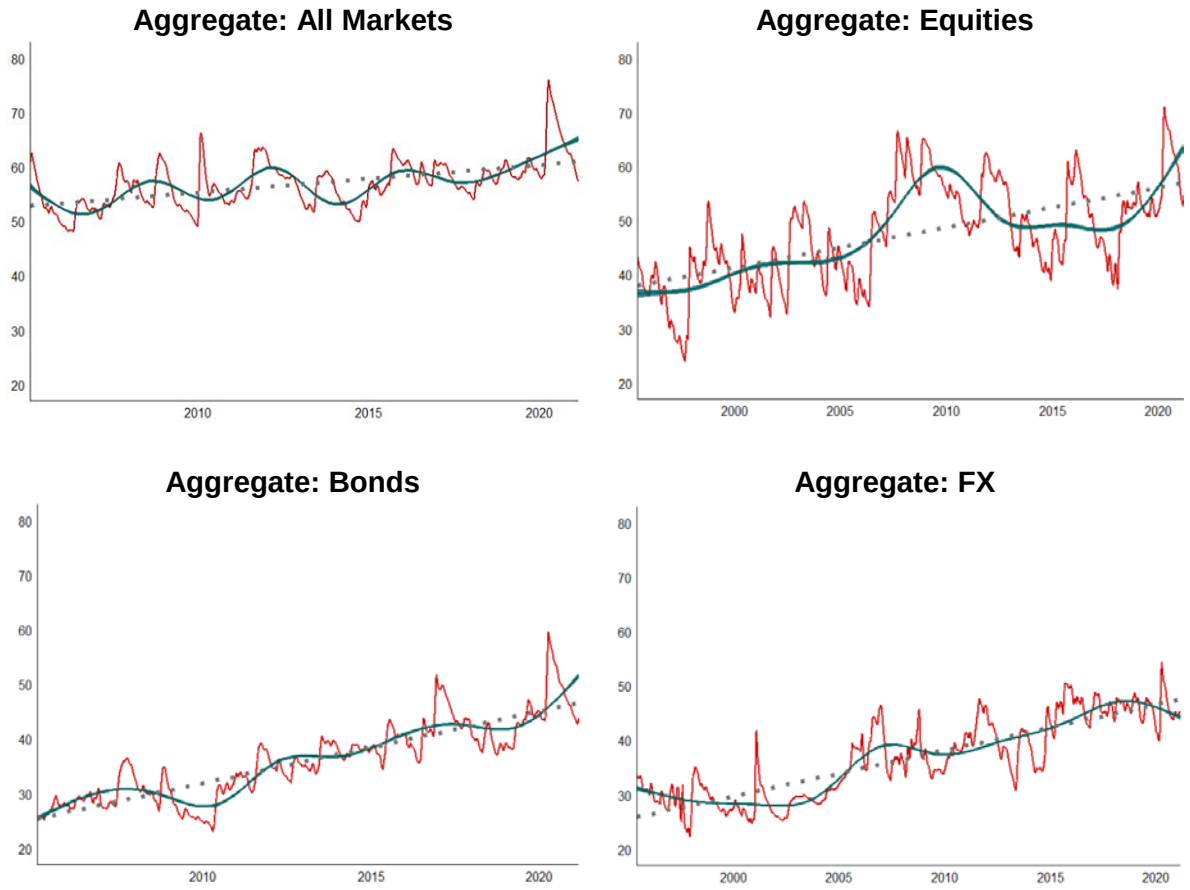
Sources: IMF via Haver Analytics; and AMRO staff calculations.

Box Figure 4. ASEAN-4 plus Korea: Non-Resident Portfolio Investment Flows
(Billions of US dollars)



Sources: IMF via Haver Analytics; and AMRO staff calculations.

Figure 3. Selected ASEAN+3: Financial Spillovers
(Percent, 1-month moving average)



Sources: Haver Analytics; Bloomberg Finance L.P; and Vu (forthcoming).
Note: The spillover indices are based on Diebold and Yilmaz (2009, 2012, 2014) and Antonakakis, Chatziantoniou, and Gabauer (2020). A higher index means higher spillovers transmitted from other markets into a given market. The gray dotted line represents a linear trendline; the green line represents the trendline estimated by fitting the spillover index into a generalized additive model; the red line represents a one-month moving average spillover index. The equity, bond and FX indices are respectively constructed from the equity market returns, sovereign bond yields and exchange rate returns of China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, and Thailand.

III. Managing Capital Flows

A. Definition

14. **There is no universal definition of CFMs.** The IMF IV appears to offer the broadest definition (Appendix I), by including both residency-based and other measures that are designed to limit capital flows (albeit the latter requires judgment). Other definitions distinguish solely based on residency (by other IFIs and academic publications). The definition of CFMs vis-à-vis their distinction from MPMs is probably most controversial. The definition of MPMs as tools to limit systemic financial risks to safeguard financial system stability are broadly consistent across major IFIs, such as the Bank for International Settlements (BIS), Financial Stability Board (FSB), IMF, as well as with academia.

15. **As a working definition of CFMs, several ASEAN+3 members broadly follow that proffered by IFIs, especially the IMF IV.** CFMs are broadly defined by members as measures that are specifically designed to limit or restrict short term and speculative capital flows “at the gate,” to: (1) safeguard both macroeconomic and financial system stability from

the risk of sudden reversals; (2) support the exchange rate against the risk of overshooting and guide its movement along a path that is appropriate for the overall macroeconomic outlook; and/or (3) influence their size and composition. Some members argue that CFMs should not differentiate capital flows with regard to residency.

16. **The majority of ASEAN+3 members do distinguish between CFMs and MPMs.**[2] Some do not have official or working definition(s) of CFMs or MPMs. Where they are defined, members have historically differentiated the measures based on the target of the tools—CFMs are specifically designed to limit cross-border capital flows while MPMs are used to mitigate systemic financial risks—to deal with property price bubbles and credit booms in the household and corporate sectors and cyclical behavior in financial markets. CFMs and MPMs may overlap when dealing with systemic risks to the financial system arising from large capital flows. Several members argue that CFMs could also be classified as MPMs if they are used to mitigate excessive financial market volatility. They stress that policy formulation should be risk-focused, with the objective of safeguarding financial stability, without necessarily labeling the respective policies as one or the other.

B. International Positions

17. **At the multilateral international level, rules, norms and expectations on capital flows have been established by particular IFIs or in international fora.** Some or all ASEAN+3 members are participants in these groups:[3]

- ***The OECD Code promotes liberalization of the full range of international capital movements between residents of member economies.*** Members may not impose new barriers to operations under List A of Annex A of OECD (2019a)—once a restriction has been abolished, it cannot be reintroduced;[4] members are expected to grant the benefit of open markets to residents of all other member economies alike, without discrimination, and where restrictions exist, they must be applied to all in the same way; information on any barrier to capital movements and trade in services should be transparent—complete, up-to-date, comprehensible and accessible.

- ***The G20, drawing on country experiences, arrived at non-binding conclusions on CFMs at the 2011 Cannes G20 Summit of Heads of State*** (G20 2011). They concluded that CFMs may constitute part of a broader policy approach to protect an economy from shocks; CFMs should not be used to avoid or unduly delay requisite economic adjustments; country-specific circumstances matter when considering the use of CFMs; CFMs should be countercyclical, transparent, properly communicated, and targeted to specific risks, and should be adapted or reversed once the destabilizing event abates; and CFM frameworks need to be sufficiently flexible to suit varying situations and challenges.

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[2] See AMRO (2022a) for a detailed discussion on ASEAN+3 members' stance on CFM versus MPM definitions.

[3] Although not relevant for the ASEAN+3, Article 63 of the Treaty on the Functioning of the European Union (TFEU) prohibits all restrictions on the movement of capital between EU countries and between EU countries and non-EU countries, unless they are legitimately in the public interest, to enable the efficient deployment of physical and financial capital for investment and financing purposes (EU 2012).

[4] List A operations, to which the "standstill" applies, are typically long-term, and derogation is required to reintroduce restrictions; no "standstill" applies to List B, which comprises typically short-term operations.

- ***The IMF IV closely adhered to the principles espoused by the G20.*** The IMF IV has been particularly pertinent for the IMF's membership in that it has become the basis for IMF staff advice to members, and their assessments on issues pertaining to capital flow liberalization and management (Table 1). Broadly, the IMF IV recommends that CFMs should not be used to substitute for or avoid necessary macroeconomic adjustment, but may be useful for supporting macroeconomic adjustment and safeguarding against systemic risks; CFMs should not be used pre-emptively, but may be appropriate for dealing with inflow surges when (1) underlying macroeconomic conditions are highly uncertain; (2) the room for macroeconomic policy adjustment is limited; and/or (3) appropriate policies take time to become effective; CFMs/MPMs should be targeted, transparent, and temporary, and should be phased out once inflow surges abate or when alternative, non-discriminatory policies become available; and CFMs should avoid discriminating based on residency.

Table 1. IMF IV: Assessment of Appropriateness of CFMs

Dimension	CFMs on Inflows	CFMs on Outflows
Guiding principle	• CFMs should not substitute for warranted macroeconomic adjustment	
Circumstances in which CFMs may be appropriate	• Capital inflow surge • Limited room to adjust policies, or adjustments take time to take effect • Financial stability risks	• Disruptive outflows • Crisis or imminent crisis • Broad policy response
	• Premature or improperly sequenced capital account liberalization	
Desirable features of CFMs	• Transparent • Do not discriminate between residents and non-residents • Temporary	
	• Targeted	• Comprehensive enough to be effective

Source: IMF (2018).

C. Recent Reviews of International Positions

18. **In recent years, reviews of existing international positions on CFMs/MPMs have led to revisions and recommendations for recalibrations of IFI policies for dealing with capital flow volatility.** In the aftermath of the GFC, many countries introduced MPMs to reduce systemic risks. Some of the measures taken by countries are differentiated by currency, wherein the treatment of transactions in foreign currency was deemed less favourable than those in local currency. The increased use of currency-based measures and the debate over their desirability and efficacy prompted a review of the OECD Code between 2016–19.

19. **Separately, the IMF IV has continued to face criticism with regard to its usefulness and value add.** It has been chided for its design and "impractical" rules, as well as its weaknesses on multilateral and spillovers aspects. IMF (2016) subsequently reviewed experiences with the IMF IV, and identified several areas that could benefit from further clarification or elaboration. They include: the interaction between CFMs and MPMs; the relevant conditions for the re-imposition of CFMs; and how the IMF IV could serve as a framework for greater multilateral consistency in designing policies to deal with capital flows. These considerations led to the IEO's evaluation on the usefulness of IMF staff advice to member countries on containing short-term risks from volatile capital flows while benefiting from international financial integration (IEO 2020).

20. **The review of the OECD Code resulted in changes to the Code itself (in the governance area) as well as modifications to the User's Guide that complements the Code.** The main outcomes, set forth in OECD (2019a), include:

- a new introduction that helps to clarify the treatment of macroprudential measures under the Code, which is included in the revised User's Guide.

- a new understanding on the treatment of measures on foreign currency liabilities, wherein non-residency-based restrictions on financial institutions' foreign currency liabilities are assessed on a case-by-case basis.

- a new understanding on the Basel III treatment of liquidity ratios that are differentiated by currency, even where they go beyond the Basel III minimum standard, which should not be considered capital flow restrictions.[5]

- clarification of the existing understanding on limits to the net FX positions of financial institutions, wherein limits on the "overall net FX position," as defined by the Basel Committee, is explicitly exempted from the scope of the Code.

- clarification of the treatment of measures taken by a country in the context of a reciprocity agreement with another country for macroprudential objectives, to address circumvention in cross-border borrowing, wherein such agreements would fall outside the Code.

21. **Meanwhile, the IEO has recommended a fresh look at the IMF IV, following extensive discussions with policymakers and in light of experience and new research findings in the intervening years since its issuance.** More specifically, IEO (2020) suggests that consideration be given to *"well-defined extensions of the circumstances in which CFMs would provide a helpful part of the policy toolbox"*, noting that it would provide the foundation for more useful policy dialogue with country authorities. Suggestions for possible calibrations to the IMF IV may include:

- greater flexibility in allowing for preemptive and longer-lasting use of CFMs under some circumstances, notably by:

    - easing the hard distinction between CFMs and MPMs applied to safeguard financial stability, to focus the policy dialogue on the use of appropriate tools, rather than on the labeling of those tools;

    - acknowledging that the use of CFMs/MPMs may be justified in addressing social issues such as housing affordability, consistent with taking into account a country's economic and political circumstances;

    - recognizing that the inclusion of CFMs as part of a broader policy package may increase macro policy space, especially for dealing with disruptive capital outflows, while weighing possible short-term stability gains against longer-term distortions.

[5] Some of the Basel III rules and OECD Code carve-outs have introduced tensions with the IMF IV. Towe (2020) provides a comprehensive comparison on coherence among international agreements vis-à-vis the treatment of CFMs.

- acknowledging the implications of capital account liberalization for income distribution—notably, financial inclusion and welfare gains—and providing guidance on mitigating measures where needed.

- reconsidering the concept of capital flow management—which has caused confusion and disagreement about its definition and evenhandedness in application—to focus on form and function rather than intent.

22. **The IEO review notes that advice framed by the IMF IV has not been entirely justified by research on capital flows.** Montiel (2020) argues that the empirical basis for the IMF IV is *"at best indirect."* While the IMF IV on capital account liberalization may be consistent with professional consensus, the link to the use of restrictions as inflow "gates" has been more contentious. The literature suggests that such measures could be effective in reducing the volume and changing the composition of inflows, and improving monetary policy space, but it offers little guidance on the appropriate types of restrictions and tenors, and their effectiveness. There is little empirical evidence on when the use of inflow restrictions might be beneficial, leading the author to conclude that the IMF's perspective has been colored by its long-standing ideological objection to capital account restrictions. Similarly, the IMF has been open to the selective and temporary use of outflow restrictions, but staff's policy advice in this area has not been supported by a fully articulated institutional view.

23. **Much more work is needed on CFMs.** Following a comprehensive review of the pre- and post-IMF IV literature, Montiel (2020) observes that policy guidance on CFMs could *"potentially be substantially improved by more empirical work on many"* of the issues. Some key aspects include: The financial versus institutional tradeoffs from liberalization; the types of inflow gates and conditions under which they are likely to be effective and their corresponding impact; and the magnitude of costs incurred by the deployment of inflow and outflow gates. The author posits that the *"broad-brush nature of multi-country studies"* may not be sufficiently useful and that country-specific studies of particular CFM episodes could be important complements. Separately, Towe (2020) notes that much work remains to be done on multilateral and bilateral surveillance of financial interconnectedness, as well as on source-country spillovers and the impact of financial regulations on capital flows.

24. **The IMF's Integrated Policy Framework (hereafter "IMF IPF") serves as a key input for the current review of the IMF IV.** The IMF IPF combines modelling, empirical work, and a review of country experiences. It reflects IMF staff's efforts to better analyze policy options and tradeoffs in a systematic manner: It considers jointly the role of monetary, exchange rate, CFMs and MPMs and their interactions with each other and other policies (IMF 2020), recognizing that that CFMs and MPMs may be better targeted at addressing financial stability risks as they are easier to adjust in the short-term. However, IMF staff acknowledge that operationalizing the framework by translating its findings into implementable policy advice would require further work. Challenges include ensuring robustness, developing appropriate metrics for assessing country characteristics, establishing the costs versus benefits of using various tools, among others.

D. ASEAN+3 Views[6]

25. **Many ASEAN+3 members welcome the recent more liberal positions of IFIs on CFMs/MPMs.** They concur that any liberalization of the capital account should be gradual, well-planned, and appropriately sequenced: Capital flows that are well-managed and stable would be beneficial to economies; CFMs and MPMs should be part of the policy toolkit to manage ever larger and more volatile capital flows, and they should complement other macroeconomic policies to achieve both price stability and financial stability. ASEAN+3 members also acknowledge that the positions of IFIs on CFMs/MPMs have evolved over time, particularly with the publication of IMF (2012).

26. **However, ASEAN+3 members note that there is a need to better understand CFMs/MPMs, their motivations, rationale, effectiveness, and cross-country experiences.** They are of the view that IFI policy guidance should be implemented in a more pragmatic way, sensitive to country-specific circumstances, and cognizant of the complexities and uncertainties facing policymakers. Members disagree with IFI positions in the following areas:

- ***The role of country-specific factors.*** Country-specific factors are not always given due consideration and reflected in IFI positions, which can be overly prescriptive and does not allow sufficient flexibility amid a rapidly evolving international monetary system. Specific policies should be assessed on a case-by-case basis, rather than with a one-size-fits-all approach. For instance, the asymmetric impact of capital flows and exchange rate fluctuations on EMEs and small open economies, compared to the major AEs, tend to be underestimated. There also needs to be greater recognition that real estate is an important asset class that is different from other types of (financial) assets, and should be treated separately with its own set of policy measures.

- ***The definition and classification of measures.*** Many ASEAN+3 members are of the view that the classification of policy measures into CFMs and MPMs is unhelpful and the negative connotations on the use of some of those measures place unwarranted pressure on policymaking, even though certain designated CFMs may be the most appropriate policy tools available to address domestic vulnerabilities and ensure financial stability. Given the overlapping nature of some CFMs and MPMs, the classification of certain measures could obscure their main purpose and potentially obstruct their implementation to mitigate risks in a timely manner. Moreover, the focus on the residency criterion oversimplifies the consideration as to whether a measure is a CFM or not.

- ***The objectives and applications of CFMs/MPMs.*** CFMs and MPMs could have multiple objectives and applications. Consistent with the IMF IV, members agree that MPMs should complement other macroeconomic policies, such as monetary policy, in addressing both price and financial stability concerns. Some members disagree with IMF-FSB-BIS (2016), which takes the view that MPMs should be implemented to limit only systemic risks and not be overburdened with other objectives that are not systemic in nature, but are nevertheless important to the financial soundness of the economy. Policymakers apply MPMs with multiple objectives in mind, and

[6] See AMRO (2022a) for a detailed discussion on ASEAN+3 members' views on the international position on CFMs and MPMs.

CFMs/MPMs should be part of a broad package of macro-financial policies available to authorities to address the challenges posed by volatile capital flows and other financial shocks.

- ***The timing of implementation and removal of measures.*** Several members argue that there should be flexibility to impose CFMs on a pre-emptive basis and, separately, to determine the appropriate timing for their removal. CFMs are considered an integral part of the policy toolkit for EMEs, to mitigate the impact of volatile capital flows and maintain stability in domestic markets. Given that the efficacy of some of these measures may take time to materialize, implementing them when a crisis is imminent may be too late, and more so if they are only put in place in the midst of a crisis. In some circumstances, it would more effective to implement CFMs pre-emptively to forestall market disruptions and then calibrate them at a later stage as individual situations warrant.

27. **Several ASEAN+3 members have continued to debate the prescriptions of the IMF IV and IMF staff's analysis and policy advice on capital flows.** For example, the IEO review finds that some major ASEAN members do not consider IMF staff's analysis and advice to add much value, nor have they influenced decisions in dealing with the challenges (Everaert and Gensberg 2020). Elsewhere, authorities have criticized the IMF for differing on how FX exposures should be addressed without offering alternative measures, or for being bogged down in applying the IMF IV and insufficiently nimble in providing support (Everaert 2020; Everaert and Gensberg 2020; Patnaik and Prasad 2020). More broadly, criticism of IMF advice by authorities in the region may be summarized as follows:

- Staff's analysis is seen to be too general, and does not provide insights into the reasons for changes in capital flows and the nature of those flows, thus reducing the credibility of any advice on exchange rate policy.

- Staff need to be prepared to advise on more specific and realistic alternative measures to deal with vulnerabilities that may threaten financial stability, if their position differs from that of member authorities'.

- Staff are perceived to be too pedantic in their assessment of CFMs and MPMs—there is a lack of clarity on how the two are differentiated, contributing to concerns about consistency and evenhandedness.

- Staff analysis and discussions should include views on the effectiveness of policy tools, as well as the best policy mix, which may include CFMs, MPMs, and FX interventions, to promote growth and safeguard financial stability.

IV. AMRO Staff Assessment and Recommendations

28. **The objective of the ASEAN+3 Economic Review and Policy Dialogue (ERPD) is to contribute to the macroeconomic stability of the region by promoting the adoption of sound macroeconomic and financial policies through peer review of policies among the members.** The ERPD aims to prevent financial crises through the early detection of risks and vulnerabilities in member economies and the swift implementation of remedial policy actions. But, while ASEAN+3 members acknowledge that strong economic fundamentals and policies should ultimately prevail in sustaining investor confidence, they recognize that capital flow shocks may be beyond a country's control, and that immediate,

short-term liquidity support may be necessary as a buffer toward sustaining market confidence. The ERPD was initially integrated into the Chiang Mai Initiative (CMI) in 2005—and remains so under the current Chiang Mai Initiative Multilateralisation (CMIM)—to support decision-making by potential creditors for any provision of support, and the subsequent monitoring of policies and performance of borrowing members (Kawai 2015).

29. **Following the AFC, the region's economies took steps to develop their local institutions, strengthen governance and economic fundamentals, and build policy space and financial buffers.** Their success in implementation was subsequently evidenced in their resilience against the spillovers of the GFC and currently, their ability to withstand the unprecedented shock of the COVID-19 crisis. Over time, ASEAN+3 authorities have supported economic activity and the financial sector through judicious use of various fiscal, monetary, CFM, and MPM levers (Khor, Guinigundo, and Kawai 2021). Financial regulators in the region and elsewhere around the world have also afforded regulatory forbearance more overtly during this pandemic, given the exceptional circumstances posed by the once-in-a-hundred-year event.

30. **ASEAN+3 members have had a long history and significant experience with the implementation of CFMs and MPMs.**[7] Members' design of CFMs and MPMs have generally covered three key areas: (1) the objective(s) of the measures; (2) the principles underlying the design of those measures; and (3) the methodologies adopted. Implementation of these diverse measures and their calibration and/or eventual removal appear to be well considered, and diverse toolkits are used to pre-emptively address macro-financial risks. That said, members acknowledge that studies on the effectiveness of CFMs and MPMs are still in their infancy, compared to, say, monetary policy instruments. They concede that disentangling the effects and contributions of the various policies is difficult, exacerbated by circumvention of measures by the targeted flows.

31. **AMRO staff have undertaken empirical analysis to assess the merits of ASEAN+3 members' positions toward CFMs/MPMs.** Staff apply a suite of econometric methods—quantile regression, vector autoregression(VAR), and conditional density forecasting—to the macro-financial indicators of member economies with open capital accounts that actively utilize CFMs/MPMs. They comprise Indonesia, Korea, Malaysia, Philippines, Thailand, and the two financial hubs, Hong Kong, Singapore (Oeking and Gabriella 2022). In particular, the more volatile (non-DI) capital flows— PI (equities and bonds) and OI (typically bank)—are analyzed for their impact on financial stability and economic growth.

32. **The findings allow AMRO staff to arrive at some preliminary conclusions and offer initial recommendations on the application of CFMs/MPMs among ASEAN+3 members.** AMRO staff's empirical analysis validate member's concerns over the impact of capital flows on financial stability and growth. Specifically, they appear to confirm the country-specific nature of those effects, notably, the influence of the different types of capital flows, and the extent and the duration of that impact. Consistent with the IEO (2020) findings, AMRO staff support the need for flexibility in managing volatile capital flows, specifically: (1) the types of capital flows that need to be managed and the tool(s) to be applied; (2) the timeframe during which CFMs/MPMs should be in place; and (3) the ability to utilize CFMs/MPMs in a pre-emptive manner, to safeguard financial stability and medium-

[7] See AMRO (2022b) for details of CFM and MPM measures implemented by ASEAN+3 authorities since the 1980s.

growth prospects. Unsurprisingly, staff's findings support the argument that the impact of capital flows can be quite economy-specific (Appendix II; Oeking and Gabriella 2022):[8]

- ***Different types of capital flows affect financial stability differently across member economies and over time.*** These relationships are econometrically modeled by staff—some findings are that the impact of the various flows affect Hong Kong and Indonesia differently between the first and second year of the risk horizon, but are largely consistent for the other countries over both years; and capital inflow shocks affect financial stability negatively through the property sector, as reflected in the widening real property price gap, over the short term in Hong Kong and Korea, and the medium term in Malaysia, Philippines, and Singapore. *Hence, CFMs/MPMs should be pragmatic, practical, and targeted, and policymakers should employ tools that are most appropriate for addressing domestic vulnerabilities and ensuring financial stability, irrespective of definition.*

- ***The timeframe during which capital flows affect an economy differ.*** For some economies, the empirical evidence suggests a positive direct link between the various types of capital flows—particularly, equity flows—and GDP growth 4 quarters ahead, especially during periods of booms and busts. The relationship between capital flows and growth appears less significant over the medium-term when estimated directly. However, it becomes much more important through the financial stability channel, suggesting that vulnerabilities can build up within an economy over time, and manifest through other channels. *Hence, there should be flexibility to keep CFMs/MPMs in place for a longer period beyond the recommended "temporary" timeframe, and authorities should have the discretion to decide the appropriate timing for their removal.*

- ***Capital flow volatility can put members' growth at risk.*** Staff's forward-looking stress tests confirm that the risks to financial stability increases in many economies following shocks to capital inflows and the build up in imbalances over time, and that tail risks to future growth rises. The effects may be specific to the types of capital flows depending on the characteristics of the member economy. Although counterfactuals are typically impossible to prove, the cost of shutting the gates on capital inflows only after a crisis has struck could be very high. *Given the asymmetric balance of risks, policymakers should have the latitude to utilize the full range of CFM/MPM tools in a pre-emptive manner, to minimize severe downside risks to the financial system and enhance growth prospects over the medium-term.*

33. **The constantly changing nature of capital flows within an increasingly complex international monetary system points to the need for continuing studies to understand their implications and impact.** At the multilateral level, AMRO could be more proactive in:

- engaging with other Regional Financing Arrangements (RFAs) and IFI partners to better understand issues related to capital flows, such as the sources and nature of

[8] The study does not explicitly model any measure that is already in place. In other words, the results would include any existing CFM or MPM during the period analyzed and relatively weak outcomes may not mean that capital flows do not have a strong impact on financial stability or growth, but because parts of the link have already been addressed with policy measures. The study also does not explicitly model the impact of capital outflows, so many of the findings are simply interpreted symmetrical.

capital flows that affect ASEAN+3 members and, in turn, how members may affect others outside the region;

- identifying systemic issues that could potentially lead to volatile capital flows in the region; and
- advocating for greater customization to meet the individual needs of ASEAN+3 members.

At the bilateral level, AMRO staff could collaborate with member authorities to empirically analyse the effectiveness of specific CFMs and MPMs for the various types of flows; and the timing of their application and calibration (and removal if and when considered no longer necessary).

V. Issues for Consideration

A. Questions Posed to Members

34. Does the Executive Committee (1) endorse AMRO staff's recommended positions on CFMs/MPMs for the ASEAN+3 economies; and (2) support the proposal that these recommendations underpin staff consultations with member authorities and, where relevant, form the basis of staff assessments on issues relating to CFMs and MPMs?

35. Should AMRO staff undertake future country-specific research into CFMs/MPMs, focusing on the types of capital flows, policy measures, and their impact on various sectors of the economy, as a regular part of the Annual Consultation?

36. Should AMRO staff establish more formal collaboration arrangements on CFMs/MPMs with other RFAs and IFIs, by setting up dedicated work agenda on the topic, focusing on the ASEAN+3 region and spillovers?

B. Summary of Responses from Members

37. **Members generally agree with AMRO staff's recommendations and welcome their findings, which are broadly aligned with the position held by many within the region.** Members underscore the need for flexibility in managing volatile capital flows and the importance of having CFMs/MPMs as part of the policy toolkit to maintain economic and financial stability. Some members commended AMRO for taking the initiative to empirically analyse the impact of volatile flows on the region, to better understand the importance of being able to apply CFMs/MPMs when necessary. However, while members support further assessments of CFMs/MPMs by AMRO staff, they do not think it is necessary to formally dedicate a separate segment of the Annual Consultation to the issue.

38. **Several members called on AMRO staff to undertake more country-specific research to capture the unique characteristics of each economy, as well as differences vis-à-vis other regions.** They propose focusing on issues such as the potential impact of the different types of capital flows on various sectors of the economy, the effectiveness of various policy measures, and their short- and long-term implications. The empirical evidence could then serve as feedback to the IMF IPF and the IMF IV. Specific suggestions include studying topics such as:

- ***Possible guiding principles for deploying CFMs/MPMs policies and tactical considerations.*** AMRO staff could undertake analyses in areas such as when certain CMF/MPM tools may be preferred over others and when they should be applied (e.g., pre-emptive CFMs and the timing of their eventual removal); the types of capital flows that would necessitate the implementation of certain policies; the pre-conditions for phasing out such measures; and the importance of a clear communication strategy in advance of any exit.

- ***The unique characteristics of financial and FX markets in the region that affect the management of capital flows.*** Despite members' continuing efforts to strengthen and deepen their financial markets since the AFC, some currency markets remain relatively thin, and may not be able to sufficiently absorb outsized and volatile capital flows. AMRO staff could undertake research into FX market dynamics and market microstructure to better understand market behaviors and policy choices for dealing with large and volatile capital flows.

- ***Possible policy responses by regional EMEs to spillovers from sizable policies implemented by AEs, particularly during periods of expansion and contraction.*** AMRO staff could examine the capital flow implications arising from the disproportionate size of recipient versus source country financial markets, and recommend policies for supporting orderly macroeconomics adjustments.

- ***The implications of financial digitalization on capital flows.*** AMRO staff should start looking into the challenges posed by financial digitalization to the more open and interconnected ASEAN+3 domestic financial markets.

39. **Members generally support more formal collaboration arrangements between AMRO and other RFAs and IFIs on CFM/MPM issues.** Some suggest setting up a dedicated work agenda on the topic, focusing on the ASEAN+3 region, to give IFIs a better understanding of the specific factors affecting the ASEAN+3 region/economies. Moreover, AMRO could coordinate with the IMF to emphasize the importance of policy collaboration and dialogue between source and recipient countries. Members are also supportive of bilateral research collaboration with AMRO staff on capital flow issues.

Appendix I. CFMs and MPMs: IFI Definitions

IMF Institutional View (IMF IV)

The term “capital flow management measures” (CFMs) is used to refer to those that are designed to limit capital flows. There are two types of CFMs (IMF 2012):

- Residency-based CFMs, which encompass a variety of measures (including taxes and regulations) affecting cross-border financial activity that discriminate based on residency (that is, between residents and non-residents). These measures are also generally referred to as capital controls; and

- Other CFMs, which do not discriminate based on residency, but are nonetheless designed to limit capital flows. These measures typically include prudential measures that differentiate transactions on the basis of currency as well as other measures (for example, minimum holding periods) that are usually applied to the non-financial sector.

CFM/MPMs (that is, CFMs that are also classified as MPMs) are measures that are designed to limit capital flows and reduce systemic financial risks stemming from such flows.

In practice, the classification of a particular measure as a CFM would require judgment as to whether the measure is, in fact, designed to limit capital flows. This assessment, in turn, needs to be based on country-specific circumstances, such as whether the measure was introduced or intensified in response to an inflow surge or disruptive outflows. Based on this definition, if a measure is not designed to limit capital flows it would not fall under the CFM nomenclature. Prudential measures—such as capital-adequacy requirements, loan-to-value ratios, and limits on net open FX positions—that are not designed to limit capital flows but rather, to ensure the resilience and soundness of the financial system, are not CFMs. Similarly, macroeconomic policies would not normally be classified as CFMs nor would structural and other policies that—while they may directly or indirectly inhibit capital flows—are not designed to limit capital flows.

OECD Code of Liberalization of Capital Movements (OECD Code)

The OECD has no clear definition, but broadly considers measures to be capital controls if they discriminate between residents and non-residents (OECD 2019a):

"[…] [R]estrictions on movements of capital to the extent necessary for effective economic co-operation. Measures designed to eliminate such restrictions are hereinafter called "measures of liberalization. […] Members shall, in particular, endeavour: i) to treat all non-resident-owned assets in the same way irrespective of the date of their formation, and ii) to permit the liquidation of all non-resident-owned assets and the transfer of such assets or of their liquidation proceeds. […] Members shall endeavour to avoid introducing any new exchange restrictions on the movements of capital or the use of non-resident-owned funds and shall endeavour to avoid making existing regulations more restrictive."

Treaty on the Functioning of the European Union (TFEU)

Article 63 TFEU prohibits all restrictions on the movement of capital and payments between Member States, as well as between Member States and third countries. As such, it does not

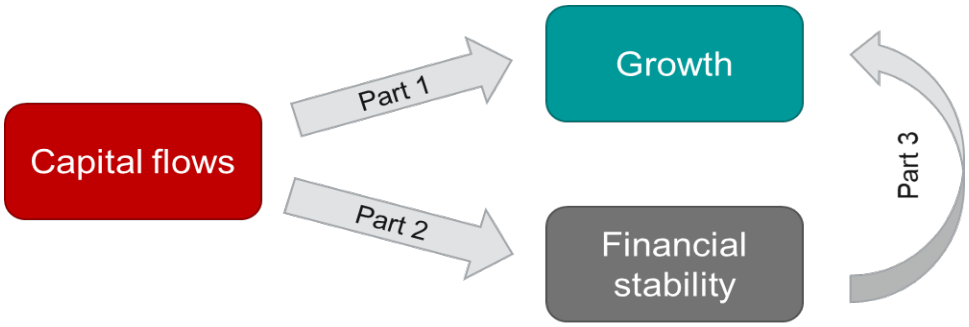
define capital controls. It mentions the relation between capital flows and macroprudential measures (EU 2012):

"Macroprudential measures are closely related to capital movements. Capital movements may be a source of systemic risks or may interact with macroprudential measures. Macroprudential measures may at times aim to limit excessive capital movements that would offset the original purpose of the policy. Reciprocation measures for example aim to prevent macroprudential measures in a country to address an overheating housing market being rendered ineffective by offsetting increases in foreign bank operations and/or cross-border lending into that country."

Appendix II. ASEAN+3 Growth at Risk[9]

Staff's analysis focuses on economies in the region with open capital accounts and receiving sizeable inflows. The economies comprise the ASEAN-5, Korea, and Hong Kong, China, and the analysis considers three components (Appendix Figure 1): (1) the empirical relationship between the different types of short-term capital flows and growth, irrespective of the main underlying channels driving this relationship; (2) whether and how capital flows impact financial stability; (3) whether capital flows put growth at risk in the ASEAN+3. The study uses gross non-resident portfolio flows (equities and bonds) data, which are sourced from the IMF's Balance of Payments statistics database, and credit and property price data from the BIS; the data span the 1990–2020 period but may start later for some countries, depending on availability.

Appendix Figure 1. Impact of Capital Flow Shocks: Overview of Relationships Analyzed



Source: Oeking and Gabriella (2022).

In a first step, the relationship between future GDP growth and prevailing levels of capital flows is established. The empirical analysis is based, in part, on the IMF's growth-at-risk (GaR) framework. Consistent with Prasad and others (2019) and Lafarguette (2019), a quantile regression with no other control variable is applied to investigate the simple relationship between capital flows and future growth over both the short- and medium-term (4 quarters and 12 quarters ahead, respectively). Given that the GaR framework is not a structural model but a parsimonious reduced-form forecasting system, the results do not necessarily represent causal links; it considers uncorrelated shocks without taking into account feedback loops, that is, it reflects comparative static analysis by assuming that other variables remain unchanged if one or more variables are shocked.

The main link between non-direct investment private capital flows and growth is via portfolio investment. For most economies, there is a positive link between the different types of capital flows and growth 4 quarters ahead, particularly so for equity flows (Appendix Table 1). The most significant results are at the outer quantiles, that is, during booms or busts. This finding may be interpreted as evidence that non-resident capital inflows are positively linked to growth in the short-term, especially when an economy is in a downturn or sharp upturn. There is little evidence of such strong relationships over the medium-term; indeed, the trends suggest a more negative relationship between capital flows and growth during periods of weak growth.

[9] This appendix summarizes the empirical analysis undertaken in Oeking and Gabriella (2022).

Appendix Table 1. Quantile Regression Results, with Capital Flows as Only Regressor

Portfolio investment

	Quantile						Quantile				
h=4	0.1	0.25	0.5	0.75	0.9	*h=12*	0.1	0.25	0.5	0.75	0.9
Hong Kong	+	-	+	+	-	Hong Kong	---	-	-	-	-
Indonesia	+++	+	+	+	+++	Indonesia	-	+	+	-	+
Korea	+	+	+	+	-	Korea	+	+	+	+	+++
Malaysia	+++	+	+	+	+++	Malaysia	-	+	+	+	+
Singapore	+++	+++	+	+++	+++	Singapore	---	-	+	+	+++
Thailand	+	+++	+	+	+	Thailand	-	-	-	+	+

Other investment

	Quantile						Quantile				
h=4	0.1	0.25	0.5	0.75	0.9	*h=12*	0.1	0.25	0.5	0.75	0.9
Hong Kong	+++	+	-	-	-	Hong Kong	-	+	-	-	-
Indonesia	+++	+++	+	+	+	Indonesia	-	+	+	+	+
Korea	-	-	+	+	+	Korea	---	+	+	+	+++
Malaysia	-	+	+	-	-	Malaysia	+	+	+	+	+
Singapore	-	-	-	-	-	Singapore	-	+	+	+	+
Thailand	-	-	-	-	---	Thailand	-	-	+	+	-

Equity flows

	Quantile						Quantile				
h=4	0.1	0.25	0.5	0.75	0.9	*h=12*	0.1	0.25	0.5	0.75	0.9
Hong Kong	+	-	+	+	-	Hong Kong	+	-	-	-	-
Indonesia	+++	+++	+	+	+++	Indonesia	-	+	+	-	+
Korea	+++	+++	+	+	+++	Korea	+	-	+	+	-
Malaysia	+++	+++	+	+	+++	Malaysia	-	-	-	+	+
Thailand	+++	+++	+	+	+	Thailand	-	-	-	+	+++

Bond flows

	Quantile						Quantile				
h=4	0.1	0.25	0.5	0.75	0.9	*h=12*	0.1	0.25	0.5	0.75	0.9
Hong Kong	+++	-	-	-	---	Hong Kong	---	-	-	-	-
Indonesia	+	+	+	+	-	Indonesia	---	+	+	-	+
Korea	---	-	-	-	---	Korea	-	+	+	+	+++
Malaysia	+	+	+	+	+	Malaysia	-	+	+	+	+
Thailand	+	+	-	+	-	Thailand	-	-	-	-	-

Source: Oeking and Gabriella (2022).
Note: Shows sign of the coefficient to the capital flow variable in equation (1) in Oeking and Gabriella (2022), where h represents the number of quarters ahead, $h \in \{4,12\}$. Green "+++" and orange "---" show statistically significant findings at the 90 percent confidence level.

The quantile regressions are expanded to take into account financial stability and other control variables that capture macro-financial conditions, using partitions. Partitions (or groupings of related variables) enable parsimonious models to be set up, with a reduced number of parameters estimated—an important feature, given the typically limited number of observations for macroeconomic data. Two partitions are defined to capture financial conditions and external factors (Appendix Table 2). Variables in each partition are aggregated using principal component analysis.

When the additional factors affecting growth are controlled for, many of the earlier results become insignificant, likely because the original variables already capture the main trends. In the short-term, the main finding is still that equity inflows during periods of weak growth in many economies are associated with higher growth 4 quarters ahead (short term). In the medium-term (12 quarters ahead), capital inflows seem to be negatively correlated with growth during periods of weak growth for several economies and across different types of capital flows; the opposite finding holds for periods of strong growth.

Appendix Table 2: Selected ASEAN+3: Availability of Partition Variables

Financial conditions	Hong Kong	Indonesia	Korea	Malaysia	Singapore	Thailand
Term premia			x	x	x	x
Sovereign spread		x	x	x	x	x
Bond returns	x	x	x	x	x	x
Bond historical volatility	x		x	x	x	x
Equity returns	x	x		x	x	x
Equity historical volatility	x	x	x	x	x	x
CDS spreads	x		x			x
Government bond yields	x	x	x	x	x	x
Prime business lending rates	x		x		x	x

External factors	Hong Kong	Indonesia	Korea	Malaysia	Singapore	Thailand
US growth	x	x	x	x	x	x
China's growth	x	x	x	x	x	x
Euro area growth	x	x	x	x	x	x
Commodity prices, energy	x	x	x	x		x
Commodity prices, non-energy			x		x	
VIX	x	x	x	x	x	x

Source: Oeking and Gabriella (2022).
Note: The partitions include a different sets of variables for each economy as we review partitions to adequately capture the main economic trends, and to provide a high variance ratio by including those variables most informative as shown by the loadings. Also, different economies have different data series available.

Next, the impact of capital flows on financial stability is examined. Financial stability is represented by the financial cycle and its components—credit to GDP, real credit growth, and real property price growth—which have been found to be the most promising leading indicator of financial crises (Alessi and Detken 2009; Drehmann, Borio, and Tsatsaronis 2012).The impact of different types of capital flows on deviations or “gaps” from the historical norms of the representative financial stability variables is estimated using a Vector Autoregression (VAR) model.

The evidence on the impact of capital flows on financial sector stability is mixed, underscoring the country-specific nature of capital flow shocks. Historically, shocks to capital flows affect the financial stability indicators similarly in both the first and second year of the risk horizon, for Korea, Philippines, and Thailand; in particular, increases in other investment flows appear to have the most negative impact (Appendix Table 3). Capital flow surges tend to impact Hong Kong’s financial stability indicators negatively within 12 months, and then recede for a few indicators, but takes time to build up in Indonesia and manifest in the second year. Surges in bank inflows appear to consistently have a negative impact on most economies, while shocks to portfolio inflows appear to widen the real property price gap almost all regional economies in the short-term, with lingering effects in Malaysia, Philippines, and Singapore.

Appendix Table 3. Selected ASEAN+3: Impact of Capital Flow Shocks on Financial Stability Indicators

Year = 1		Hong Kong	Indonesia	Korea	Malaysia	Philippines	Singapore	Thailand
Credit Gap	Portfolio investment	○	●	○	○	●	○	●
	Equity flows	●	●	●	○	●		●
	Bond flows	○	●	●	●	○		○
	Other investment	●	●	●	○	○	○	●
Credit Growth Gap	Portfolio investment	●	●	○	○	●	○	○
	Equity flows	●	●	●	○	○		●
	Bond flows	●	●	●	○	●		●
	Other investment	○	●	●	○	●	○	●
Real Property Price Gap	Portfolio investment	●	○	●	●	○	●	○
	Equity flows	○	○	○	●	●		○
	Bond flows	●	○	●	○	○		○
	Other investment	○	○	●	○	○	○	○
Financial Cycle	Portfolio investment	○	●	○	○	●	○	●
	Equity flows	●	●	●	○	○		●
	Bond flows	○	●	●	●	●		●
	Other investment	○	●	●	●	○	○	●

Year = 2		Hong Kong	Indonesia	Korea	Malaysia	Philippines	Singapore	Thailand
Credit Gap	Portfolio investment	○	●	○	○	○	○	○
	Equity flows	○	●	●	●	○		○
	Bond flows	●	○	●	○	○		○
	Other investment	○	●	●	●	○	○	●
Credit Growth Gap	Portfolio investment	○	●	○	○	●	●	○
	Equity flows	●	●	○	○	○		●
	Bond flows	●	○	●	○	●		○
	Other investment	●	●	●	●	●	○	●
Real Property Price Gap	Portfolio investment	●	●	○	○	○	●	○
	Equity flows	●	○	○	●	●		●
	Bond flows	●	○	○	○	○		○
	Other investment	○	○	○	○	○	●	○
Financial Cycle	Portfolio investment	○	●	○	○	○	○	○
	Equity flows	○	●	●	●	○		○
	Bond flows	●	○	●	○	○		○
	Other investment	○	●	●	●	○	●	●

Source: Oeking and Gabriella (2022).
Note: Dots show the results from the impulse responses as described in equation (3) in Oeking and Gabriella (2022). Red dot means that financial stability is weakened (higher financial gap); green dot means financial stability is strengthened (lower financial gap), and white dot means the result is not significant.

In the third step, the link between capital flows and financial stability is incorporated into the quantile regressions to determine whether shocks to capital flows put growth at risk. Even if capital flows *per se* do not have a negative association with growth over the medium term, their potential impact on financial stability could shed light on their ultimate effect on growth:

- First, two different sets of quantile regressions are run ("basic" and "extended"),[10] both modelling a relatively ad-hoc inclusion of the linkage between capital flows and financial stability—one more generalized, the other taking into account more country-specific features. A full distribution of future growth is developed based on the conditional quantiles from the regression.

[10] The basic model excludes capital flows as an explicit regressor and focuses on the financial stability variable; the extended model includes both capital flows and financial stability variables.

- Subsequently, the GaR model—which links macro-financial conditions to the probability distribution of future real GDP growth— is used to derive "growth-at-risk" at specific points in time (Adrian, Boyarchenko, and Giannone 2019; Prasad and others 2019; Lafarguette 2019), with the 5th percentile of the growth distribution defined as the severely adverse outcome.

- Finally, counterfactual scenario analysis is undertaken. Here, the impact of a point-in-time shock to capital flows—via its effect on financial stability—on the distribution of future growth is simulated. Under the basic model, a uniform shock across economies of 0.2 standard deviation —which is based on the estimated maximum range of impulse responses of financial stability to inflow shocks—on the financial stability indicator is assumed (Appendix Table 4). Under the extended model, the size of the shocks correspond to the results from the VAR.

Appendix Table 4: Selected ASEAN+3: Estimated Size of Shock to Financial Stability
(Number of standard deviations)

Capital Flow Type	Hong Kong	Indonesia	Korea	Malaysia	Singapore	Thailand
Portfolio investment	–	0.16	–	–	–	-0.04
Equity flows	0.06	0.22	-0.21	-0.05		-0.04
Bond flows	-0.10	-0.08	0.15	-0.03		0.03
Other investment	-0.04	0.08	0.16	0.04	-0.09	0.04

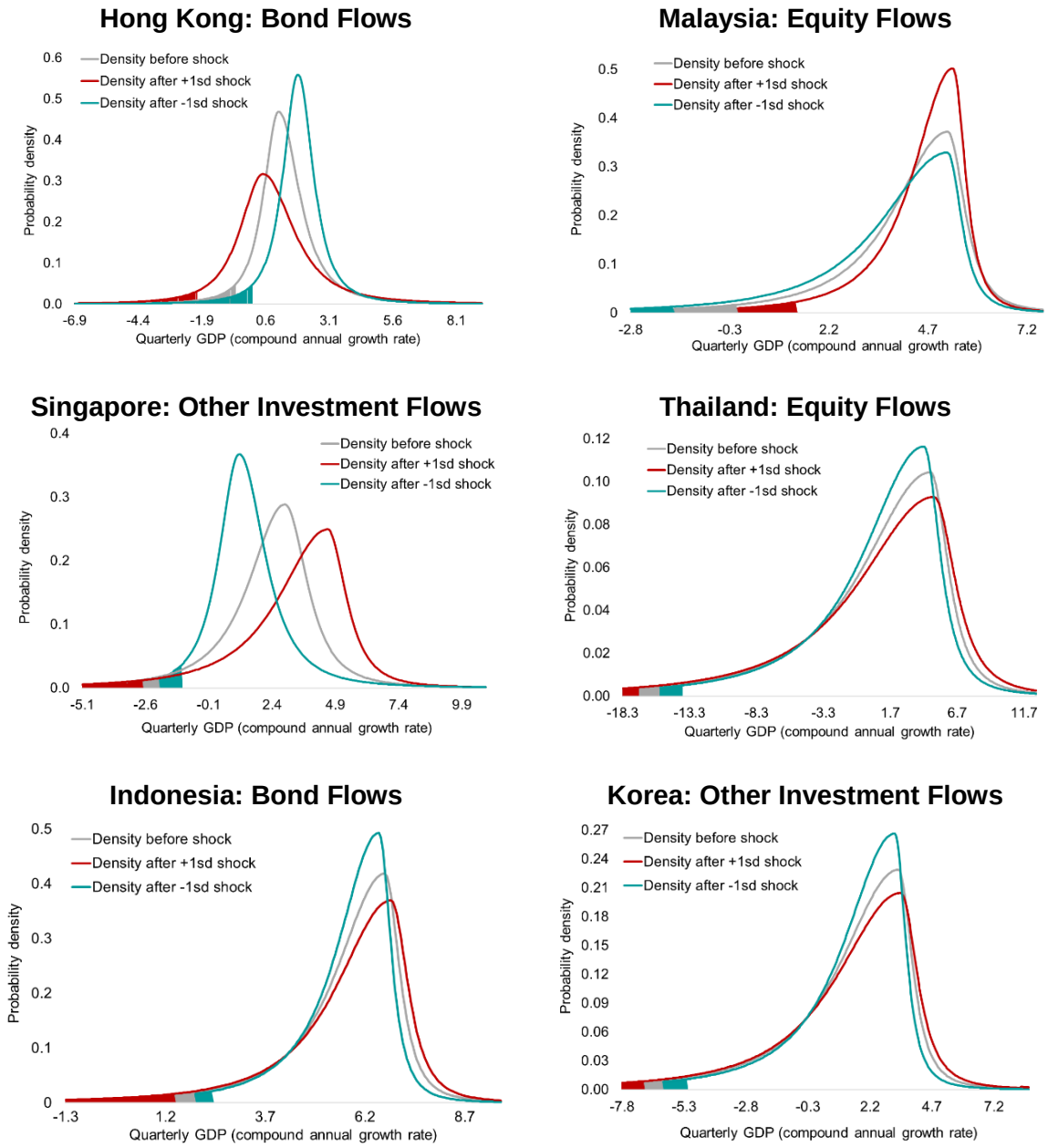
Source: Oeking and Gabriella (2022).
Note: Derived from the impulse response functions estimated for Appendix Table 3; shows the maximum statistically significant impulse responses as measured in standard deviations.

Overall, the empirical findings suggest that capital flows matter for growth, through the financial stability channel. Following a shock to capital inflows, financial stability weakens in many economies and so does the tail risk of future growth. The effects can also be quite economy-specific:

- The results of the basic model differ by economy and forecast horizon. For some, weakening (strengthening) financial stability—which is assumed to be driven by capital flow shocks—is correlated with the probability of lower (higher) tail growth (Indonesia throughout the entire forecast horizon; Singapore after at least six quarters). For others, the probability of higher tail growth is greatest at six quarters before worsening subsequently (Hong Kong, Malaysia, Thailand); for yet others, tail risk growth under the 5 percent GaR is only marginally affected (Korea).

- The extended model focuses on the impact on medium-term growth after capital inflows have built up over time. For all economies, tail risk growth 12 quarters ahead is found to be weaker following a bond inflow shock, and stronger following a bond outflow shock. In Indonesia and Thailand, surges in the various types of capital inflows consistently increase the tail risks to growth. Economic growth in Korea and Malaysia is most vulnerable to equity outflows, and Malaysia is also exposed to other investment outflows. Examples of the full distribution of future growth and corresponding 5 percent GaR clearly show that the full distribution can look quite different across economies, and change in distinct ways after a shock (Appendix Figure 2).

Appendix Figure 2. Selected ASEAN+3: Future Growth Distributions and Growth-at-Risk, Extended Model



Sources: Bank for International Settlements, IMF, and national authorities, all via Haver Analytics; and authors' estimates.
Note: Shaded parts represent 5 percent GaR. Time periods considered are Q1 2020 for Hong Kong; Q2 2019 for Malaysia; Q2 2019 for Singapore; Q2 2019 for Thailand; Q2 2020 for Indonesia; and Q2 2019 for Korea. sd = standard deviation.

There are a couple of caveats to the analysis:

- The findings do not explicitly model any measure that has been implemented. Thus, they would also capture any CFMs/MPMs already in place during the period analyzed. For example, a country that explicitly relies on policy measures to address financial stability concerns from capital flows could show up in the results as having a relatively weaker link between the two, not because capital flows do not have a strong impact on financial stability, but because any link may have already been reduced, in part, with policy. Thus, the analysis does not provide any assessment on the effectiveness of any specific CFM or MPM measure in place.

- The analysis shows the varying impact of the different types of capital flows across individual economies over the full time period for which data are available. Their significance and signs may change depending on sub-periods selected, which would again underscore the importance of economy- and situation-specific considerations in determining how shocks or potential shocks to capital flows should be managed.

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