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COVID-19 Shock and Multilateral Aspects of Foreign Exchange Intervention and Capital Flow Management Policies

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As the COVID-19 pandemic shock unfolds, its magnitude and multi-faceted nature requires individual economies to consider a broad range of policy interventions. At the same time, the global scale and protracted nature of the shock increases the risk of cross-border spillovers from country-specific policies, if similar policies are applied by groups of countries representing a large share of the global economy. This note discusses foreign exchange interventions (FXIs) and capital flow management measures (CFMs) from a multilateral perspective, recognizing that IMF advice should consider its multilateral implications. The main conclusions are twofold. First, when spillovers are taken into account, more caution is warranted in the use of CFM policies than from a purely individual-country perspective, especially in larger economies and/or regional financial centers. Second, spillovers from FXIs (that is, FX sales) that are not aimed at preventing warranted exchange rate adjustments are likely to be on the net positive. Multilateral cooperation can reduce the need to use FXI or impose CFMs and, in the recovery, the need to accumulate foreign exchange reserves, and hence could improve global outcomes.

POLICY PRESCRIPTIONS FROM AN INDIVIDUAL COUNTRY PERSPECTIVE

In countries with credible macroeconomic frameworks and without sizeable financial frictions, the appropriate monetary and exchange rate policy response to a shock like the COVID-19 entails letting exchange rates adjust and easing monetary policy (see COVID 19 Series “Monetary and Macroprudential Policy Responses for EMDEs”). In countries with shallow foreign exchange (FX) markets, high exchange rate pass-through to inflation, or unhedged balance sheet exposures, FXI can help avoid disorderly exchange rate adjustment and associated adverse implications for inflation and financial stability. In crisis or imminent crisis circumstances, a

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temporary use of broad-based CFMs may provide important breathing space while macro-financial policies are implemented and become effective.

Although possibly appropriate at the individual country-level, the use of FXIs and CFMs might involve considerable cross-border spillovers and externalities, particularly if used by many countries simultaneously.[2] As discussed below, these effects do not have to be negative, and spillovers are not exclusive to FXI and CFM (for example, monetary easing by advanced economies may have both positive and negative spillovers to emerging market and developing economies (EMDEs), and macroprudential policies may also entail spillovers). However, the risk of adverse spillovers from certain policy actions may be high in the case of those global shocks that generate high levels of uncertainty about economic fundamentals and trigger a broad-based flight of international investors from risky to safe assets, or constrain monetary policy (by pushing countries toward the effective lower bound, ELB)—such as in the current COVID-19 pandemic.

SPILLOVERS FROM FXI

In countries that are characterized by financial frictions and face strong depreciation pressures, and have sufficient international reserve buffers, FX sales by the central bank can help ease FX liquidity constraints and ease financial conditions faced by the private sector.

FXI could have positive spillovers by easing financial conditions and providing liquidity where it is most needed.

Stabilizing the exchange rate in one country could have positive cross-border spillovers, mainly through increased trade and balance sheet effects. First, by supporting financial conditions in the countries that are intervening in FX markets, FXI strengthens aggregate demand in such countries (relative to a no-FXI counterfactual) and may imply positive spillovers to other countries, including advanced economies (AEs), through improved trade. In fact, a two-country model simulation suggests that when a country sells FX to undo an exchange rate depreciation caused by a risk premium shock (and poorly anchored inflation expectations), the exchange rate depreciates less, credit spreads fall, and the other country benefits via increased trade and higher economic activity (Annex 1 and Figure A.1). Second, if FX interventions help avoid a cascade of corporate defaults, or the introduction of CFMs, they could boost investors' confidence regarding other countries that are closely linked to the domestic economy.[3] By reducing exchange rate- and credit risks for international investors, they could also relax the latter's balance sheet constraints and support inflows to other countries.[4]

Simultaneous large-scale sales of reserve assets by EMDEs could increase the stabilization burden in reserve currency countries, although the effects are likely to be transient and could be offset by AE central bank actions

Procyclical actions by central banks' reserve managers during the global financial crisis amplified global flight to safety and added to the stabilization burden of central banks in reserve-issuing countries (Pihlman and Hoom 2010; Jones 2018). Currency Composition of Official Foreign Exchange Reserves (COFER) data indicate that at least US$6.7 trillion of global reserve assets in the first quarter of 2019 were claims in US dollars. A back-of-the-

[2] For a review of countries' experiences in using various tools to manage capital flows, and examples of cases where the use of CFMs and FXI was considered appropriate under the Institutional View (IV), please see IMF (2016) and IEO (2020).

[3] The argument is similar to central bank actions supporting domestic asset prices thereby avoiding liquidity spirals. See, for example, Brunnermeier and Pedersen (2009) and Brunnermeier and Sannikov (2012).

[4] Currency mismatches between global investors' EMDE assets and USD-denominated liabilities can result in a feedback loop between falling EMDE bond prices (rising credit risk premiums) and currency depreciation (Gabaix and Maggiori 2015; and Hofman and others 2019).

envelope calculation suggests that the holdings of US Treasuries by major EMDEs could amount up to about US$2.9 trillion, or 17.6 percent of the outstanding marketable US Treasuries held by public (Table 1).

Thus, a sell-off of US Treasury bonds (UST) by EMDE central banks could have effects on US Treasury yields. Estimating the effect of such a sell-off requires knowledge of the maturity structure of UST holdings by EMDE central banks, information which is generally not available. However, suppose that EMDE central banks decide to sell 10 percent of their holdings of UST (that is, US$290 billion) and that the sales are concentrated on on-the-run bonds with maturities between 5 and 10 years. Using Brandt and Kavajeccz's (2004) estimates of the price impact of net order flow (0.014 per 1 billion USD daily order flow imbalance), we estimate 10-year yields to increase by 14 basis points if the sales happen over 30 days.[5] If the sales are concentrated in one week, the estimate is 98 basis points.

Table 1: EMDEs Have Accumulated Large Holdings of US Treasuries

Country	*Total Reserves Excluding Gold* (Billions USD) (1)	*Central Bank, Securities Non-residents, Securities included in Official Reserve Assets* (USD billions) (2)	*Estimated Reserves held in US Treasuries* (USD billions) (3)
Brazil	353.59	335.05	274.74
Chile	40.64	38.97	27.67
*China, P.R.: Mainland**	3127.49	NA	1970.32
Colombia	51.97	50.07	44.06
Egypt, Arab Rep. of	40.69	34.04	21.44
*India**	432.38	NA	255.1
Indonesia	125.34	112.38	70.8
Mexico	177.18	0	0
Morocco	25.33	20.42	12.87
Nigeria	42.84	9.59	6.04
Pakistan	13.42	1.11	0.7
Philippines	79.82	37.43	33.69
Russian Federation	443.97	258.06	162.58
South Africa	48.92	36.68	21.64
Turkey	78.53	33.51	26.48
Total	**5082.11**	**967.33**	**2928.14**

Sources: IMF Monetary and Financial Statistics (MFS); IMF, International Financial Statistics (IFS); Ito and McCauley (2019); and IMF staff calculations.

Note: The numbers are end-2019 except for Nigeria, which is end-2018. For all countries except India and China, the Estimated Reserves in US Treasuries are computed by multiplying the estimates of *USD share in FX reserves* from Ito and McCauley (2019) by the reported values of *Central bank reserve assets held in foreign securities*, from the MFS database. The *USD share in FX reserves* is read from Graph 7 of Ito and McCauley (2019), which presents estimated USD share for 60+ economies; for countries listed above but not covered in the paper, we applied 63 percent, the EM aggregate estimate of the paper. The series *Central bank reserve assets held in foreign currency non-resident securities other than shares is from MFS,* series code ***FAAFSNR_FX_XDC.A, *Central Bank Assets, Securities other than Shares, In Foreign Currency, Securities Non-residents, National Currency* (converted to USD using end-2019 exchange rates from IMF IFS). Due to data limitations on *Central bank reserve assets held in foreign securities*, for China and India, the *USD share in FX reserves* is applied to their *Total Reserves (excluding gold)* from IFS.

Other sovereign debt markets could also be affected by liquidations of securities holdings of EMDE central banks. This is because a significant fraction of global reserve assets is held in the form of government securities issued by other AEs. Back-of-the envelope calculations suggest that about 16 and 18 percent of outstanding

[5] If the duration of UST holdings by EMDEs is shorter than the assumed 10-year, the price effects might be lower, as the shorter part of the Treasury curve is largely anchored by the Federal Reserve's quantitative easing stance.

government securities from Canada and Australia, respectively, could be held by reserve managers (Table 2). In these countries, where government securities markets are smaller than for UST, domestic financial markets could come under pressure from widespread sales by EMDE reserve managers.

However, such flow effects should be short-lived (D'Amico and King 2013)[6] and likely offset by large-scale asset purchases and other actions by AE central banks.[7] In sum, the positive spillover effects through trade and corporate defaults should clearly dominate.

Table 2: Canadian and Australian Government Securities Held as Foreign Exchange Reserves.

	Australia	Canada
Treasuries outstanding, 31 December 2019 (USD billions)	451.1	542.6
World allocated foreign exchange reserves: claims in currency of relevant country (2019:Q4, USD billions)	187.9	206.0
Average share of World reserves held in foreign securities excluding shares	0.4	0.4
Estimated World reserves held in government securities of relevant country (USD billions)	80.1	87.8
Estimated share of relevant country's Treasuries outstanding that are held in World foreign exchange reserves (percent of)	**17.8**	**16.2**

Sources: Australian Office of Financial Management; Bank of Canada; IMF, COFER database; IMF, International Financial Statistics; and IMF staff calculations.

Notes: Data for Treasuries outstanding are total AGS Outstanding from the table on Non-resident Holdings of AGS, Public Register of Government Borrowings for Australia, and Government of Canada Treasury Bills and Domestic Marketable Bonds Outstanding from Bank of Canada. They are converted to USD using exchange rates as of December 31, 2019. World Allocated Foreign exchange reserves data are from COFER. Estimated Share of World Reserves held in government securities are computed as the average over all countries for which data are available, the ratio of "Central Bank, Assets, Securities other than Shares, In Foreign Currency, Securities Non-residents, Securities included in Official Reserve Assets", expressed in USD from MFS and the Total Reserves less Gold series from IFS.

Simultaneous FXIs by EMDEs could have a large effect on the exchange rate but also cause more distortions

While the empirical evidence on the effectiveness of FX interventions remains mixed (Ostry and others 2012), simultaneous FXIs by many central banks are more likely to influence nominal exchange rates than isolated interventions (Dominguez 2003; Fratzscher and others 2019).[8] At the same time, joint FXIs by many central

[6] Still, D'Amico and King (2013) estimate the persistent effect of 300 billion purchase of US Treasury securities between March and October 2009 to have shifted yields by 30 basis points over the life of the program.

[7] A significant price impact of EMDE central bank sales of reserve currency securities would hinge on adverse selection in AE debt securities' markets. In that case, price impact and bid-ask spreads would increase because market makers would not be able to differentiate between privately informed and uninformed order flow. However, the adverse selection would be counteracted by AE central banks acting as large committed buyers and that would be perceived by market players as not trading on private information. In addition, central banks could act as market makers of last resort. For example, attesting to the potential seriousness of the problem, the FIMA repo facility was created by the US Federal Reserve in part to "avoid disruptions to the Treasury market and upward pressure on yields" which could result from the actions of foreign central banks. In launching a similar repo facility (EUREP), the ECB noted that "By providing euro liquidity to a broad set of non-euro area central banks in crisis times, EUREP reduces risks related to sell-off episodes of euro-denominated assets and spill-overs of market dysfunctions from other economies to the euro area, including through global confidence effects."

[8] FXI by many central banks may be more effective in supporting currencies because it allows for larger-sized interventions. However, the equilibrium impact will depend also on the actions of the reserve currency central banks. For the most recent

banks (or by fewer central banks from large economies) may be more distortive. In theory, if the country stabilizing the exchange rate is small, it can affect the exchange rate without affecting global prices of traded goods (Hassan and others 2016). But when the size of the intervening country is large—or if the countries conducting FX sales account for a large share of the global economy—FXIs are more likely to have a negative impact on global prices, requiring even more FX sales to achieve the same objective. Another spillover effect from FXI—volatility migration to non-intervened currencies (Chortareas and others 2013)—can also be potentially magnified by simultaneous FXIs by many central banks.

FXI used to resist warranted exchange rate depreciation, rather than to mitigate excessive volatility, may be a precursor to protectionist policies and could delay the global recovery

If countries use FXI to prevent warranted depreciation by stabilizing the exchange rate over a prolonged period, rather than to mitigate excessive volatility, this could be a precursor to trade protectionism, with negative externalities for trade partners and for the global recovery. Evidence from the Great Depression shows that countries that resisted warranted devaluation of their currencies more frequently resorted to protectionist measures than countries that went off the gold standard (Eichengreen and Irwin 2010).[9] If the nominal exchange rate does not adjust, real adjustment must take place through relative prices (wages), which can mean a sluggish recovery (Bernanke and Carey 1996).

SPILLOVERS FROM OUTFLOW CFMS

In the face of an imminent capital account crisis, a temporary use of broad-based CFMs on outflows can help prevent a free fall of the exchange rate and provide time for necessary policy adjustments to be implemented.[10] For EMDEs with underdeveloped financial systems, it is plausible that CFMs (by themselves or in combination with FXI) could help stabilize their economies, and, on balance, be helpful to trading partners if they had limited financial dependence on the economies imposing controls. However, the use of outflow CFMs by a major economy—that is, one with substantial trade and financial interlinkages with other emerging markets—could increase policy uncertainty and tighten balance sheet constraints of foreign investors, potentially triggering capital outflows from other economies. It could also increase balance of payment pressures (including through trade channels) in countries where the large economy is a significant investor.

Imposition of outflow CFMs in one EMDE could lead to outflows and CFMs in other countries…

The use of CFMs on outflows by one country could induce similar measures in other economies through several channels. First, in an environment of global liquidity shortages, restricting repatriation of foreign investment could force global investors to unwind positions in countries that have not (yet) imposed such measures. If a major EMDE resorted to outflow CFMs, in particular on non-residents, this could lead to a significant rise in uncertainty, and further spur outflows in other EMDEs (Forbes and others 2012). A useful parallel is the execution of limits or redemption halts in the mutual funds sector, where the mere possibility of such provisions

case of simultaneous FX interventions, the October 2020 *Global Financial Stability Report* finds that FXIs in response to the COVID-19 shock did not lead to an appreciation in EMDE currencies.

[9] Analyzing the data since the global financial crisis, Georgiadis and Grab (2016) found that countries continue to pursue more trade-restrictive policies when they experience recessions and/or when their competitiveness deteriorates.

[10] Outflow CFMs in this note are CFMs on both residents' external investments and the withdrawal of nonresidents' inflows. The focus of the note is on spillovers from outflow CFMs as the IV does not discuss liberalization of inflow CFMs as a tool to mitigate exchange rate pressures in the context of crisis or precrisis circumstances.

creates a risk of preemptive runs on all mutual funds (Cipriani and others 2014). The outflow spillovers could in turn lead to imposition of outflow CFMs by other countries.[11]

A simple simulation exercise, calibrated to the size of bond outflows from EMs observed in the first quarter of 2020, demonstrates how the introduction of outflow CFMs by one country following an adverse global risk-aversion shock, could amplify redemptions by global investors from other EMDEs, leading to larger exchange depreciations, and introduction of CFMs in other countries (Annex 2 and Table A.1).

It follows that greater FX volatility tolerance may be warranted in a context like the COVID-19 shock (for example, see Kalemli-Ozcan [2019] for evidence on the benefits of greater FX flexibility when countries face risk premium shocks). The simulation exercise (Annex 2) shows that when the exchange rate is allowed to depreciate considerably before a CFM is introduced, the scope for cross-border spillovers from CFMs is limited. By contrast, when introduced early on, CFMs in one EMDE trigger the introduction of CFMs elsewhere. While the exercise does not account for all channels through which CFMs in one economy could trigger spillovers to other countries, it shows how the multilateral perspective reinforces the need for caution in use of these tools. Instead, tolerating a larger exchange rate depreciation before using outflow CFMs can be beneficial from the multilateral perspective.

…and widespread adoption of outflow CFMs could impede global recovery

By disrupting existing cross-border financial relationships, widespread adoption of CFMs would make it harder for firms to access credit and quickly resume operations. This could happen directly through the reduction in flows to other countries from investors in the CFM-imposing countries, or indirectly through the negative effect of CFMs on the balance sheets and the risk-absorption capacity of global financial intermediaries and investors. If imposed by a regional financial center, CFMs could also result in a loss of financial access by firms in the region, amplifying the credit crunch in other countries through this direct channel and, thus, potentially leading to capital outflows and CFMs in those countries. Past experience suggests that, once introduced, outflow CFMs tend to stay in place for a long time potentially dampening growth by tightening financial constraints for small and medium enterprises (Forbes 2007). Thus, in addition to involving significant deadweight costs and to intensifying circumvention efforts, a widespread use of CFMs could delay a global recovery (Eichengreen and Sachs 1985; Frankel 2015).

COORDINATED USE OF ALTERNATIVE POLICIES CAN IMPROVE OUTCOMES

The broad reach of the crisis and a consideration of the spillover effects of individual country responses underscores the desirability of a coordinated international response, preferably including the private sector in the stabilization efforts. The widespread adoption of CFMs by EMDEs could have a cascading effect, which would reduce capital flows to similar EMDEs and potentially prolong the post-COVID-19 recovery. The key to avoid such suboptimal outcomes is a multilateral mechanism to coordinate and enforce jointly beneficial arrangements (De Haas and others 2017). Examples of multilateral initiatives during the COVID-19 shock include US dollar swap lines between the Federal Reserve and a group of foreign central banks, the expedited access to existing and creation of new IMF lending facilities. Multilateral cooperation on allocation of special drawing rights and coordinated debt-service suspension by the private sector are also likely to reduce the need to impose CFMs

[11] While much of the recent literature on spillover effects of capital controls focuses on inflow CFMs, it also provides evidence of policy spillovers between EMDEs, where inflow tightening in a major EMDE leads to inflow tightening in other EMDEs (Pasricha and others 2018).

and, in the recovery, the need for countries to accumulate reserves, and hence could improve global outcomes.[12,13]

Going forward, it would be important to build robust arrangements for multilateral cooperation that can be reliably and automatically activated in future crises, to foreshadow the need for the deployment of domestic policy measures when a shock hits. Moreover, as the recovery gets underway, the IMF's work toward an integrated policy framework suggests that it would also be important to focus on structural reforms, for example, by building liquid and deep domestic financial markets and a resilient banking sector.

[12] According to World Bank just-released country-by-country data on the debt owed to individual creditors by the 73 countries eligible to participate in the G20-sponsored debt service suspension initiative, suspending debt service for the rest of 2020 would originate substantial savings for the beneficiaries (Ahmed 2020). See also: World Bank (2020).

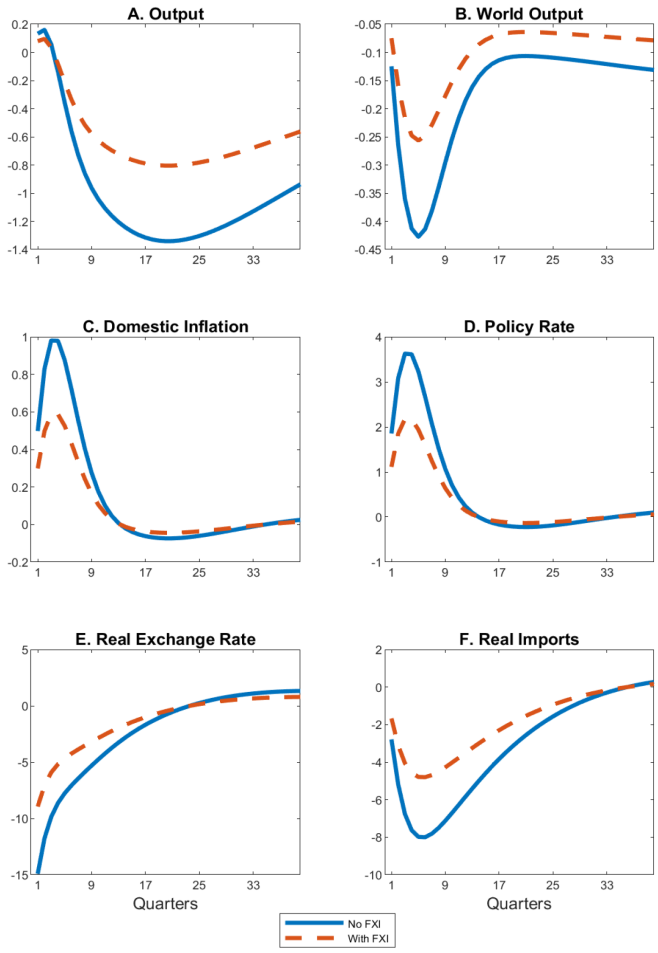
[13] The success of FXI in stabilizing currency pressures during the COVID crisis could lead to an increase in precautionary demand for reserves during the recovery, which could impede growth by preventing warranted appreciation of currencies. While the IV encourages countries to accumulate reserves during inflow surges if the existing reserves levels are inadequate, broad-based and rapid accumulation during the recovery could have sizeable contractionary effects on trading partners. The effects on trading partners would be larger if the latter are constrained by the effective lower bound and could well encourage retaliatory actions by trading partners. More generally, frequent FXI can also cause moral hazard problems for investors by limiting the downside risks.

ANNEX I MODEL SIMULATION

This annex summarizes the approach followed by Ammer and others (2016) and the results of a simulation based on this model which is used in page 2 of this Note to discuss the spillovers from FXI. Ammer and others (2016) use the SIGMA model (a large-scale two-country open economy DSGE model by Erceg, Guerrieri, and Gust 2005), which is used by Federal Reserve Board staff for policy simulations. In the model, the home economy has poorly anchored inflation expectations, while the foreign economy does not. The model is simulated to show the effects of a risk premium shock to the home economy with and without FXI.[14] The results are summarized in Figure A.1.

Specifically, the home economy experiences a 15 percent depreciation of its exchange rate due to a risk premium shock (panel E). While home exports expand and imports contract (the latter in panel F), home output (panel A) falls after a few quarters. The output decline reflects that the shock boosts inflation substantially (panel C), which induces a sharp tightening of policy (panel D). Foreign and hence world GDP contract given the deterioration in foreign real net exports. Thus, under this calibration, home currency depreciation induces "stagflationary" effects on the home economy while hurting foreign economies through the usual trade channels. FXI by the home economy eases both the output contraction and rise in inflation. The foreign economy also gains since its exchange rate appreciates less, and because domestic demand in the home economy contracts by less (both factors help foreign NX).

Figure A.1. Effects of FXI in a Two-Country Model



Source: IMF staff.

[14] The FXI interventions in the home country in the model is like a coordinated FXI policy in a large group of EMs.

ANNEX II SIMULATION OF CROSS-BORDER SPILLOVERS

This annex explains the simulation of cross-border spillovers from CFMs. Table A.1 shows simulation results from a scenario in which an adverse global risk-aversion shock forces bond-focused mutual funds based in advanced economies (that is, euro area, Japan, Switzerland, United Kingdom, United States) to liquidate US$45 billion of the claims against EMDEs, roughly equal to the total bond outflows from EMDEs observed between January and mid-April 2020 (April 2020 GFSR Chapter 1). The simulation uses data on claims by mutual funds from EPFR Global as of May 2019 and adjusts it for indirect exposures through offshore financial centers using data from the IMF's CPIS database. In the simulation, redemptions by mutual funds put a downward pressure on asset prices in domestic currencies, and a depreciation pressure on the bilateral exchange rates against USD. We assume that the redemptions from individual countries are proportional to the mutual funds' exposures in different EMDEs; we use the estimates of exchange rate pressures from Patnaik and others (2017) and the estimates of domestic market illiquidity (price impact of redemptions) from Amihud and others (2015).

We consider different triggers for the use of CFMs by countries. When a country imposes outflow CFMs, the mutual funds can realize redemptions only partially (and proportionally to the size of allowed depreciation relative to the depreciation in the absence of CFMs). The last two columns in the Table present the total outflows and the exchange rate depreciation against USD when no country imposes CFMs. The scenario "high tolerance for depreciation" assumes that outflow CFMs are imposed once the depreciation reaches 40 percent, the "low tolerance for depreciation" scenario—when the depreciation reaches 25 percent. Within each CFM trigger scenario, we look at the number of countries imposing CFMs if there are no cross-border spillovers from mutual fund redemptions (column "CFM w/o spillovers") and when there are such spillovers (column "CFM with spillovers"). In the latter case we assume that an introduction of CFM in one country results in higher redemptions by mutual funds in other EMDEs in order to collect the target amount of US$45 billion.

As Table A.1 shows, when the tolerance for exchange rate depreciation is low, and when foreign investors have targets for liquidity withdrawals from the EMDEs in the face of an adverse global shock, the use of CFMs by one country can trigger capital controls in other EMDEs. In our "Low tolerance" scenario, five countries apply CFMs when spillovers are allowed, compared to two in the absence of such spillovers.

Table A.1: Simulated Outflow CFM Spillovers in EMDEs

	Scenario I: Low tolerance for depreciation				Scenario II: High tolerance for depreciation				No CFMs	
country	Outflows (billion $)	Depreciation	CFM w/o spillovers	CFM with spillovers	Outflows (billion $)	Depreciation	CFM w/o spillovers	CFM with spillovers	Outflows (billion $)	Depreciation
1	6.95	-14.7%	0	0	6.54	-13.9%	0	0	6.21	-13.2%
2	3.42	-7.5%	0	0	3.20	-7.0%	0	0	3.03	-6.6%
3	7.24	-8.8%	0	0	6.80	-8.3%	0	0	6.46	-7.9%
4	1.88	-23.9%	0	0	1.76	-22.5%	0	0	1.67	-21.3%
5	4.84	-5.0%	0	0	4.55	-4.7%	0	0	4.32	-4.4%
6	1.69	-12.1%	0	0	1.59	-11.4%	0	0	1.51	-10.8%
7	1.16	-25.0%	0	1	1.22	-23.9%	0	0	1.16	-22.7%
8	2.88	-5.2%	0	0	2.72	-4.9%	0	0	2.58	-4.6%
9	1.34	-8.4%	0	0	1.25	-7.8%	0	0	1.19	-7.4%
10	2.10	-25.0%	1	1	3.36	-40.0%	1	1	5.65	-67.0%
11	0.24	-0.6%	0	0	0.23	-0.6%	0	0	0.22	-0.5%
12	2.06	-25.0%	0	1	2.24	-24.8%	0	0	2.13	-23.6%
13	3.24	-16.5%	0	0	3.03	-15.5%	0	0	2.88	-14.7%
14	2.80	-25.0%	1	1	3.36	-29.9%	0	0	3.19	-28.5%
15	2.58	-18.2%	0	0	2.43	-17.1%	0	0	2.31	-16.3%
16	1.70	-25.0%	0	1	1.84	-24.6%	0	0	1.75	-23.3%

Sources: Amihud and others (2015); EPFR Global; IMF, Coordinated Portfolio Investment Survey (CPIS); Patnaik and others (2017); and IMF staff calculations.

Table A.2: Mutual Funds Claims as Share of Total External Liabilities in EMDEs

Panel A: Mutual funds' claims in percent of recipient country's external portfolio liabilities

Bond mutual fund claims

	Fund domicile			
	USA	EA + UK	Japan	Total AE
BRICS	1.94	2.91	0.46	6.00
non-BRICS EMDEs	5.89	8.29	0.76	16.88

Equity mutual fund claims

	Fund domicile			
	USA	EA + UK	Japan	Total AE
BRICS	21.52	10.27	1.08	36.29
non-BRICS EMDEs	8.80	3.50	0.26	13.76

Total mutual fund claims

	Fund domicile			
	USA	EA + UK	Japan	Total AE
BRICS	23.47	13.18	1.54	42.29
non-BRICS EMDEs	14.69	11.79	1.02	30.64

Notes: Data as of May 2019, corrected for the exposures through offshore financial centers. BRICS: Brazil, Russia, India, China and South Africa. Non-BRICS EMDEs include Chile, Colombia, Egypt, Indonesia, Mexico, Morocco, Nigeria, Pakistan, Philippines, and Turkey.

Panel B: Mutual funds' claims in percent of recipient country's GDP

Bond mutual fund claims

	Fund domicile			
	USA	EA + UK	Japan	Total AE
BRICS	0.24	0.35	0.06	0.73
non-BRICS EMDEs	1.09	1.54	0.14	3.13

Equity mutual fund claims

	Fund domicile			
	USA	EA + UK	Japan	Total AE
BRICS	2.62	1.25	0.13	4.42
non-BRICS EMDEs	1.63	0.65	0.05	2.55

Total mutual fund claims

	Fund domicile			
	USA	EA + UK	Japan	Total AE
BRICS	2.86	1.60	0.19	5.15
non-BRICS EMDEs	2.72	2.19	0.19	5.68

Notes: Data as of May 2019, corrected for the exposures through offshore financial centers. BRICS: Brazil, Russia, India, China and South Africa. Non-BRICS EMDEs include Chile, Colombia, Egypt, Indonesia, Mexico, Morocco, Nigeria, Pakistan, Philippines, and Turkey.