

MANAGING VOLATILE PORTFOLIO FLOWS

Chapter 3 at a Glance

- The COVID-19 pandemic led to an unprecedented sharp reversal of portfolio flows, highlighting the challenges of managing such volatility in emerging and frontier markets.
- This chapter shows that:
 - Changes in global financial conditions tend to influence portfolio flows more during surges and reversals than in normal times.
 - Stronger domestic fundamentals do not always lead to surges in portfolio flows but do help mitigate outflows.
 - Greater foreign investor participation in local currency bond markets can help reduce borrowing costs, but it may also increase price volatility where domestic markets lack depth, especially in frontier markets.

The dramatic reversal of emerging market portfolio flows following the global spread of coronavirus (COVID-19) highlights the challenges of managing volatile portfolio flows and risks they may pose to financial stability. A prolonged period of low interest rates had encouraged both borrowers and lenders to take on more risk. Surges of portfolio inflows into riskier asset markets contributed to the buildup of debt and, in some cases, resulted in stretched valuations. This chapter quantifies the sensitivities of different types of portfolio flows and the associated cost of funding to global and domestic factors during “normal” times as well as during periods of weak or strong flows. Analysis suggests that both bond and equity flows are much more sensitive to global financial conditions during periods of extreme flows than in normal times, while domestic fundamentals may matter incrementally more for equities and local currency bond flows. Furthermore, greater foreign investor participation in local currency bond markets that lack adequate depth can greatly increase the volatility of bond yields. Dealing with immediate capital outflow pressures calls for using reserves to reduce excessive volatility, deploying capital flow management measures, and preparing for long-term external funding disruptions.

The authors of this chapter are Reinout De Bock, Dimitris Drakopoulos, Rohit Goel, Lucyna Gornicka, Evan Papageorgiou (team leader), Patrick Schneider, and Can Sever, under the guidance of Fabio Natalucci and Anna Ilyina.

Foreign Funding in Times of Uncertainty

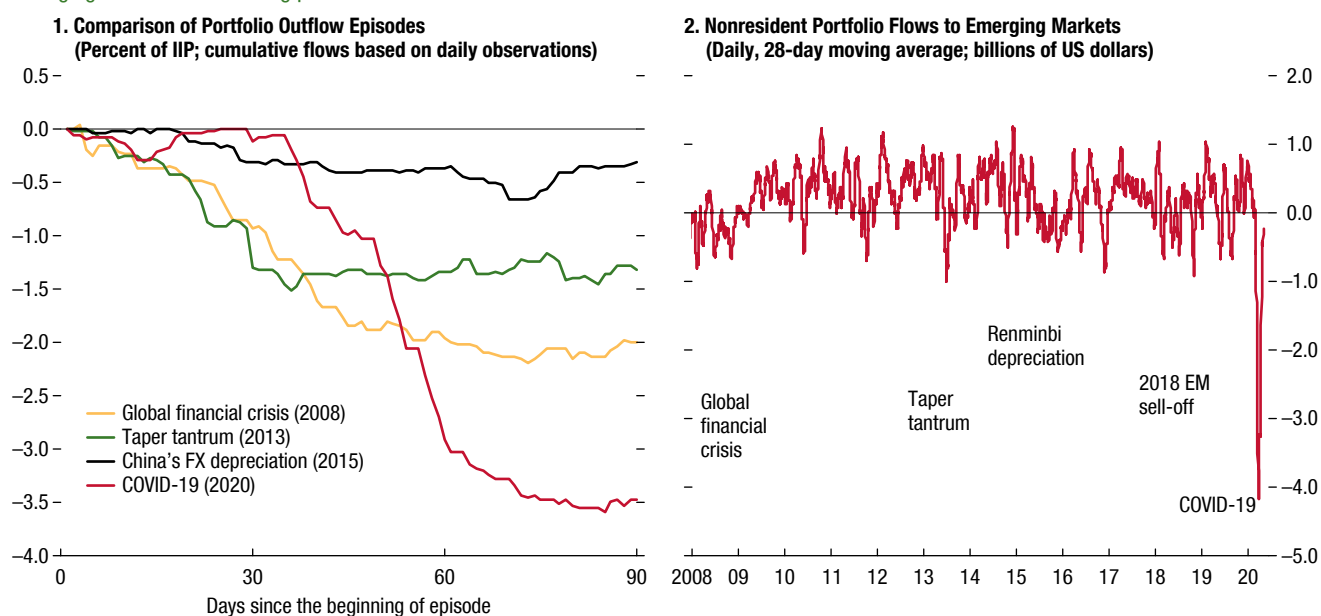
The COVID-19 pandemic has led to historic portfolio outflows from emerging and frontier markets (see also Chapter 1). After a strong resumption of portfolio flows to emerging markets through early 2020, driven by increased optimism about economic recovery amid easing trade tensions, total portfolio flows reversed dramatically in March, with more than \$100 billion in outflows (or 3½ percent of asset holdings) since January 21, led initially by equity outflows (Figure 3.1, panel 1). The volatility of nonresident flows to equity and local currency bond markets during the trough of the sell-off reached unprecedented levels, despite policy rate cuts and measures to support economic activity (Figure 3.1, panel 2).

Foreign portfolio flows are an important source of funding for emerging market sovereigns and corporations. Nonresident portfolio investment can help expand and diversify the investor base for emerging market assets, lower the cost of funding, and ultimately contribute to stronger economic growth and economic development (see Hannan 2018 for a literature review). However, reliance on foreign financing can also entail risks. Heightened uncertainty in the global economy resulting from trade tensions, geopolitical events, and pandemics (as is currently the case with COVID-19) can lead to a significant tightening of global financial conditions and increased portfolio flow volatility.

Figure 3.1. Recent Trends in Portfolio Flows to Emerging Markets

Concerns about the economic fallout of the COVID-19 pandemic on emerging markets led to strong portfolio outflows ...

... as well as historically high volatility at the trough of the sell-off.



Sources: IMF, World Economic Outlook database; national authorities; and IMF staff calculations.

Note: Economies included in panel 2 are Brazil, China, Hungary, India, Indonesia, Korea, Mexico, Pakistan, Philippines, Qatar, Sri Lanka, South Africa, Taiwan Province of China, Thailand, and Ukraine. EM = emerging market; FX = foreign exchange; IIP = international investment position.

Moreover, the strong and persistent portfolio inflows seen in earlier periods can create vulnerabilities by encouraging excessive domestic credit creation and an overvaluation of local currency and other financial assets. These risks need to be managed.

Emerging and frontier markets have become more reliant on foreign portfolio flows over the years. Foreign participation in emerging and frontier markets¹ has grown significantly in the 10 years since the global financial crisis, aided by accommodative policies in advanced economies (Figure 3.2, panel 1). Foreign debt portfolio investment in frontier market economies has risen rapidly and is now on par with cross-border loans. Even in equity markets, where nonresident participation has traditionally been smaller than in debt markets, foreign investors currently own a significant share of outstanding assets in some countries (Figure 3.2, panel 2).

Risks related to portfolio flows may be more acute in the context of high levels of overall debt in emerging market economies. Total debt for the median emerging

market economy rose to 100 percent of GDP in 2018 from 75 percent before the global financial crisis, and to more than 250 percent of GDP in China from 140 percent in 2007. These increases are the result of greater public sector borrowing in many emerging markets and a strong rise in corporate sector leverage in China.

Many emerging market sovereigns have stepped up issuance of local currency debt in recent years (Figure 3.2, panels 3 and 4). At face value, this reduction in the so-called “original sin” affords countries greater insurance from episodes of domestic currency volatility or tightening of external financial conditions. But increased foreign participation in debt markets, particularly in many frontier market economies, exposes them to changes in global financial conditions through the behavior and preferences of foreign investors, such as the current volatility around the COVID-19 pandemic. During periods of risk aversion, when local currencies weaken and domestic assets sell off, foreign investors are likely to reduce their exposure and might not roll over maturing positions, thereby triggering outflows, which could disrupt bond markets. Even in the absence of outflows, increased foreign

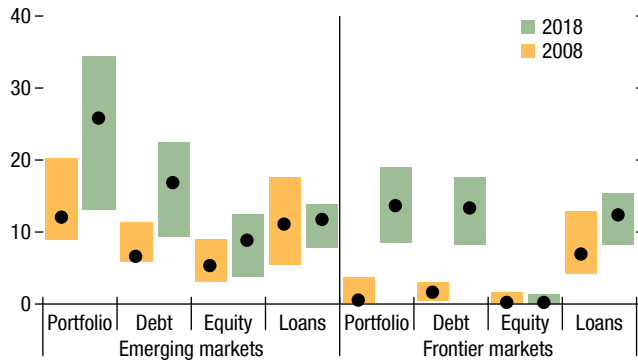
¹See Online Annex 3.1 for definitions of frontier market economies. All annexes are available at www.imf.org/en/Publications/GFSR.

Figure 3.2. Emerging and Frontier Market Economy Debt

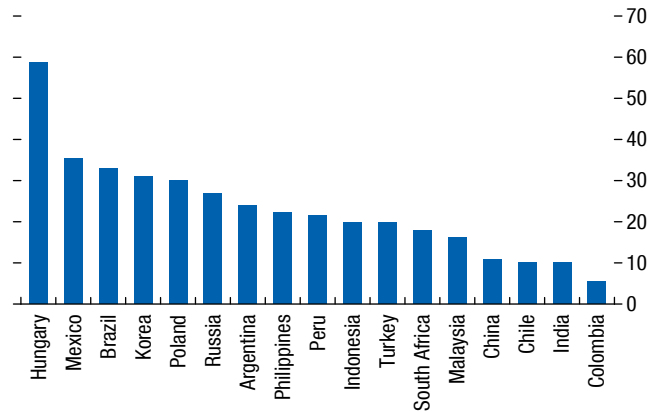
Portfolio investment has grown quickly for most emerging and frontier market economies, led by debt.

Foreign participation in equity markets is also significant in some emerging market economies.

1. Portfolio and Cross-Border Loan Liabilities IIP (Percent of GDP, interquartile range, median)



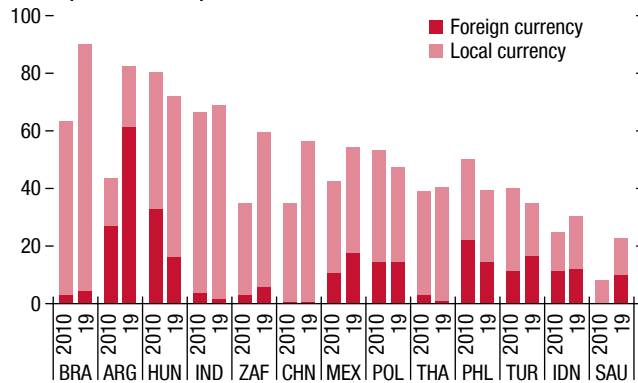
2. Equity International Investment Position (Liabilities, percent of market capitalization, 2019:Q2)



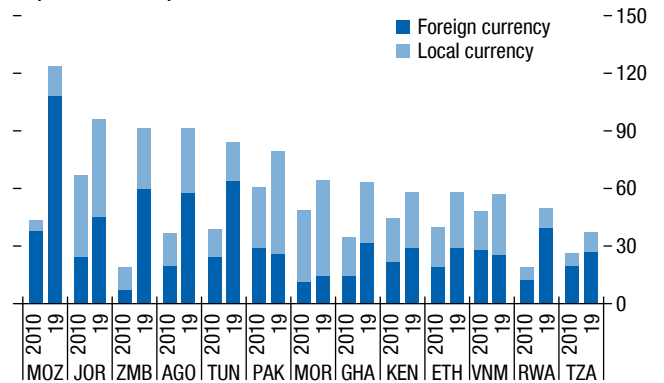
The steady rise in government debt in the past decade was mostly a result of greater local currency issuance in emerging markets ...

... as well as in some frontier market economies, where government debt increased dramatically in many cases.

3. Emerging Market Government Debt, 2010 and 2019 (Percent of GDP)



4. Frontier Market Government Debt, 2010 and 2019 (Percent of GDP)



Sources: Bloomberg Finance L.P.; IMF, World Economic Outlook database; JPMorgan Chase & Co; and IMF staff calculations.

Note: For more information on the sample of countries, see Online Annex 3.1. "Portfolio" is the sum of debt and equity, excluding loans; the interquartile range is calculated separately. In panels 3 and 4, data labels use International Organization for Standardization (ISO) country codes. EMs = emerging markets; IIP = international investment position.

currency hedging could exert substantial pressure on the exchange rate and the cost of funding.

This chapter aims to provide an empirical assessment of the trade-offs between raising additional foreign funding or reducing funding costs, on one hand, and increasing rollover risks or volatility in asset prices, on the other. The analysis involves two elements:

- *Dynamics of portfolio flows:* The drivers of nonresident bond and equity portfolio flows to emerging markets during surges and reversals and in normal times, and

- *Funding costs:* The sensitivity of the level and volatility of funding costs to portfolio flows and other domestic and common global factors, including the capacity of domestic institutional factors to mitigate the volatility of funding costs.

The empirical analysis presented in this chapter shows that the outlook for debt flows tends to be influenced more by global (common) factors than by country-specific (idiosyncratic) factors, while the outlook for equity flows is more heavily influenced

by domestic factors, such as growth. For both bond and equity flows, changes in global financial conditions tend to affect the “tails” of their predicted portfolio flow distributions (the likelihood of future surges or reversals) more than the likelihood of median flows. The outlook for local currency bond flows has greater sensitivity to domestic vulnerabilities than the outlook for hard currency (primarily dollar and euro) bond flows. For instance, strong growth prospects can limit the likelihood of future outflows from local currency bond markets but can also amplify future surges. Domestic bond yields are highly sensitive to external factors, especially for low-rated economies. The current circumstances of large outflows due to the COVID-19 global health emergency illustrate the effects of tighter global financial conditions and lower domestic growth prospects on different types of portfolio flows.

The findings from the empirical analysis can be used to assess the circumstances under which reliance on foreign investors (such as by frontier market economies) may be considered excessive, given the state of these countries’ fundamentals. The analysis in this chapter suggests that a rise in foreign investor participation in the local currency bond market beyond a certain critical threshold—controlling for the domestic investor base—can significantly increase yield volatility. However, greater depth of domestic financial markets and the local investor base can help reduce the volatility of local currency bond prices. Some frontier markets already exceed that threshold. The high secondary market bond price volatility during the first quarter of 2020 under the COVID-19 shock underscores the need to find a better balance between attracting foreign investors and further developing their financial markets, particularly for frontier market economies. This includes improving the liquidity of foreign currency markets and the availability of hedging instruments.

Some Stylized Facts

Nonresident bond portfolio flows dominate equity flows in aggregate, given the larger investible universe of assets and the postcrisis boost from lower global rates (Figure 3.3, panel 1). Foreign portfolio investment in emerging market debt is still predominantly in foreign currencies, but consistent with the reduction in “original sin,” there has been a long-term shift to debt denominated in local currencies since the Asian financial crisis (Figure 3.3, panel 2).

Portfolio flows to emerging markets have been more volatile since the global financial crisis compared with the previous decade. Since 2013 the periods of inflows have become shorter, while outflow episodes have lasted longer (Figure 3.3, panel 4). Equity portfolio flows to emerging markets (excluding China) have been especially volatile in recent years. And despite a generally benign global economic backdrop, steady year-to-date inflows came to a sudden halt in August 2019 on fears about an escalation of US–China trade tensions and the outcome of the primary election in Argentina.

Developments in local currency government bond markets have played an important role in shaping debt portfolio flow trends (Figure 3.3, panel 5), given the increasing share of local-currency-denominated external debt (Figure 3.3, panel 2). Watershed events for large emerging market economies—such as inclusions in global bond indices (China, Mexico, South Africa) or crises elsewhere (Brazil, Russia)—along with large systemic events—such as the taper tantrum, synchronized central bank easing, and the emerging market sell-off in 2018—have had large effects on aggregate portfolio inflows to emerging market economies.

Key Drivers of Portfolio Flows to Emerging Markets

Factors driving surges of portfolio inflows to emerging markets may differ from factors driving large outflows.² The extensive literature on capital flows has stressed the role of both domestic “pull” and global “push” factors in explaining the dynamics of flows to emerging markets.³ However, almost all of the past work has looked separately, on one hand, at the drivers of average capital flows and, on the other, at the drivers of capital flow surges and sudden stops. In contrast, the analytical framework of the capital-flows-at-risk methodology (see Online Annex 3.1) considers the joint impact of multiple drivers on the entire predicted distribution of portfolio flows.⁴ Looking at the

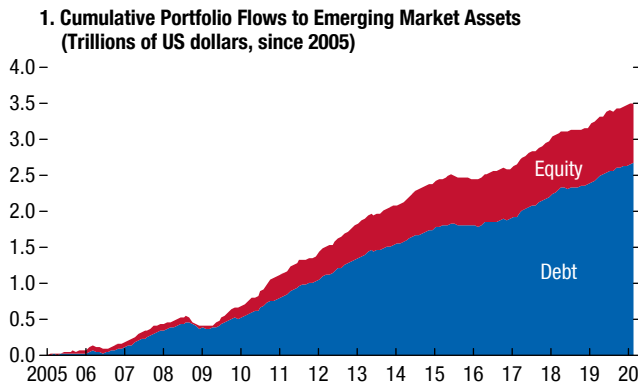
²Calvo and Reinhart (1999); Guidotti, Sturzenegger, and Villar (2004); and Cecchetti and others (2020) discuss the risks of portfolio flows in periods of “sudden stops” and “surges.”

³See Koepke (2019) for an overview of the literature.

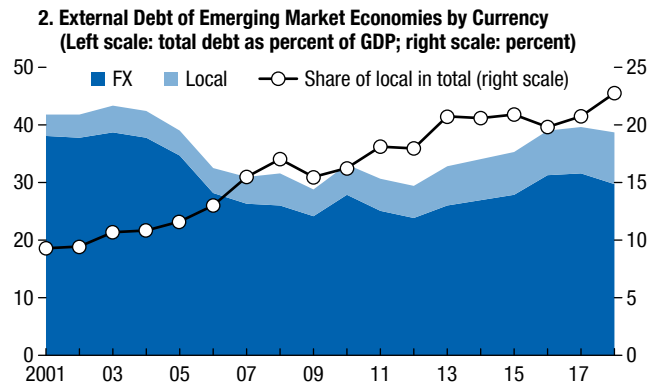
⁴For details of the capital-flows-at-risk methodology, see the October 2018 *Global Financial Stability Report* (GFSR), and Gelos and others (2019). For more information on the model specifications used in this chapter, see Online Annex 3.1.

Figure 3.3. Trends in Portfolio Flows to Emerging Markets

Nonresident emerging market portfolio flows have traditionally been significantly bigger for debt than for equities.

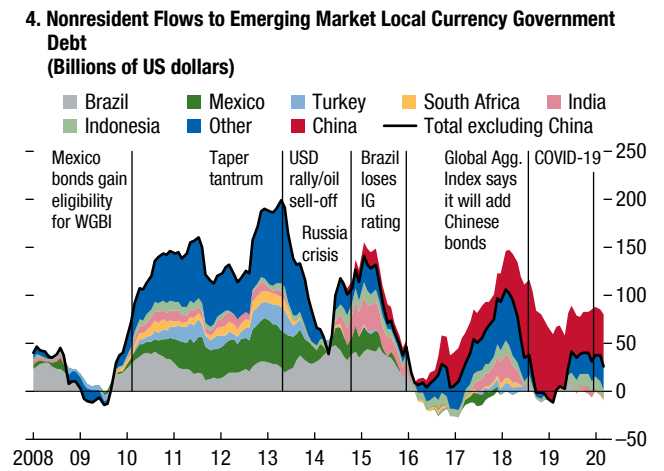
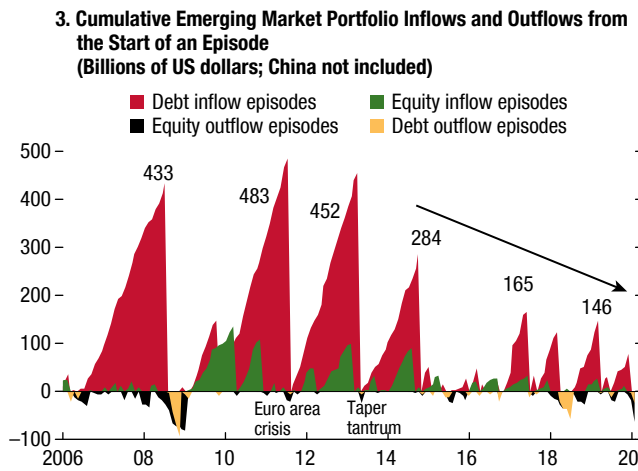


The share of foreign participation in local currency debt markets grew from 10 percent of the total in 2000 to almost 25 percent recently.



Since 2013, portfolio inflow episodes have been shorter, particularly for debt ...

... and this shortening is partly explained by significant idiosyncratic and global market developments.



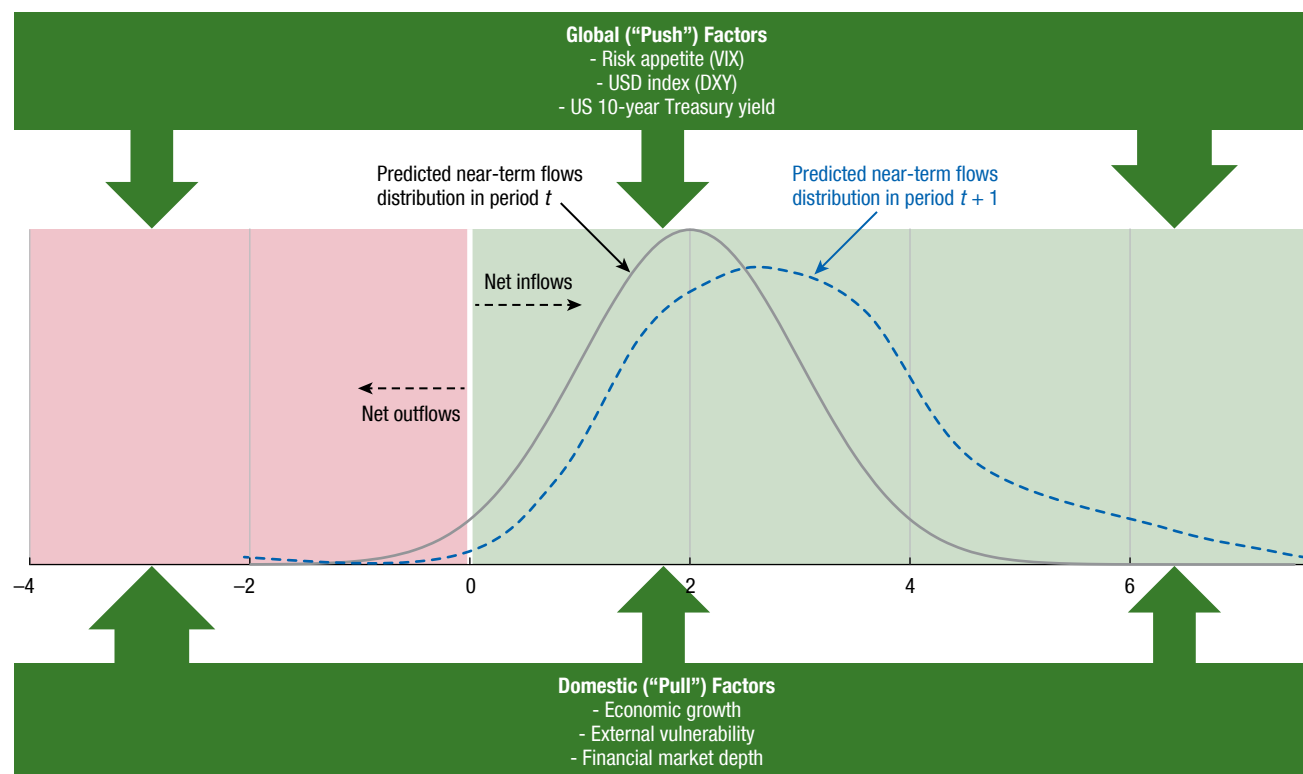
Sources: Bloomberg Finance L.P.; EPFR Global; Institute for International Finance; IMF, World Economic Outlook database; and IMF staff calculations. Note: Panel 2: China is not included. Panel 3: inflow (outflow) episodes are reset at the first monthly occurrence of outflows (inflows). Panel 4: calculated as rolling sum, data ends February 2020. EM = emerging market; EMEA = Europe, Middle East, and Africa; FX = foreign currency; IG = investment-grade; USD = US dollar; WGBI = World Government Bond Index.

distribution of future flows is a way of quantifying a likelihood of extreme outcomes that could potentially lead to financial instability. From a policy perspective, this could help policymakers prepare for future reversals or surges of portfolio flows.

In this chapter, the capital-flows-at-risk methodology is used to study the impact of global and domestic factors on total debt and equity portfolio flows to emerging markets and on hard currency versus local currency debt flows. The analysis focuses on the predicted distributions of portfolio flows over the near term (the current quarter and the next two quarters) based on global factors in the current period and on

domestic factors prevailing in the previous period. Figure 3.4 shows two stylized distributions of portfolio flows—the gray line is the predicted distribution conditional on factors observed at time t , and the dashed blue line is the predicted distribution conditional on factors at time $t + 1$. The figure shows that a change in either global or domestic conditions between t and $t + 1$ contributed to an improved outlook for portfolio flows, including a significantly lower likelihood of outflows and a higher likelihood of strong inflows, conditional on other factors being fixed.

The capital-flows-at-risk approach used in this chapter highlights the differential effects of global

Figure 3.4. Effects of Global and Domestic Factors on the Distribution of Predicted Portfolio Flows

Source: IMF staff.

Note: The gray density function is an example of a predicted density of near-term portfolio flows distribution. The predicted distribution is state-contingent; that is, it depends on the global and domestic factors in a given period. Changes in the domestic or global factors over time induce shifts in the predicted distribution. The blue density function shows a rightward shift of the predicted density of near-term flows, which could be caused, for example, by easing in global funding conditions. This change—all else equal—is associated with a reduced likelihood of net outflows and with a higher likelihood of very large inflows. In addition, the likelihood of very large inflows increases by more than the likelihood of net outflow declines. See Online Annex 3.1 for details. DXY = US Dollar Index; VIX = Chicago Board Options Exchange Volatility Index.

and domestic factors on the likelihood of negative or weak flows in contrast to the likelihood of moderate or strong flows. For example, changes in certain factors can have a larger effect on the likelihood of outflows than on the rest of the expected distribution of portfolio flows. The analysis in this chapter focuses on nonresident flows, referred to as “gross inflows” in the literature. In the baseline specification, the portfolio flows (in percent of GDP) are regressed on the Chicago Board Options Exchange Volatility Index (VIX), US Dollar Index, US 10-year Treasury yield, and lagged domestic drivers (domestic GDP growth, the ratio of short-term foreign exchange debt to international reserves, the depth of domestic financial markets, GDP per capita, and capital account openness). All regressions include country fixed effects and period dummies prior to, during, and following the

global financial crisis. When discussing the results of quantile regressions, the interpretation focuses on the directional impact of different factors on the likelihood of observing weak or strong flows, conditional on other factors being fixed.

Based on the literature, tightening in global funding conditions would be expected to worsen the outlook for near-term portfolio flows. Similarly, weaker growth and more shallow domestic financial markets should worsen the outlook for portfolio flows across the board. At the same time, higher levels of external debt could have differential effects on portfolio flows at different percentiles. For example, a higher level of debt today could increase short-term financing needs—and thus future inflows—or it could lead to a decline in flows because of concerns about debt sustainability.

Debt versus Equity Portfolio Flows

For debt portfolio flows, changes in global conditions disproportionately affect the outlook for large inflows. In contrast, changes in domestic fundamentals seem to contribute more to the likelihood of negative or weak inflows than to the likelihood of large inflows. Intuitively, positive global risk sentiment can quickly boost portfolio inflows as investors search for yield, but when risk appetite deteriorates, investors tend to pay more attention to domestic factors, leading to larger pullbacks from countries with weaker fundamentals.⁵ The sensitivities to specific factors vary:

- As expected, easier global financial conditions today boost the near-term outlook for debt portfolio flows across the board (that is, the entire distribution of predicted flows in Figure 3.4 moves to the right). This is also the case when considering individual factors that make external borrowing cheaper or change the risk-adjusted returns in favor of emerging markets—lower volatility (VIX), lower US Treasury yields, and a weaker US dollar. But a closer look at the individual global factors reveals important differences (Figure 3.5, panels 1–4). Lower US Treasury bond yields and a weaker US dollar (or equivalently, stronger domestic currencies) increase the likelihood of strong debt portfolio inflows by considerably more than they decrease the likelihood of negative or weak flows. This could be because debt managers often try to take advantage of favorable funding conditions to arrange funding in advance (prefinance). In contrast, risk aversion among global investors—measured by the VIX—affects the outlook for strong and weak flows in roughly equal magnitudes.
- While stronger domestic fundamentals do not necessarily lead to surges in portfolio inflows, they often help reduce the likelihood of outflows. Stronger domestic growth is associated with a smaller likelihood of negative or weak inflows but does not seem by itself to increase the likelihood of very large inflows. Greater external vulnerabilities (measured by a higher level of short-term foreign currency debt relative to international reserves) are linked to a larger likelihood of negative or weak debt inflows in the near term (Figure 3.5, panel 5).

⁵For example, as shown by Milesi-Ferretti and Tille (2010), countries with larger external or domestic vulnerabilities also experienced a larger retrenchment in capital flows during the global financial crisis.

When the level of short-term debt is higher today, the likelihood of very strong inflows increases too, but to a lesser extent. This positive impact potentially reflects greater refinancing needs in countries with higher levels of short-term debt, as well as investors' confidence in successful debt redemption. Moreover, deeper domestic financial markets improve the outlook for debt flows across the board (Figure 3.5, panel 6).

The results discussed above also suggest that the COVID-19 shock has considerably weakened the outlook for debt inflows. The downgraded GDP forecasts imply a greater likelihood of weak or negative flows, while tightened global financial conditions reduce the likelihood of large inflows, at least in the near term. The magnitude of the deterioration in the near-term outlook is comparable to the one observed during the global financial crisis, with the strengthening of the US dollar and higher market volatility alone weakening the median predicted quarterly flows by 1 percent of GDP for an average emerging market economy.⁶

Equity portfolio flows are also influenced by global and domestic factors, but in a different way. A similar specification of the quantile regression for equity flows (Figure 3.5, panels 4–6) shows some notable differences⁷:

- Equity flows seem to be less sensitive to global factors than debt flows. Among global factors, the disproportionately larger impact on the likelihood of strong inflows (compared with weak inflows) is present only for debt portfolio flows. In particular, a stronger US dollar weakens the near-term outlook for equity flows across the board, but its impact is an order of magnitude smaller than for debt flows.⁸
- Domestic fundamentals have a similar qualitative impact on both debt and equity flows, but—in line with intuition—stronger domestic growth

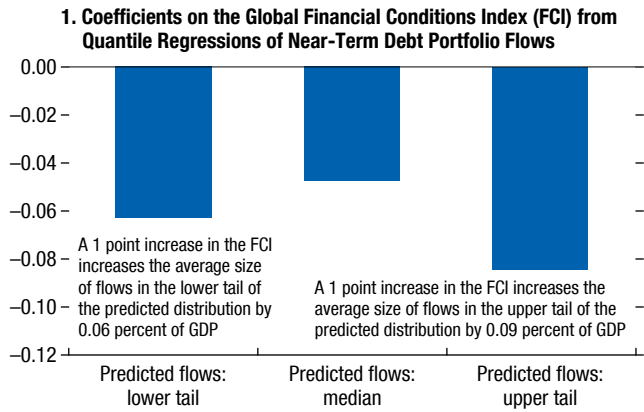
⁶During the last quarter of 2008, the US Dollar Index and the VIX increased by about 10.5 points and 33.5 points, respectively. As of mid-March 2020, the US Dollar Index and the VIX were 10.5 points and 43 points higher, respectively, than at the end of 2019.

⁷Figures 3.5 and 3.6 show nonstandardized coefficients for different variables. The findings presented in this chapter also hold when comparing standardized coefficients (reported in Online Annex 3.1).

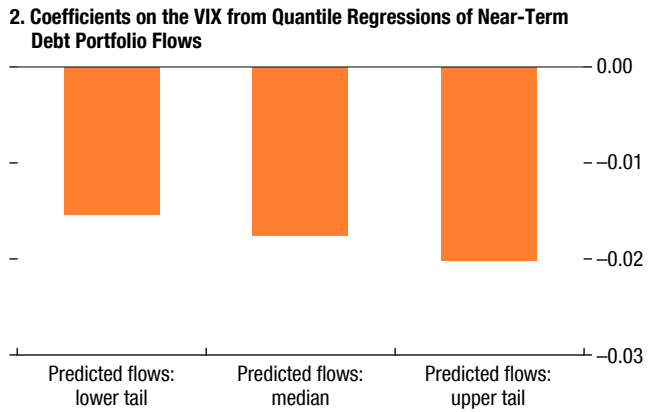
⁸This is in line with Li, de Haan, and Scholtens (2018), which finds that weaker domestic currency provides earnings support to exporters in an economy, thus boosting growth and equity flows.

Figure 3.5. What Drives Debt and Equity Portfolio Flows to Emerging Markets?

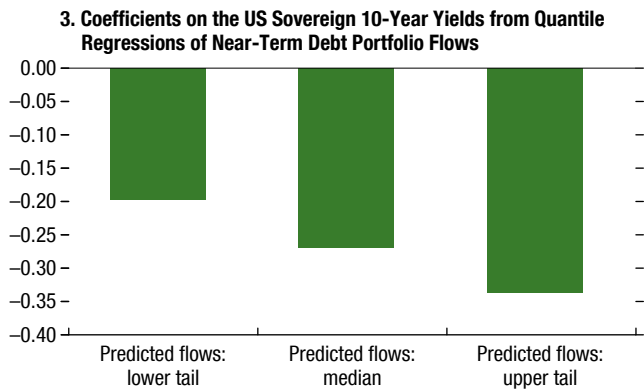
Tighter global financial conditions today decrease near-term debt flows in general.



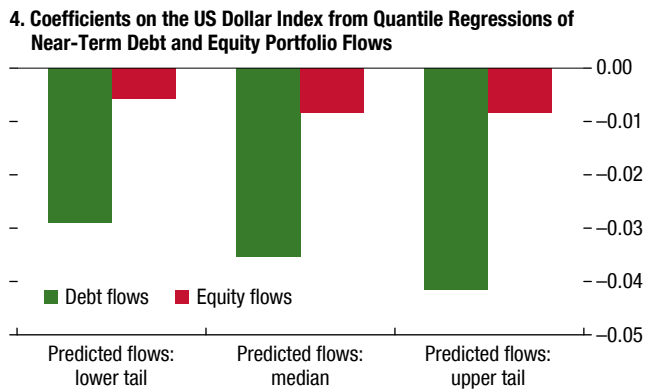
The risk aversion of global investors affects the outlook for debt flows across the board ...



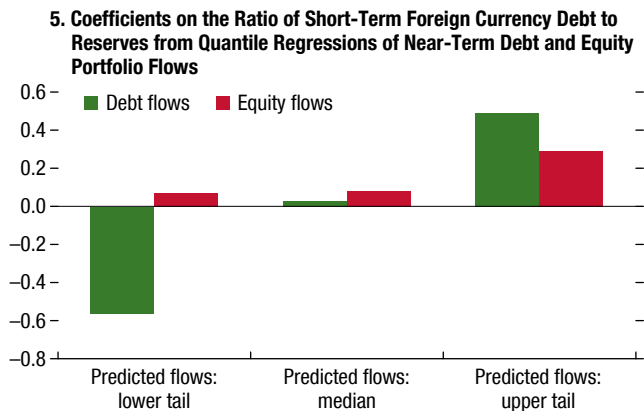
... while higher global interest rates disproportionately limit the likelihood of very large inflows.



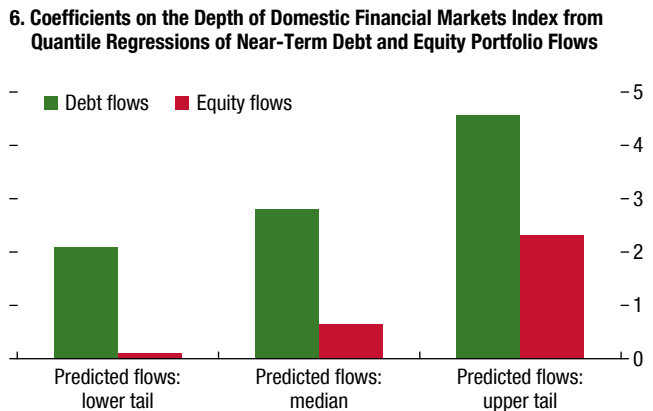
A stronger US dollar reduces the likelihood of strong flows more than it increases the likelihood of weak or negative flows, more so for debt flows than for equity flows.



Higher debt vulnerability is negative for debt flows in general, but it increases the likelihood of negative or weak inflows much more than it increases the likelihood of large inflows.



Deeper financial markets reduce the likelihood of negative or weak debt inflows and increase the likelihood of large inflows of both types of flows.



Sources: IMF, International Financial Statistics, Financial Flows Analytics, and Assessing Reserve Adequacy databases; World Bank; and IMF staff calculations. Note: The reported coefficients come from quantile regressions of average quarterly debt or equity portfolio inflows in the current and next two quarters (as a percent of GDP) on a range of global and (lagged) domestic factors for a panel of emerging and frontier markets. The lower tail corresponds to average coefficients on explanatory variables from regressions for low percentiles (5th, 10th, 20th, 30th), median flows correspond to average coefficients from regressions for middle percentiles (40th, 50th, 60th), and upper tail corresponds to average coefficients for upper percentiles (70th, 80th, 90th, 95th). See Online Annex 3.1 for details. FCI = Financial Conditions Index; VIX = Chicago Board Options Exchange Volatility Index.

contributes to an increased likelihood of strong equity inflows more than it improves the likelihood of strong debt inflows, while overall debt sustainability (as proxied by the ratio of short-term foreign currency debt to international reserves) seems to be more relevant for debt flows. In the context of the COVID-19 crisis, weakened growth prospects for emerging markets will worsen the outlook for equity portfolio flows more than for debt portfolio flows. Deeper domestic financial markets do not seem to matter when it comes to reducing the likelihood of negative or weak equity inflows in the same way as they do for debt flows.⁹

Hard Currency versus Local Currency Debt Portfolio Flows

While better domestic fundamentals and economic prospects improve the outlook for both local and hard currency debt portfolio flows, local currency flows are more sensitive to domestic factors than hard currency flows:

- Local currency debt flows appear to be more sensitive to the level of external vulnerabilities than hard currency debt flows. A higher level of short-term debt and weaker reserve adequacy significantly increase the likelihood of negative or weak inflows, especially for local currency flows (Figure 3.6, panel 1).¹⁰ For example, a 1 percentage point rise in the ratio of short-term debt to international reserves could lower the local currency debt flows at risk¹¹ by 0.4 percent of GDP and hard currency debt flows at risk by 0.2 percent of GDP.¹²
- Local currency debt flows are more sensitive to domestic growth prospects than hard currency debt flows, especially the likelihood of extreme flows.

⁹The literature suggests that financial market depth can mitigate the impact of global shocks on portfolio flows by softening the asset price response to these shocks. For the role of institutional factors in capital flows, see Alfaro, Kalemli-Ozcan, and Volosovych (2008).

¹⁰An exception is local currency flows during surges, which potentially reflect investor confidence in successful refinancing.

¹¹A measure of downside risks to capital flows, equal to the value of flows that will materialize with 5 percent probability.

¹²This is consistent with Anderson, Silva, and Velandia-Rubiano (2010), which finds that prudent public debt management with a focus on containing risks in the debt portfolio was an additional fundamental factor that strengthened emerging markets' resilience during the global financial crisis.

Higher growth boosts expected flows but affects the tails of the portfolio flow distribution twice as much (Figure 3.6, panel 2). This also means that better growth prospects limit the likelihood of weak or negative inflows but also amplify the likelihood of very large inflows. The outlook for local currency flows is almost three times more sensitive to domestic growth than the outlook for hard currency flows.¹³

- Deeper domestic financial markets improve the outlook for both hard currency and local currency flows (Figure 3.6, panel 3) and significantly limit the likelihood of negative or weak flows. The result is in line with previous studies (October 2007 GFSR) and reflects the increased market liquidity (October 2018 GFSR) and decreased volatility (discussed later in this chapter) associated with greater market depth. The probability of significant bond outflows (equivalent to the 5th percentile of historical events) declines from about 35 percent to less than 10 percent when market depth increases by one standard deviation.

Tighter global financial conditions decrease expected portfolio flows and have a disproportionately larger impact on the likelihood of extreme flows.¹⁴ Moreover, hard currency flows are almost twice as sensitive as local currency flows to changes in global financial conditions (Figure 3.6, panel 4). This may in part reflect differences in the investor base—hard currency bonds are typically held by global investors—whereas the local currency bond markets are typically dominated by domestic investors.¹⁵ For example, benchmark-driven investors have a larger presence in hard currency than in local currency sovereign debt markets (April 2019 GFSR). The analysis implies that a much weaker growth outlook for emerging markets due to the COVID-19 outbreak will significantly worsen the outlook for local currency flows, while the outlook for hard currency flows will be relatively more affected by the sharp tightening in global financial conditions.

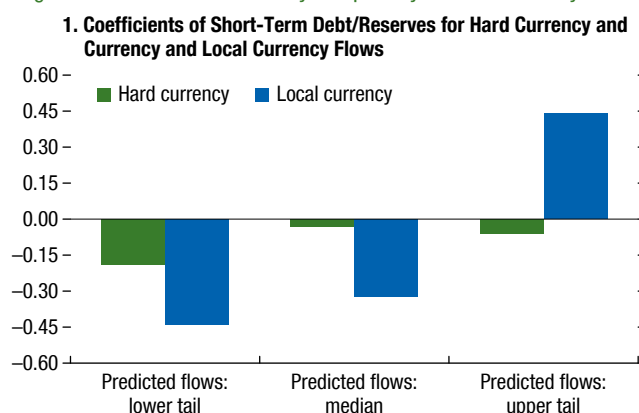
¹³Greater sensitivity of local currency bonds to domestic factors provides diversification for global investors (Miyajima, Mohanty, and Chan 2012).

¹⁴Nier, Sedik, and Mondino (2014) also finds that risk appetite becomes the dominant driver of flows during crises.

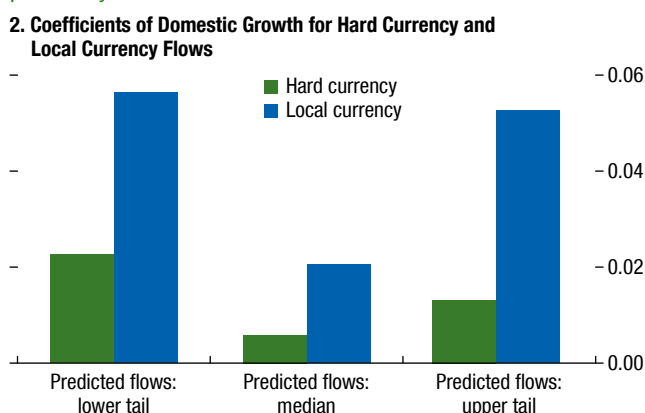
¹⁵Median foreign ownership of emerging market local currency bonds is just about 20 percent, though this level has risen over the past decade.

Figure 3.6. What Drives Local Currency versus Hard Currency Debt Portfolio Flows?

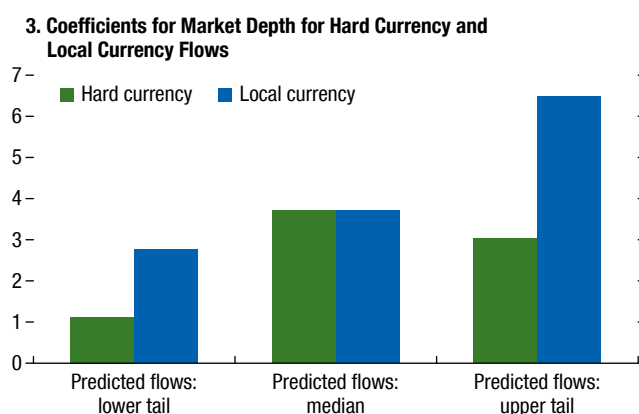
Higher short-term debt relative to reserves reduces the likelihood of negative or weak flows materially—especially for local currency flows.



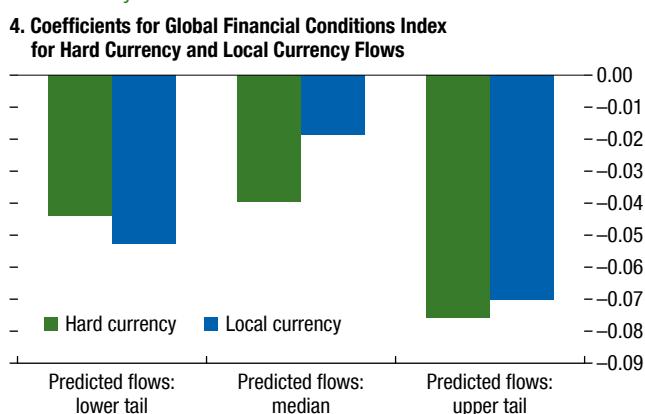
Local currency flows are more sensitive to domestic growth prospects, particularly the likelihood of extreme flows.



Greater market depth significantly improves the outlook for both hard currency and local currency portfolio flows.



Tighter global financial conditions have negative effects on both local currency and hard currency flows, with a somewhat larger impact on hard currency flows.



Sources: Bloomberg Finance L.P.; Haver Analytics; JPMorgan Chase & Co; Institute of International Finance; IMF, International Financial Statistics, Financial Flows Analytics, and Assessing Reserve Adequacy databases; World Bank; and IMF staff calculations.

Note: The reported coefficients come from quantile regressions of average quarterly debt portfolio inflows in the current and next two quarters (as a percent of GDP) on a range of global and (lagged) domestic factors for a panel of emerging and frontier markets. The lower tail corresponds to average coefficients on explanatory variables from regressions for low percentiles (5th, 10th, 20th, 30th), median flows correspond to average coefficients from regressions for middle percentiles (40th, 50th, 60th), and the upper tail corresponds to average coefficients for upper percentiles (70th, 80th, 90th, 95th). See Online Annex 3.1 for details. In panel 4, the larger sensitivity of hard currency flows to global factors may reflect the attendant exchange rate volatility and its impact on the issuer's repayment capacity in the presence of foreign exchange mismatches.

Impact of Portfolio Flows on the Level and Volatility of Funding Costs

The pricing of sovereign debt securities is linked to country-specific fundamentals (Edwards 1985) but is also influenced by global investors' risk appetite (Eichengreen and Mody 2000). Strong domestic fundamentals help lower funding costs (Baldacci and Kumar 2010), while tight global financial conditions can widen spreads (Ebner 2009; Peiris 2010). Global risk appetite becomes especially relevant during

periods of stress (González-Rozada and Levy-Yeyati 2008) because it can interact with domestic vulnerabilities to amplify the impact on borrowers, especially those with weaker fundamentals (Nickel, Rother, and Rülke 2009).

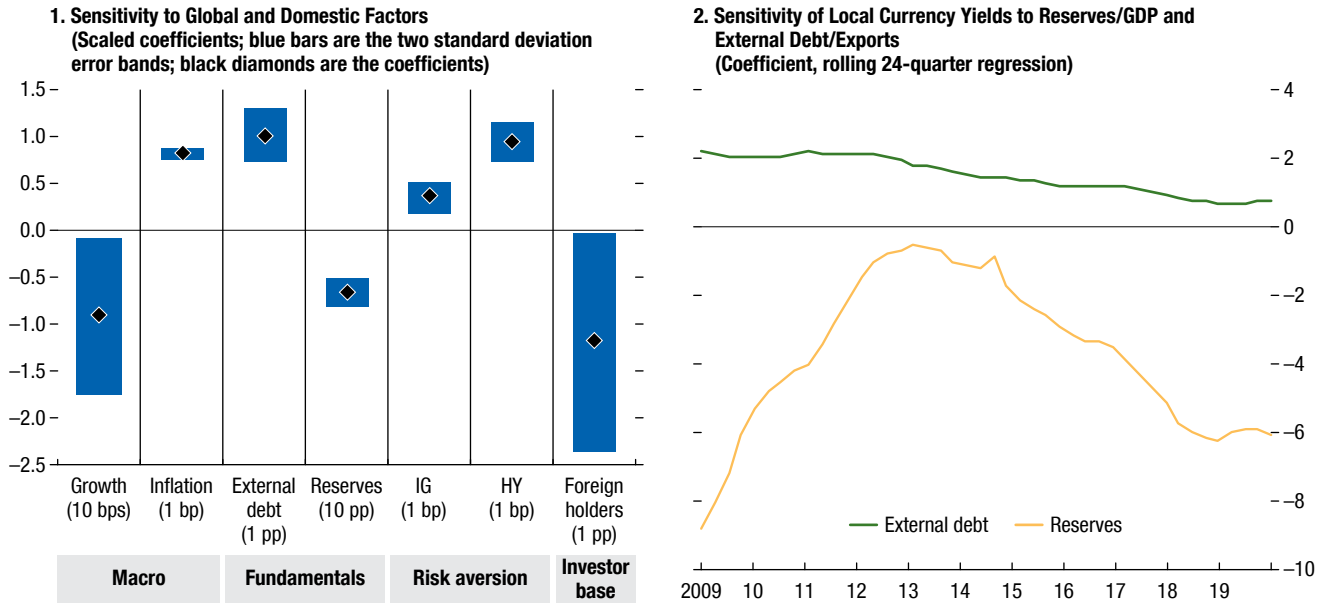
Foreign participation in local currency bond markets can be a mixed blessing:

- Nonresident holdings of bonds can reduce borrowing costs, currency mismatches, and rollover risks associated with external borrowing. In addition, by

Figure 3.7. Emerging Market Local Currency Bond Yields

Funding cost is lowered by stronger domestic fundamentals and higher foreign participation.

Local currency bond yields have become more sensitive to reserve adequacy and less sensitive to the level of external debt.



Sources: Bloomberg Finance L.P.; Haver Analytics; Institute of International Finance; JPMorgan Chase & Co; and IMF staff calculations.
 Note: Panels 1 and 2 report the unconditional effect of domestic and global factors on the local currency bond yields. In panel 1, variable coefficients are scaled by a given metric; for example, for every 10 basis point increase in growth, yields change by -0.9 basis points as per the panel. For every 1 percentage point increase in external debt (to exports), yields change by 1 percentage point. bp = basis point; HY = high yield; IG = investment grade; pp = percentage point.

- diversifying the investor base, issuers can increase their flexibility and boost the potential size of the market beyond the absorption capacity of their domestic investor base.
- At the same time, investment decisions by foreign investors can strengthen the link between exchange rate fluctuations and domestic financial conditions. Foreign investors can create or reinforce exchange rate pressures, and a reduction in their positions can create domestic debt rollover risks. Local currency bond outflows can also increase term premiums and increase long-term interest rates, which in turn can affect domestic activity (Carstens 2019). Ebeke and Kyobe (2015) suggests that foreign holdings transmit global financial shocks to local currency sovereign bond markets by increasing yield volatility and, beyond a certain threshold, amplifying spillovers from global shocks.

Depth of domestic financial markets can help countries mobilize savings, promote information sharing, and diversify risk. Deep financial systems can also support financial stability by helping

buffer the economy against external shocks and by dampening the volatility of asset prices (Sahay and others 2015).¹⁶

Level of Funding Costs

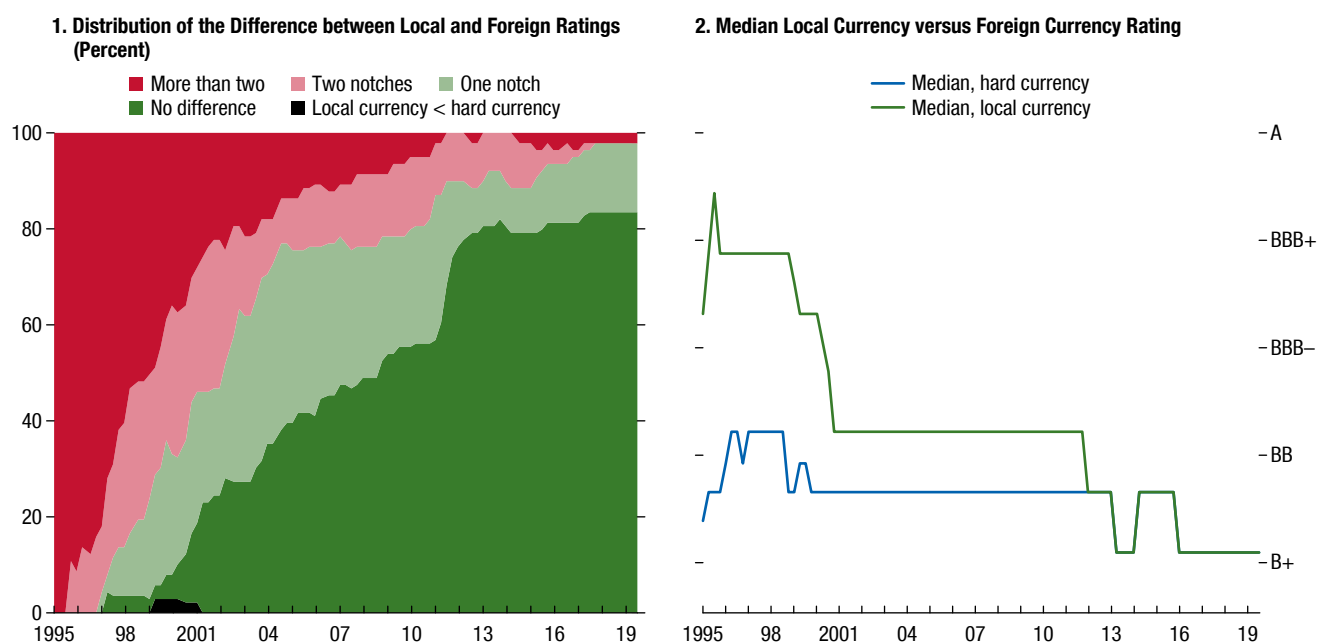
Stronger domestic fundamentals are associated with lower funding costs (Figure 3.7, panel 1).¹⁷ High inflation increases local currency bond yields, while better growth prospects contribute to lower yields. Elevated vulnerabilities and lower buffers tend to increase the cost of funding: higher levels of external debt and lower levels of foreign exchange reserves are associated with higher local currency yields. IMF staff analysis suggests that the sensitivity of local currency bond yields to the level of foreign exchange reserves has increased in recent years, while sensitivity to external debt appears to have declined somewhat

¹⁶Sahay and others (2015) also points out a potentially dark side of financial deepening in terms of financial stability; that is, a “too much finance effect.”
¹⁷See Baldacci and Kumar (2010), Jaramillo and Weber (2013), and Piljak (2013).

Figure 3.8. Local Currency versus Hard Currency Sovereign Ratings

The local currency ratings advantage has narrowed significantly over time ...

... driven by an overall worsening of ratings.



Sources: Bloomberg Finance L.P.; and S&P Capital IQ.
 Note: Panels reflect S&P sovereign credit ratings.

as the search for yield has intensified (Figure 3.7, panel 2).¹⁸

Lower-rated bond issuers are found to be more vulnerable to swings in global investor risk sentiment than higher-rated issuers,¹⁹ as suggested by analysis of yield sensitivity to global risk-aversion shocks (Figure 3.7, panel 1). For example, a 100 basis point increase in US BBB-rated corporate spreads could widen yields of high-yield emerging market bonds by almost 100 basis points, compared with only 40 basis points for investment-grade issuers.

Greater foreign participation also helps reduce local currency yields (as in Ebeke and Lu 2015), which reflects the investor confidence channel as well as the role of foreign investors in the development of local bond markets (Peiris 2010).

Credit ratings also play an important role in determining funding costs (Jaramillo and Tejada 2011), even after accounting for fundamentals, as they alter

investor behavior and eligibility. Local currency debt has been deemed safer by sovereign debt managers (Amstad, Packer, and Shek 2018), and this has aided the push toward greater local currency borrowing.²⁰ However, the ratings gap between local and foreign currency debt has narrowed significantly over time as the local currency rating advantage has withered away. For 80 percent of the countries in the sample, there is currently no difference between the local and foreign currency rating, compared with 50 percent at the time of the global financial crisis and 20 percent during the Asian financial crisis (Figure 3.8, panels 1 and 2). This convergence has been driven by a worsening of local currency ratings.²¹

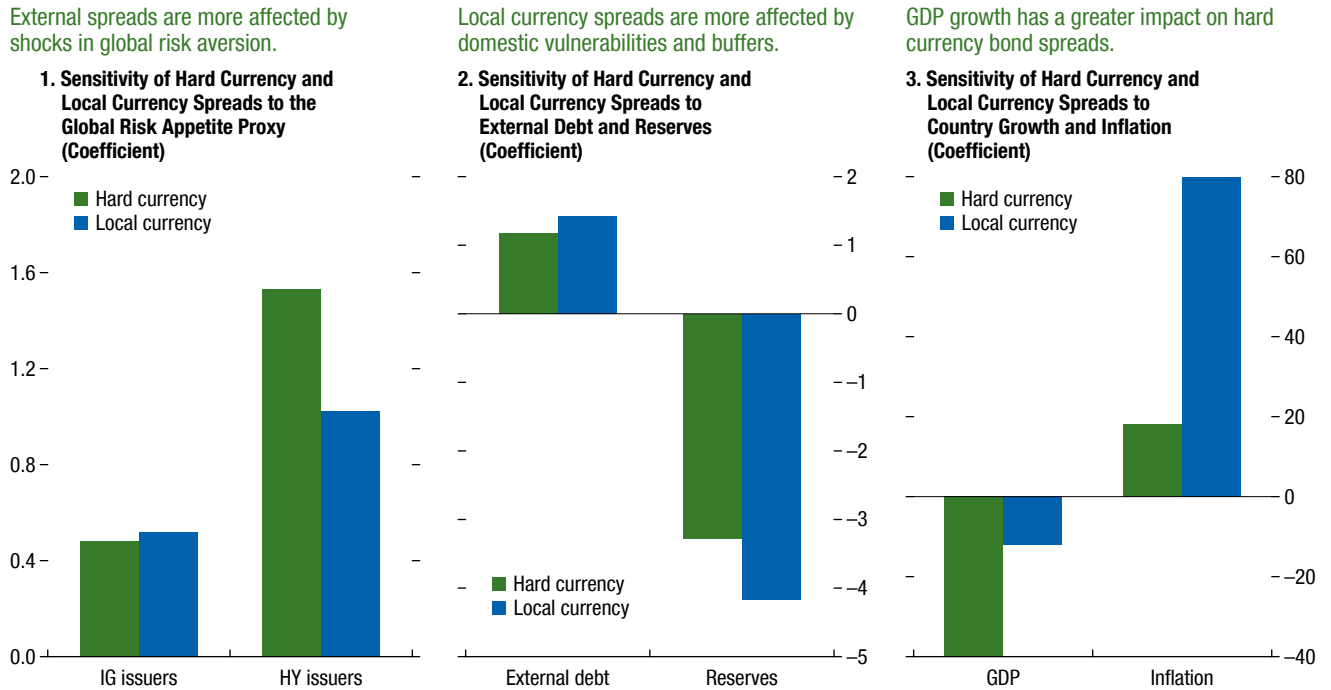
²⁰Led by China's domestic bond market boom (Dehn 2019), local currency bonds now account for almost 90 percent of the marketable emerging market fixed-income universe compared with 75 percent in 2008.

²¹This reflects country-level downgrades (Brazil, South Africa, Turkey) and increased recognition that sovereigns do default in local currency (Reinhart and Rogoff 2009), as well as more local currency ratings, possibly for the lower-rated countries (Amstad, Packer, and Shek 2018).

¹⁸This might also reflect the lengthening of maturities by investors.

¹⁹The results are consistent with the hard currency spread analysis conducted in the October 2019 GFSR.

Figure 3.9. Drivers of Hard Currency versus Local Currency Spreads



Sources: Bloomberg Finance L.P.; Haver Analytics; Institute of International Finance; JPMorgan Chase & Co; and IMF staff calculations.
 Note: Spreads on local currency bonds are proxied by subtracting the five-year US Treasury yield from the local currency yields. The specification for local currency spreads is the same as discussed for local currency yields in the previous section and described in Online Annex 3.1. The model for the hard currency spreads is the same as introduced in the October 2019 *Global Financial Stability Report*. HY = high yield; IG = investment grade.

There are also notable differences between hard and local currency debt in terms of drivers of their valuations.²² Hard currency bond spreads, especially for high-yield issuers, are affected about 60 percent more by global risk aversion shocks (Figure 3.9, panel 1). Local currency spreads are more sensitive to domestic vulnerabilities, including external debt and reserve adequacy (Figure 3.9, panel 2).²³ Economic fundamentals have a mixed effect, with domestic inflation disproportionately increasing local currency spreads (Figure 3.9, panel 3). Every percentage point rise in inflation increases local currency bond spreads by more than 70 basis points, but by only 20 basis points for hard currency bond spreads, and GDP growth has a greater impact on hard currency bond spreads.

²²These spreads capture only part of the funding costs. The level of local currency yields can also be affected by monetary policy.

²³Du and Schreger (2013) also finds that local currency bond spreads are less sensitive to global factors than hard currency bond spreads.

Volatility of Funding Costs

IMF staff analysis finds evidence that greater foreign participation in local currency bond markets increases the volatility of yields after it reaches a certain threshold, while further domestic financial deepening helps reduce the volatility of yields. In particular, conditional on domestic factors, when the size of foreign investor bond holdings exceeds about 40 percent of the country’s international reserves, the volatility of yields is found to increase by about 15 percent (see Table 3.1 and Online Annex 3.1). Controlling for the same factors and the threshold effect for foreign participation, the analysis finds that domestic financial market deepening decreases volatility significantly.²⁴ On average, domestic financial market deepening helped emerging market economies dampen volatility by 39 percent during 2004–17.

²⁴The variable used for financial market deepening does not capture all aspects of market depth—for example, the amount of foreign exchange liquidity, which could also act as a mitigating factor (as in Mexico and South Africa), is not accounted for.

Table 3.1. Contribution of Financial Market Depth and Foreign Participation to the Volatility of Yields

Estimates show that financial market depth increases volatility when foreign participation rises beyond a 40 percent threshold.

Variable Threshold (Percent)	Financial Market Depth	Dummy: Foreign Participation
37	-1.051***	0.009
38	-1.029***	0.060
39	-1.015***	0.090
40	-0.980***	0.147**
41	-0.969***	0.163**
42	-0.967***	0.205***
43	-0.980***	0.188**

Source: IMF staff calculations.

Note: The sample is based on quarterly data from 18 emerging market economies during 2004–17. The number of observations is 741. Country and quarter fixed effects are included. The dependent variable is volatility of yield. The dummy is defined using the ratio of different thresholds of foreign participation in local currency bond markets to reserves. Control variables include the current account balance, external debt, government debt, reserves as shares of GDP, growth rate of GDP, inflation, exchange rate against the US dollar, and turnover in the foreign exchange market. Results are robust to dropping these control variables and are not driven by any of the countries in the sample. Results are very similar for the depth of financial institutions (see Online Annex 3.1).

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Foreign Investor Participation in Frontier Markets and Debt Rollover Risks

Strong investor interest in frontier market economies in 2017–19 led to a notable increase in nonresident exposures in the foreign exchange and local currency bond markets. Local currency bond markets in Egypt and Nigeria have consistently had some of the largest overweight exposures in investor surveys, with most of the foreign holdings concentrated in their high-yielding short-term debt market segments. As a result, the share of foreign holdings of local currency debt in several frontier markets reached levels similar to those prevalent in emerging markets, despite the relatively weaker fundamentals and policy frameworks in frontier market economies (Figure 3.10, panel 1). Evidence so far from the COVID-19–induced market turbulence suggests that economies with greater nonresident investor participation in domestic bond markets experienced larger yield increases (Hofmann, Shim, and Shin 2020) and higher exchange rate volatility. Frontier markets underperformed, experiencing large outflows²⁵ and acute

²⁵For example, there were reports of large outflows in local currency debt and/or reserves declines in Egypt and Nigeria.

exchange rate pressure, with 12-month nondeliverable forwards depreciating by more than 20 percent in some cases (Figure 3.10, panel 2).

Frontier market economies often lack financial depth and have a relatively shallow domestic investor base.²⁶ Many of them rank well below the emerging market median in terms of overall financial development and the depth of local financial markets (Figure 3.10, panel 3). The lack of financial depth is also reflected in more challenging local market liquidity conditions, with bid-offer spreads and the price impact of trades typically being much larger than in other emerging markets (Figure 3.10, panel 4). Limited market liquidity tends to compound market pressures in times of stress, due to reduced capacity of market makers to intermediate flows, and may also impair monetary policy transmission, especially in countries where foreigners are concentrated in short-term instruments.

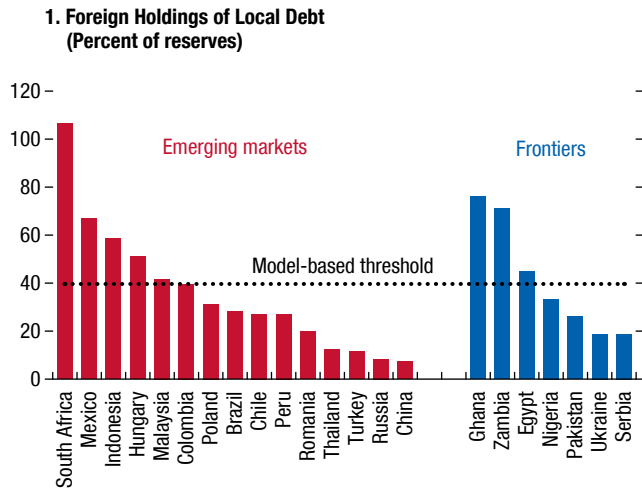
Emerging signs of financing strains, combined with a greater need for debt issuance to support COVID-19–related fiscal spending and a difficult external demand outlook (most notably, for oil and tourism revenues), pose significant risks for frontier market economies. Short-term relief from debt payments to official creditors announced by the IMF, the World Bank, and the Group of Twenty (G20) in April 2020 provides vulnerable economies with some breathing room to handle the health emergency. But over the near term, many frontier market economies may need to rethink the currency composition of their debt issuance, the extent of reliance on official versus private creditors, and the extent of foreign investor participation in their local markets.

Over the long term, beyond the COVID-19 pandemic, frontier market economies should seek to develop their local financial markets where feasible. The empirical estimates based on the analysis in this chapter suggest that a further deepening of domestic financial markets and institutions to the emerging market average level could help an average frontier market economy lower the volatility of

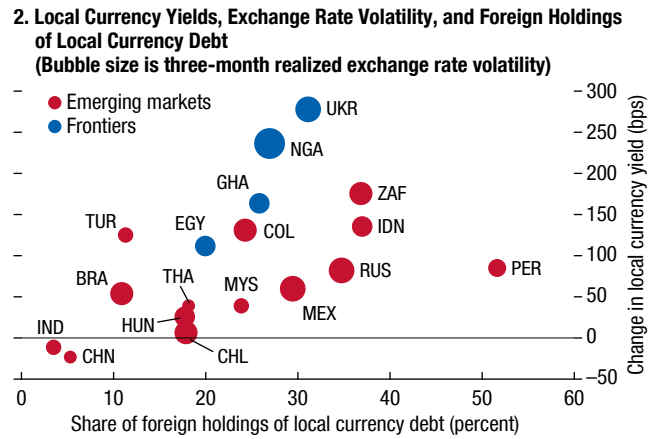
²⁶In addition, none of the countries in the frontier market sample are yet included in any of the major global index or emerging market bond indices. In comparison, several emerging market local currency bond markets are part of both global and emerging market types of indices (for example, Malaysia, Mexico, Poland, South Africa), which can help them attract more buy-and-hold foreign investors.

Figure 3.10. Local Currency Debt Markets

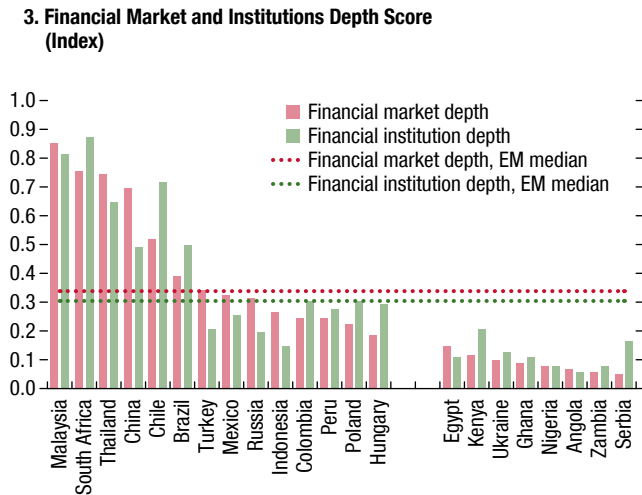
Foreign participation in local currency bond markets is comparable between emerging and frontier market economies.



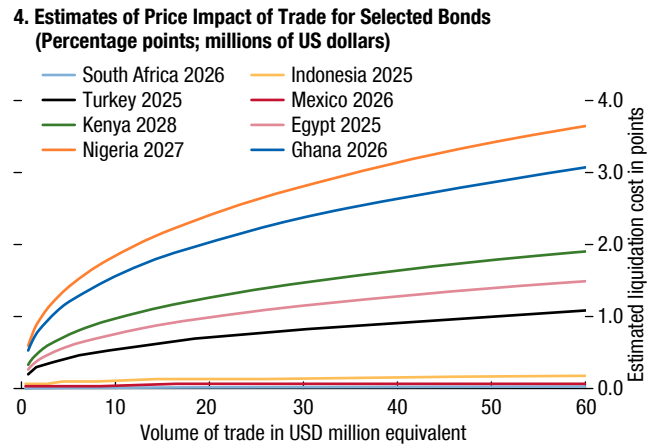
Generally, countries with a larger share of nonresident investors in their local markets saw a larger increase in their bond yields.



A shallower domestic investor base and lower financial depth have the potential to create higher volatility ...



... and limited liquidity can augment market volatility.



Sources: JP Morgan Chase & Co.; and IMF staff calculations.

Note: Panel 1 and 2 holdings data are latest available as of the end of February 2020. Reserve data are end-2019 estimates as of the end of 2019. For Nigeria and Egypt, only Treasury bill holdings are considered. Panel 2 exchange rate volatility for frontiers is calculated using nondeliverable forwards. The panel 3 index is calculated based on latest available data as of 2017. Panel 4 estimates use the liquidity assessment function in Bloomberg as of January 2019. In panel 2, data labels use International Organization for Standardization (ISO) country codes. bps = basis points; EM = emerging market; USD = US dollar.

its local currency bond yield by almost 30 percent. The capital-flows-at-risk analysis also suggests that if frontier market economies were to increase their financial depth to the emerging market average level, their portfolio debt flow outlook could improve by 1.2 percent of GDP, on average, and the probability of net nonresident outflows could decline by 15 percentage points.

Policy Priorities

The analysis presented in this chapter focuses on the cost-risk considerations related to different types of portfolio flows that have a bearing on sovereign debt management, capital flow management, exchange rate, and macroprudential policies. These policies can play an important role in containing external pressures and help cushion

the corresponding macroeconomic and financial impacts that emerging markets are facing during the COVID-19 crisis.

What Should Policymakers Do Now?

The specific policy responses to external pressures will depend on the nature of the shock (for example, liquidity versus solvency crisis), fiscal and monetary policy space, depth of financial markets, and balance sheet vulnerabilities, among others (see Chapter 1 for a broader discussion of policy priorities). However, there are some common principles that can help guide policy choices:

Foreign Currency Interventions

- For countries with flexible exchange rates, credible monetary frameworks, low inflation, deep financial markets, and the absence of large currency mismatches, the exchange rate should be a key shock absorber.
- For countries with adequate reserves, exchange rate intervention can lean against market illiquidity and thus play a role in muting excessive volatility. However, interventions should not prevent necessary adjustments of the exchange rate. Interventions should be based on the expectation that the pressures arising from the current crisis could last several months or longer.
- Countries with fixed or tightly managed currency regimes, including some major oil exporters and frontier markets, have more difficult trade-offs to consider. If reserves are adequate, maintaining the currency regime may be the best course of action in the short term. Exchange rate intervention, however, may need to be supported by monetary policy tightening and possibly capital flow management measures. These policies should also be based on the expectation that outflow pressures could last several months or longer, which may put current currency regimes under severe strain.

Capital Flow Management Measures

- In the face of an imminent crisis, introducing capital outflow management measures could be part of a broad policy package, but these measures cannot substitute for, or avoid, warranted macroeconomic adjustment. If nonresident outflows are a significant driver of overall outflows, minimum holding periods, caps, and other limits on nonresidents'

transfers abroad could be considered with due consideration for the country's international obligations. Such measures should be implemented in a transparent manner, temporary, and lifted once crisis conditions abate.

Sovereign Debt Management Strategy

- Sovereign debt managers should prepare for long-term external funding disruptions. Countries that still enjoy market access at reasonable rates should actively decrease rollover risks as part of their debt management strategy. From the perspective of the trade-off between cost and risk, lowering rollover risks should take priority over concerns about containing costs when there are large downside risks stemming from potential loss of market access. Given the considerable sensitivity of the private sector and some state-owned enterprises to commodity prices, sovereign debt managers should consider the interactions between the government's financing strategy and other domestic issuers in times of stress to ensure that debt management activities of the government do not exacerbate risks (IMF 2014).

Macroprudential Policy

- If there are macroprudential buffers available, a relaxation of these tools can reduce the impact of the current shock on market conditions as well as on the economy in general. For example, foreign currency reserve requirements can be relaxed to mitigate foreign exchange funding pressures. Furthermore, countries that have introduced additional liquidity coverage ratio requirements in foreign currency can allow banks to use the buffer or relax the requirement.

Looking Beyond the Current Crisis

For frontier market economies with less-developed financial systems, *local capital market development* and the promotion of a stable and diversified local investor base should be a priority. This would require coordination among public stakeholders and proper sequencing of reforms (IMF 2020). Specific measures include (1) developing efficient money markets, (2) strengthening primary market practices to enhance transparency and predictability of issuance, (3) bolstering market liquidity, (4) developing a robust market infrastructure,

and (5) establishing a sound legal and regulatory framework for securities.

During periods of strong investor appetite, *macroprudential tools* may be put in place or tightened preemptively—before an inflow surge occurs—and maintained over the long term or permanently to build resilience and/or contain the buildup of systemic financial risk. Policymakers should weigh all evidence about encouraging the participation of foreign investors beyond a level considered prudent after taking into account the capacity of their

local markets to absorb external shocks without excessive volatility. In particular, when local markets are at an early stage of development and there is limited room to adjust macroeconomic policies, authorities should proceed with caution when it comes to liberalizing portfolio inflows. Countries with portfolio flow restrictions that intend to liberalize might consider a gradual approach by moving toward either quantitative limits or price-based restrictions (for example, taxes, reserve requirements) that could mitigate the risk of excessive inflows.

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