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BACKGROUND NOTE 3: PRINCIPLES FOR THE DESIGN OF MEASURES TO ADDRESS SYSTEMIC RISKS FROM FX MISMATCHES

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PRINCIPLES FOR THE DESIGN OF MEASURES TO ADDRESS SYSTEMIC RISKS FROM FX MISMATCHES

This note describes the key principles for the design and implementation of preemptive CFM/MPMs. These measures should be designed to be effective—so they achieve their intended goal and are not easily circumvented—and efficient—so they minimize distortions and costs. Preemptive CFM/MPMs should be targeted, calibrated to risks, transparent, and as temporary as possible. The appropriate design depends on country circumstances, such as institutional and legal constraints, as well as the precise source of the vulnerability. Where measures that do not discriminate by residency are available and effective, they should be preferred.

1. While this review proposes the preemptive use of CFM/MPMs, the key principles for the design of such measures follow from the 2012 Institutional View (IV) and the Fund’s macroprudential policy framework. In particular, the use of CFM/MPMs should be aligned with the key principles that are consistent across both the IV and the macroprudential frameworks ([IMF, 2012](#), paragraph 34; [IMF, 2017](#), paragraphs 45 and 47). These are to: (i) avoid using CFMs/MPMs as a substitute for necessary macroeconomic adjustment; (ii) use the policy instruments that are the most effective, efficient, and direct, and the least distortive in addressing the policy objective; and (iii) seek to treat residents and nonresidents in an evenhanded manner. Such measures should, moreover, be transparent and generally temporary ([IMF, 2012](#)).¹

2. Preemptive CFM/MPMs should be designed to address systemic risks from FX mismatches by targeting them at source. For the use of preemptive CFM/MPMs to be appropriate, systemic financial risks should be elevated owing to FX mismatches. To assess and mitigate these risks effectively, it is important to identify the magnitude and source of FX mismatches across the relevant sectors (financial sector, non-financial corporate sector, and household sector) as well as the underlying financial transactions (e.g., type and maturity of financial instruments) that give rise to the risks (see also Background Note 2). Based on this information (as available), the measure should closely target those specific sector(s) and financial transaction(s) that give rise to FX mismatches—on balance sheets overall, or at relevant shorter maturities. Examples of measures targeting FX mismatches for each sector are shown in Table 1.

3. Preemptive CFM/MPMs should be calibrated in a manner that addresses vulnerabilities effectively, while minimizing costs and distortions. The measures should be calibrated to address FX mismatches effectively without generating undesirably strong impacts on capital flows, domestic

¹ For measures that seek to contain systemic risk and differentiate by currency, the assessment of whether the measure is assessed as an MPM under the Fund’s macroprudential framework or a CFM/MPM under the IV, depends on the context, the calibration of the measure, and other country-specific circumstances (IMF, 2012; IMF, 2017). In practice, measures that affect domestic banks’ lending in FX to domestic unhedged borrowers have typically been assessed as an MPM only, while measures that affect FX liabilities of banks or non-financial corporates (NFCs) have been assessed as MPM or CFM/MPM depending on the circumstances (see also IMF, 2012, Annex II, and IMF, 2017, paragraphs 50 and 51). MPMs that affect international financial transactions and discriminate by residency are always assessed as CFM/MPMs.

credit, output, or market functioning (IMF, 2014). Among the alternative instruments that could target the same sources of risks, the most efficient preemptive CFM/MPMs are preferred, i.e., those that minimize distortions and costs.

- A narrowly targeted design can help contain potential unintended side-effects and costs, by reducing the scope for the measure to curtail other capital flows or develop unintended distributional effects. A potential drawback of a narrowly targeted measure can be that such a measure is prone to circumvention. The measure should therefore target risks as closely as possible without undermining effectiveness.
- Certain price-based measures (e.g., a higher reserve requirement on non-resident FX liabilities) can be easier to adjust and may be less distortionary than ceilings (i.e., dollar limits) on the volume of FX inflows, when they are well calibrated to work through incentives. However, some country authorities may face challenges in calibrating or flexibly adapting price-based measures, such as taxes that require legislation, while they may have the capacity to implement administrative measures (see also Background Note 1). There can also be informational obstacles to enforcing the most efficient tool. This can generate trade-offs for the design of CFM/MPMs, requiring a need for caution in the calibration of the tool and an effort to close such data gaps (IMF, 2014).
- CFM/MPMs that target certain types of flows (e.g., short-term FX debt) and encourage a shift toward potentially less risky flows (e.g., by imposing a reserve requirement or levy on banks' external FX liabilities that is higher for shorter maturities) may reduce systemic risks while having relatively limited effects on overall capital inflows and the exchange rate. Such measures may therefore be more efficient than broader measures, such as limits on all FX borrowing from abroad.
- Regardless of whether measures are administrative, price or quantity based, they should be calibrated in a manner that is commensurate with the policy objective, while minimizing costs and distortions (IMF, 2017). For instance, credit rating requirements, all-in-cost ceilings, or hedging requirements on agents engaged in external borrowing should not be so strict as to preclude nearly all enterprises from borrowing from abroad.

4. Measures that increase resilience to FX mismatches can be useful, as are those that reduce amplification from an interaction with other drivers of systemic risk. Preemptive CFM/MPMs can be designed to increase resilience to aggregate shocks by building buffers for those sectors or institutions that are exposed to FX mismatches. This increase in resilience can limit adverse effects from borrowers reaching their solvency or debt repayment capacity limits in the event of adverse shocks (see also Background Note 2). Examples of designs that help build resilience include maximum leverage limits (caps on borrowing relative to equity capital) for corporates based on their external FX borrowing, and levies on external liabilities in FX that feed a dedicated resource of liquid FX assets that can be used when rollover risk materializes (see Table 1).

Table 1. MPMs, CFMs, and CFM/MPMs to Address FX Mismatches

Type/sector of vulnerabilities ^{1/}	Banks and NBFIs	Non-financial corporations (NFCs)	Households (HHs)
FX balance sheet mismatch	<ul style="list-style-type: none"> Capital requirements based on the net open FX position Constraints on the net open FX position Limits on FX derivatives positions Limits on banks' lending in FX Caps on credit growth in FX Taxes on foreign inflows of capital* Limits on FX borrowing from abroad* Higher (marginal) reserve requirement on FX than local currency liabilities Higher (marginal) reserve requirement on FX liabilities to nonresidents than residents* 	<ul style="list-style-type: none"> Sectoral capital requirements (risk weights, loss given default floors) for banks FX lending to (unhedged) NFCs Requirements on NFCs to hedge FX exposures Tighter lending standards on banks for (unhedged) FX lending to NFCs Loan-to-value (LTV) and/or debt service coverage (DSC) limits for CRE loans in FX Caps on banks' sectoral FX credit growth Maximum leverage requirements based on NFC's borrowing from abroad in FX* Minimum requirements for NFC's credit rating for external borrowing* Taxes on foreign inflows of capital* Limits on (unhedged) NFCs' FX borrowing from abroad* 	<ul style="list-style-type: none"> Sectoral capital requirements (risk weights, LGD floors) for banks' FX lending to (unhedged) HHs Tighter lending standards on banks for (unhedged) HH borrowing in FX Tighter LTV, debt-to-income (DTI), and/or debt-service-to-income (DSTI) limits on (unhedged) FX mortgage loans Differentiated stamp duty rates on (unhedged) HHs with FX mortgage loans Caps on banks' sectoral FX credit growth, Tax on household borrowing from abroad* Limits on (unhedged) HHs' FX borrowing from abroad*
FX maturity mismatch	<ul style="list-style-type: none"> FX liquidity coverage ratio (LCR) FX net stable funding ratio (NSFR) Caps on FX loan-to-deposit (LTD) ratio Maturity dependent levies on banks' non-core (e.g., short-term non-deposit) FX liabilities Higher (marginal) reserves requirement on short-term than long-term FX liabilities Higher marginal reserves requirement on the new flow of short-term non-resident FX liabilities* Maturity-dependent constraints on external funding in FX* 	<ul style="list-style-type: none"> Liquid asset requirements on NFCs which borrow (unhedged) in FX Maturity dependent interest rate limits with which NFCs can borrow (unhedged) in FX from abroad* Maximum leverage requirements based on NFC short-term FX borrowing from abroad* Unremunerated reserve requirement on NFC short-term borrowing in FX from abroad Minimum liquidity ratios between short-term FX assets and liabilities for NFCs borrowing abroad* 	<ul style="list-style-type: none"> Unremunerated reserve requirements on HH short-term borrowing from abroad in FX*

^{1/} This table includes a non-exhaustive list of measures that in practice may be MPMs, CFMs, or CFM/MPMs depending on their objectives and design. Measures affecting cross-border financial activity that discriminate on the basis of residency (marked with *) will always constitute CFMs or CFM/MPMs. Some measures in the table could be used to contain both FX balance sheet and FX maturity mismatch, but they are recorded only once.

5. Adjustment costs from CFM/MPMs should be considered in the implementation stage.

Adjustment costs to banks from measures that affect the new flow will typically be smaller than measures that affect the stock of existing FX liabilities. Measures that are designed to affect the new flow only, such as marginal reserve requirements, can be calibrated in a manner that achieves relatively strong effects on new flows while avoiding adjustment costs to banks that would arise if the measure were applied to all existing FX liabilities. When effective CFM/MPMs on new flows are unavailable or inefficient and they need to be calibrated on component(s) of balance sheets (such as the stock of all existing external borrowing), such adjustment costs are likely to arise and would need to be mitigated through phase-in or a stepwise tightening.

6. Measures that do not discriminate by residency are preferred. Where a measure is available that does not discriminate by residency and that can contribute to containing systemic risks from FX mismatches, it should be preferred to a residency-based CFM/MPM. MPMs, which are measures that do not discriminate by residency and are not designed to limit capital flows, would always be preferred. For instance, consideration should be given to MPMs that provide incentives for banks and corporates to hedge FX mismatches, thereby reducing the underlying stock vulnerability. Indeed, as stipulated in the main paper, a CFM/MPM should be used only when MPMs are not available or are insufficient to address the policy concern.

7. Preemptive CFM/MPMs should be transparent. As stressed in both the IV and the macroprudential framework, clear communication of the policy objectives and the specific measures being used would help avoid disrupting market and public expectations. A timely announcement of a well explained CFM/MPM would make it easier for the targeted sectors to understand the authorities' intentions. Clear communication would also make it possible to set accurate expectations regarding when and under what conditions the measures would be removed or adjusted.

8. Preemptive CFM/MPMs should be reassessed periodically and recalibrated if possible, to minimize possible distortions and unintended side-effects that can arise over time. As set out in the Board paper, and in line with the IV, the CFM/MPM should be recalibrated if the vulnerabilities that led to its adoption subside or an alternative, less distortionary, tool becomes available. Moreover, as addressing stock vulnerabilities may take time, there is scope for unintended effects and distortions, such as from attempts at circumvention, to emerge and strengthen over time (Background Note 1). The continued effectiveness of the measure and the potential emergence of circumvention and side effects should therefore be regularly reviewed. These periodic evaluations can assess whether an alternative measure can be found that is an MPM or a CFM/MPM that addresses the concern in a manner that does not discriminate by residency and/or is less distortive, or whether the design of the existing CFM/MPM measure needs to be adjusted to counter the side-effects.

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BACKGROUND NOTE 4: USING THE IPF ANALYTICAL TOOLKIT TO ENHANCE POLICY ASSESSMENTS

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USING THE IPF ANALYTICAL TOOLKIT TO ENHANCE POLICY ASSESSMENTS

1. Insights from the IPF workstream can help guide the appropriate policy mix during an inflow surge, based on the shock and country characteristics. This Background Note describes how the insights from the IPF workstream can help apply the IV framework during surges (right-hand side of Figure 1 in the Board paper).¹ The IPF examines the integrated use of all instruments, i.e., how monetary policy, fiscal policy, FXI, MPMs, CFMs, and CFM/MPMs can be used together. It recommends that when a country is facing large inflows, it is important as a first step to attempt to identify the nature of the underlying shock (fundamental, non-fundamental, or a mix of the two) and the country's characteristics. These factors would help determine the warranted macroeconomic adjustments, and the potential for economic and financial distortions, thereby informing the appropriate mix of policies to respond to the shock.

2. Inflow surges may be caused by a range of shocks and can take different forms in different countries. Fundamental shocks, which may be persistent, include changes in global interest rates, productivity, and commodity prices. Non-fundamental shocks include risk-on/risk-off episodes triggered by changes in investors' portfolio constraints that are not directly related to fundamentals.² The composition of inflows can also vary by country. For instance, debt flows with short-term remaining maturity, either in FX or domestic currency, can increase rollover risks when capital flows reverse.

3. The IPF models suggest that warranted macroeconomic policy adjustments depend on the nature of the shock and country characteristics. If the shock is at least in part fundamental or persistent, it is likely to require some adjustment to monetary, fiscal, and financial policies, and for countries with flexible exchange rate regimes, an adjustment to the nominal exchange rate. The degree of adjustment would depend on country characteristics that determine the economic and financial impact of the shock (e.g., the importance of commodity trade would matter for the response to a commodity price shock).³ By contrast, if the shock is predominantly or exclusively non-fundamental (e.g., a risk-on/risk-off episode), it is not generally warranted to adjust

¹ This review does not alter the IV's recommendation of the use of policy instruments during surges. The IPF workstream can help inform the judgments that are already required under the IV.

² In practice, multiple shocks may strike simultaneously, with both fundamental and non-fundamental components. Disentangling the shocks may therefore be challenging in real time and requires judgment. Under the current IV and informed by the 2013 Staff Guidance Note, staff analyze the drivers of capital flows using empirical methods supplemented with market and anecdotal information.

³ The assessment of warranted adjustments should be guided by the indicators of policy space and imbalances used in bilateral surveillance (e.g., inflation expectations, output gap, debt sustainability, the ESA, and reserve adequacy).

macroeconomic policy settings away from levels that are consistent with inflation and growth objectives.⁴

4. The IPF models point to shocks and country characteristics that make it difficult to effectively respond to surges using only macroeconomic policy and exchange rate adjustment.

The IPF models suggest that the following frictions may increase the likelihood of overvaluation and overheating (although there may also be other frictions which generate the same distortions):

- *Non-fundamental shocks combined with shallow FX markets.* After fundamental or persistent shocks, irrespective of FX market depth, a rapid appreciation of the currency to its new fundamental level could facilitate external adjustment and reduce the risk of overheating without necessarily generating overvaluation (even if a temporary overshooting could take place). By contrast, for non-fundamental shocks or very large inflows into local currency debt, shallow FX markets make it more likely that an overvaluation emerges. They also make it more likely that the shock transmits into lower premia on local currency debt, leading to overheating via excessive borrowing. As asset markets deepen, the premia become less sensitive to shocks.
- *Weak monetary policy credibility.* If the appreciation is associated with high pass-through and therefore pushes overall inflation down, medium-term inflation expectations may fall excessively even alongside an output expansion driven by credit growth, which may worsen the tradeoff between inflation and output stabilization and amplify the overheating.

5. The IPF models also suggest that, in the presence of overheating and overvaluation, the use of FXI and CFMs can enhance monetary autonomy in certain circumstances without generating other distortions.

The models suggest that the combination of overvaluation and overheating is more likely (albeit not exclusively) to arise in countries with shallow FX markets and weakly-anchored inflation expectations after non-fundamental shocks. This combination reduces monetary autonomy: specifically, lowering the policy rate to reduce the overvaluation may exacerbate the overheating. If FX reserves are adequate or more than adequate, the IV suggests that CFMs may be appropriate, and this policy advice remains unchanged in the current review. The IPF provides further insights regarding the policy trade-offs: FXI and CFMs can enhance monetary autonomy by partially insulating the economy from such non-fundamental shocks, provided that their use does not reduce autonomy in other ways or generate other large distortions. Under the IV, the use of CFMs is not limited to enhancing monetary autonomy; in particular, CFMs can limit the degree of overvaluation and overheating by reducing appreciation pressures and external funding.

6. The relative costs and benefits of FXI and CFMs depend on country-specific factors. For example, FX reserve accumulation involves carry costs which may increase with the size of reserves.

⁴ The IV does not necessarily assume that the pre-shock policy settings were consistent with domestic and external stability. The IPF interprets this situation as a prior shock or inappropriate policy having caused a deviation from domestic and external stability. Both the IV and IPF would suggest warranted policy adjustments to address both the prior instability and the new shock.

FXI may also create confusion about the nominal anchor, may induce agents to increase their FX risk exposure, and may hinder the development of FX markets.⁵ On the other hand, CFMs require developing enforcement mechanisms to administer the controls, and their use may be constrained by international agreements. The choice of CFMs would be informed by the country's legal and administrative infrastructure, and this can affect the costs and benefits of the instruments.

7. The IPF models also illustrate how surges can lead to a build-up of systemic financial risks. The IPF models suggest that inflow surges can generate systemic financial risks through:

- *Domestic collateral constraints.* Bubbles in domestic asset prices (e.g., housing) triggered by foreign inflow surges may excessively relax collateral constraints of borrowers that can lead to surges in local currency credit. Systemic financial risks may increase, as the country becomes vulnerable to debt overhang and sharp deleveraging once inflows reverse.
- *FX mismatches.* Surges in FX debt inflows may generate systemic financial risks by causing elevated FX mismatches which may no longer be sustainable once inflows reverse. The riskiest FX debt inflows tend to be short-term.

8. The IPF workstream connects the appropriate mix of MPMs and CFM/MPMs to the structure of the country's financial system. In assessing the case for the use of CFM/MPMs, staff should consider how the structure of the financial system affects the effectiveness and the calibration of MPMs. CFM/MPMs can be a useful complement to MPMs in some circumstances, such as when agents borrow from abroad, and risks cannot therefore be addressed by MPMs alone.

⁵ Such confusion may be heightened by ad-hoc FXI without appropriate modalities (e.g., announced objective and timeframe), especially if the monetary framework is not well established.