

A GREATER SET OF POLICY OPTIONS TO RESTORE STABILITY

Chapter 2 at a Glance

- To mitigate stress in local bond and currency markets, many emerging market central banks used foreign exchange (FX) interventions and, for the first time, asset purchases.
- This *Global Financial Stability Report* (GFSR) presents a novel *local stress index* (LSI) to measure the stress in local bond and currency markets.
- Asset purchase programs (APPs) helped lower government bond yields, did not lead to FX depreciation, and eventually reduced market stress. Asset purchases may have a role to play going forward, but ongoing evaluation of the risks is also needed.
- Strategies to address debt distress in frontier markets need to consider the impact of the expected treatment of different creditors in future debt restructurings on investor perception of risk.

The pandemic has hit emerging and frontier market economies hard, but the policy response has been equally strong. Policymakers have taken steps to soften the hit to economic activity, ease financial conditions, and reduce stress in domestic markets. For the first time, many emerging market central banks have launched asset purchase programs to support the smooth functioning of financial markets and the overall economy. Asset purchases have been effective in reducing bond yields and have not contributed to currency depreciation, but they appear to have taken longer to reduce broader domestic bond market stress. This chapter examines the effectiveness of these unconventional policy measures and concludes that asset purchases with credible monetary policy frameworks and good governance may be a useful addition to the policy toolkit of central banks in emerging and frontier market economies, although a careful ongoing evaluation of associated risks is needed, especially for open-ended programs. In frontier market economies, the policy focus has been on addressing the effect of the pandemic while dealing with high debt. This chapter examines the potential impact on investor perception of sovereign risk as a result of the expected treatment of different classes of creditors in future debt restructurings.

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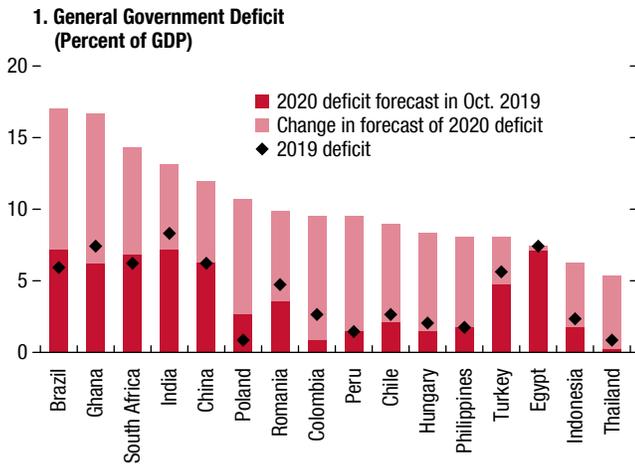
The Global Pandemic Has Required Bold Action

Emerging market economies have responded forcefully to the coronavirus disease (COVID-19) crisis. As a result of the sudden and unprecedented shock to economic activity, most governments have increased spending for emergency measures and transfers (Figure 2.1, panel 1). Over 90 percent of central banks have cut policy rates since March—some to all-time lows—and many have taken measures to provide liquidity to the banking system (Figure 2.1, panels 2 and 3). As a result of these measures and buoyant global risk appetite, financial conditions have eased considerably (see Chapter 1).

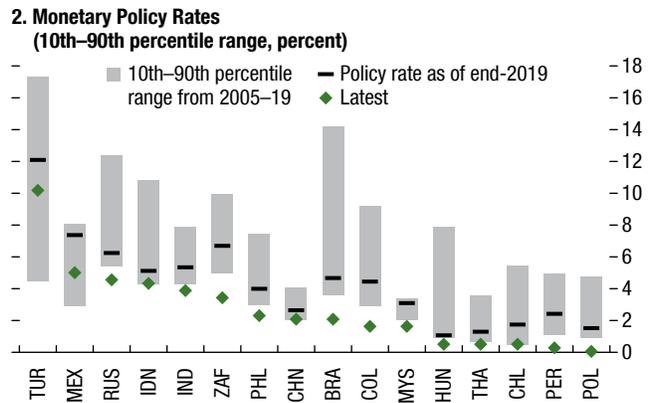
This chapter discusses the historic policy responses of emerging market policymakers to the global pandemic and the financial stability implications of those policies. The “FX Intervention by Emerging Market Central Banks” section considers the use and effectiveness of FX interventions during the peak of the crisis and reviews central bank asset purchases—a new policy tool for emerging market economies—including an examination of their effectiveness and lessons to evaluate their risks in the two sections that follow. “The Role of the Official Sector in Frontier Market Economy Debt Restructuring” section discusses many frontier market economies’ loss of market access because of COVID-19 and the potential impact of different classes of creditors on debt restructurings and on investor perception of sovereign risk. Building on the findings of the chapter, the final section

Figure 2.1. Emerging Market Policy Response to the COVID-19 Pandemic

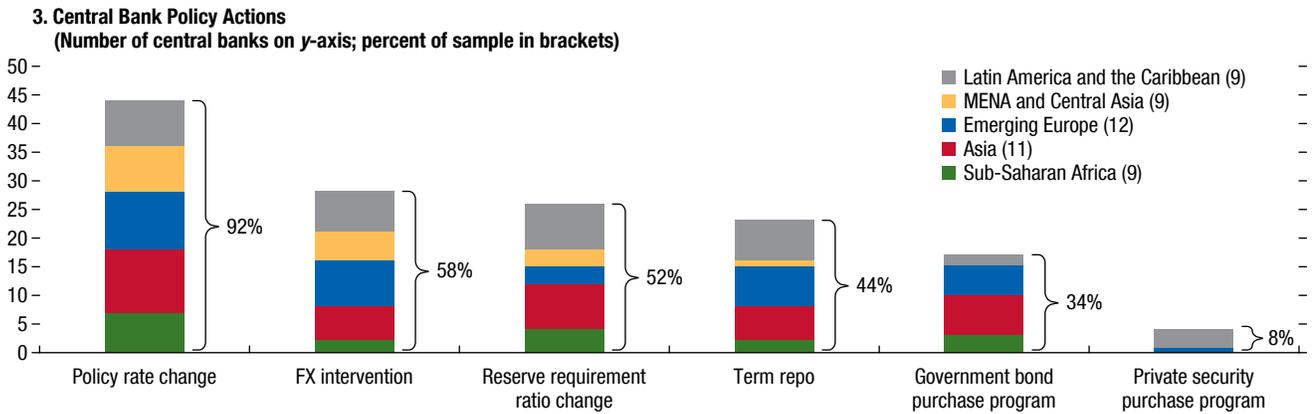
The need for emergency spending and the hit to revenues from the sharp economic shock of the COVID-19 crisis increased budget deficits ...



... and most central banks have aggressively cut rates, some to all-time lows.



In addition to rate cuts, central banks have responded forcefully to the COVID-19 crisis with an array of measures to boost market liquidity and stabilize economic and financial conditions.



Sources: Bloomberg Finance L.P.; IMF, World Economic Outlook database; national authorities; and IMF staff calculations.
 Note: In panel 3, countries are counted only once per action (for example, multiple policy rate cuts are counted once). The sample comprises 50 central banks and does not include any advanced economies. The sample is defined in Online Annex 2.1 and is quantified by region in parentheses. Data labels in panel 2 use International Organization for Standardization (ISO) country codes. FX = foreign exchange; MENA = Middle East and North Africa.

offers policy recommendations. The apparent absence to date of capital flow management measures during the COVID-19 crisis and China’s policy challenges in maintaining supportive financial conditions are briefly examined as well (Online Annex Boxes 2.1 and 2.2).

FX Intervention by Emerging Market Central Banks

FX interventions, including in some cases through forward contracts, were widespread at the height of the crisis in March, as policymakers sought to insulate their

economies from external movements in the pricing of risk. While many countries intervened, surpassing recent stress episodes in absolute size (Figure 2.2, panel 1), the use of reserves (as a share of total international reserves) was about two-thirds the magnitude observed during the global financial crisis for the median country (Figure 2.2, panel 2). The limited and short-lived use of reserves can potentially be attributed to a relatively short duration of the stress episode due to a quick turnaround in global risk sentiment, which has also likely reduced the need for the capital flow management measures (see Online Annex Box 2.2).

IMF staff analysis shows that global factors, including Federal Reserve rate cuts and global risk appetite (proxied by the Chicago Board Options Exchange Volatility Index [VIX]¹), played a significant role in driving currency surprises² during the COVID-19 sell-off (Figure 2.2, panel 3). Domestic policy rate cuts and FX interventions, on the other hand, had a relatively insignificant impact. This contrasts with the 2015 sell-off, which was more specific to emerging markets and not driven by exogenous global shocks, and during which emerging market currencies were significantly affected by domestic FX interventions and policy rate cuts (Figure 2.2, panel 4).

The New Game in Town: Central Bank Asset Purchases

During the COVID-19 crisis, for the first time on a broad basis, at least 18 emerging market central banks adopted unconventional policies through the use of asset purchase programs³ targeting government or private sector bonds in local currency. In several cases the purchases were sterilized, which alleviated downward pressure on exchange rates. The scope and motivation of these programs varied across economies (see Table 2.1 and Figure 2.3, panel 1), and the objectives were often multifaceted, but a view toward the available conventional monetary policy space allows for the identification of three broad groups:

- Central banks with *policy rates well above zero* tended to use asset purchase programs as a tool to improve bond market functioning (India, Philippines, South Africa) and provide liquidity to the financial sector. In some cases, central banks may have seen nominal policy rates below a certain level as counterpro-

¹Other policy variables, such as announcements by the Federal Reserve of additional purchases, credit facilities, and swap lines, must have also affected emerging market currencies indirectly, but a significant part of that impact should be reflected through global risk appetite.

²The results are broadly consistent even when simple currency changes are considered. For more details, see Online Annex 2.1. All annexes are available at www.imf.org/en/Publications/GFSR.

³For the purpose of this GFSR, an APP is the expansion of the central bank balance sheet via purchases of various type of securities. APPs include quantitative easing programs that aim to ease financial conditions and provide monetary stimulus, more limited programs that aim to improve market functioning, and purchases in primary markets that aim to assist with government financing requirements. Some countries in the sample set up new purchase programs (for example, Chile and Hungary); others adjusted their existing open market operations (for example, Malaysia and Turkey).

ductive, primarily because of fears over portfolio outflows and ineffective policy transmission.

- Central banks with *policy rates closer to their lower bound* (Chile, Hungary, Poland) have partially sought to use asset purchase programs for somewhat similar reasons as advanced economies, to ease financial conditions, provide additional monetary stimulus, and exert greater influence on longer maturity bond yields. It is worth noting that in most cases market functioning and liquidity objectives were prominently featured.
- Some central banks explicitly stated that one of their objectives was to temporarily *ease government financing pressure* in the face of the once-in-a-generation global pandemic (Ghana, Guatemala, Indonesia, and the Philippines through its repurchase agreement).

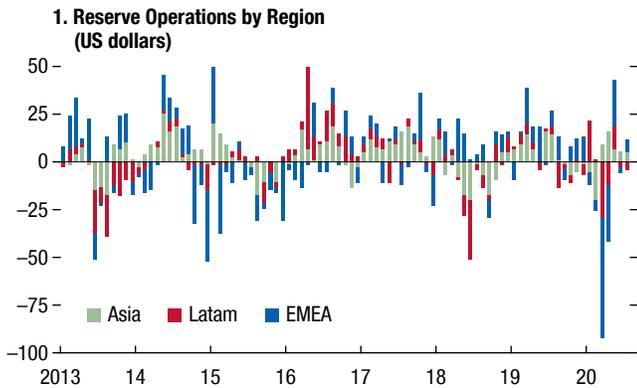
Central bank purchases of government securities played an important role in some domestic bond markets during the acute phase of the sell-off. Beginning in February 2020 (Figure 2.3, panel 2), almost all economies faced sizable local currency bond outflows. Central bank asset purchases varied substantially in size, but in most cases they helped the domestic investor base absorb much of the outflow pressure and deal with the government's increased financing needs. For example, in Poland between the end of February and June the central bank purchased more than 2 percent of GDP in government bonds in the secondary market compared with outflows of 0.7 percent of GDP, alongside an increase in net domestic issuance of 4.4 percent of GDP. In some countries that did not launch asset purchase programs, debt management offices limited the local bond supply to avoid further deterioration of already stressed local bond markets. Instead, they relied on alternative sources of financing (for example, the use of cash buffers in Brazil, increased external issuance in Mexico, and pension funds in some Latin American countries) or back-loaded issuance to the second half of the year.

Local Market Stress Is Greater in Bonds than in Currencies

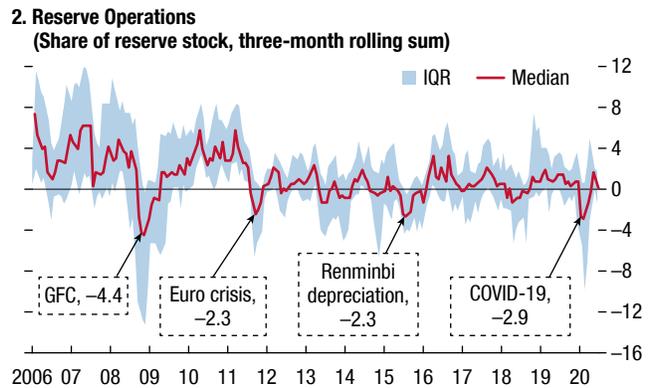
This GFSR introduces a novel market conditions index designed to assess the level of stress in local bond and currency markets. The *local stress index* (LSI) summarizes conditions into an indicator that can help guide central bank decisions regarding the need for interventions to support local market functioning. Unlike financial conditions indices, which can loosen or

Figure 2.2. FX Interventions and Reserve Operations

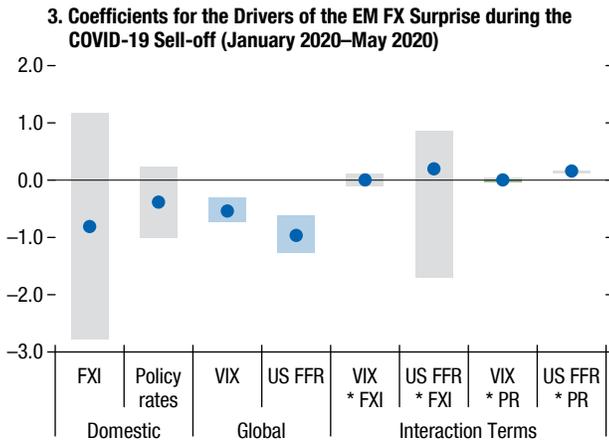
Reserve operations were substantial and widespread in dollar terms ...



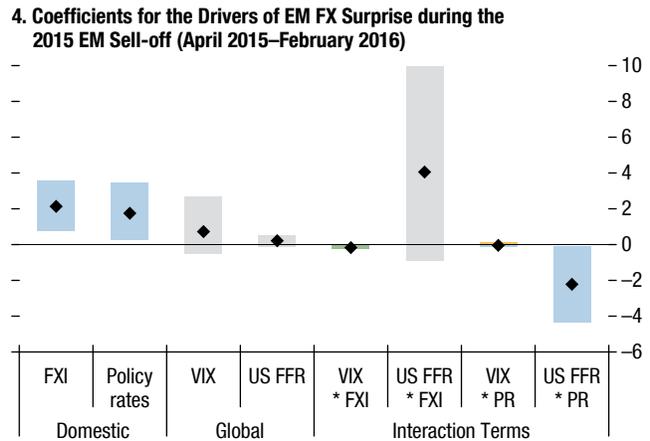
... though as a share of reserves they never reached the level of the global financial crisis and receded quickly.



Global factors played a significant role in driving emerging market currency surprises during the COVID-19 sell-off ...



... in sharp contrast to the 2015 emerging market sell-off, when domestic factors played a significantly more important role.



Sources: Data set from Adler and others (forthcoming); Bloomberg Finance L.P.; Haver Analytics; International Institute of Finance; and IMF staff calculations. Note: In panel 1, data exclude China. In panels 1 and 2, data are as of end-August 2020. Data from May onwards include estimates for operations only in the spot market, while data for April and earlier include estimates for operations in spot as well as derivatives markets. Operations in derivatives markets do not represent a drag on the reserve stock but are included in the calculations to estimate the size of the intervention. These estimates do not adjust for foreign exchange bond sales/purchases, so they may represent a partial picture in a few cases (for example, Mexico). In panels 3 and 4, the sample consists of 14 emerging markets with panel data at monthly frequency (see Online Annex 2.1 for more details). The dependent variable is the forecast error between the spot currency value and the value forecast by the previous month's forward contracts. A positive value implies that the currency appreciated versus market expectations, assuming parity holds. In reality, the forward values might vary from spot for an extended period of time, but the changes in this metric will still highlight currency pressures, albeit only partially. The results hold broadly true even if the dependent variable is taken as foreign exchange appreciation. Foreign exchange intervention (FXI) is calculated as valuation-adjusted changes in reserves and the intervention as taken in the derivative markets. A positive value means active intervention. Country fixed effects are included. Coefficient estimates are shown with two standard error confidence intervals. In panels 3 and 4, blue bars are the statistically significant coefficients, while gray bars are not statistically significant. EM = emerging market; EMEA = Europe, Middle East, and Africa; FFR = Federal funds rate (effective); GFC = global financial crisis; IQR = interquartile range; Latam = Latin America; PR = policy rate; VIX = Chicago Board Options Exchange Volatility Index.

Table 2.1. Asset Purchase Programs in Response to COVID-19 in Emerging Market Economies

Country	Primary Objectives	Asset Type	Target or Limit Size (local currency unless specified)	Market	Total Purchases (percent of GDP)	Program Duration (observed or explicit)	Significant Program Announcement Dates	General Government 2020 Deficit (percent of GDP)	Government Debt (percent of GDP)
Colombia	Provide liquidity to the financial sector	Government, private sector bonds	10 tn private, up to 4 tn government	Secondary	1.1	Mar.–Apr.	Mar. 23	-9.5	68.2
Chile	Facilitate monetary policy transmission, ease financial conditions	Bank, central bank, and government bonds*	\$16 bn	Secondary	2.9*	Mar.–present	Mar. 16, Mar. 31, Jun. 16, Aug. 12	-8.7	32.8
Croatia	Stabilize domestic bond market	Government bonds	Not specified	Secondary	4.9	Mar.–Jun.	Mar. 13	-8.1	87.7
Ghana	Finance budget deficit	Government bonds	5.5 bn (up to 10 bn)	Primary	1.4	May	May 15	-16.4	76.7
Guatemala	Finance budget deficit	Government bonds	11 bn	Both	1.9	Apr.–Aug.	Apr. 8	-5.6	32.2
Hungary	Facilitate monetary policy transmission at longer maturities, provide financial sector liquidity	Government, mortgage bonds (MBS)	No upper limit, but technical revision after 1 tn in government, 300 bn in MBS	Both (only MBS in primary)	1.4	May–present	Apr. 7, Apr. 28, Jul. 21, Aug. 25	-8.3	77.4
India	Stabilize domestic bond market	Government bonds	Not specified	Secondary	1.0	Mar.–present	Mar. 18	-13.1	89.3
Indonesia	Stabilize domestic bond market, provide liquidity to the financial sector, finance budget deficit	Government bonds	Initially not specified, with direct “burden sharing” of 397.6 tn later announced	Both	3.8**	Mar.–present	Mar. 31, Jul. 7	-6.3	38.5
Malaysia	Provide liquidity to financial sector	Government bonds	Not specified	Secondary	0.6	Mar.–Jun.	Mar. 25	-6.5	67.6
Philippines	Provide liquidity to financial sector, stabilize bond market, finance budget deficit (repurchase agreement)	Government bonds, including repurchase agreement	Secondary market purchases not specified, repurchase amount limited to about 850 bn	Both	4.3 (7.3)***	Mar.–present	Mar. 23, Apr. 10, Oct. 2	-8.1	48.9
Poland	Strengthen monetary policy transmission at longer maturities, stabilize domestic bond market, provide liquidity to financial sector	Government, SOE bonds	Not specified	Secondary	4.6	Mar.–present	Mar. 17, Apr. 8	-10.5	60.0
Romania	Provide liquidity to financial sector	Government bonds	Not specified	Secondary	0.5	Mar.–present	Mar. 20	-9.6	44.8
South Africa	Stabilize domestic bond market	Government bonds	Not specified	Secondary	0.7	Mar.–present	Mar. 25	-14.0	78.8
Thailand	Stabilize domestic bond market	Government, central bank bonds	Not specified	Secondary	1.0	Mar.–Apr.	Mar. 19, Mar. 22	-5.2	50.4
Turkey	Provide liquidity to financial sector, strengthen monetary policy transmission mechanism, secure credit conditions	Government bonds	Not specified, but OMO portfolio limited to 10 percent of balance sheet	Secondary	1.6	Mar.–present	Mar. 31	-7.9	41.7

Sources: Local media; national authorities; and IMF staff estimates.

Note: Total purchase amounts are estimates of March through latest available as of publication process (late September). Program dates are not exhaustive, but generally reflect a significant program announcement or first purchase date. Poland includes purchases of bonds from the State Development Bank (BGK) and State Development Fund (PFR). For Chile, only assets purchased under the Special Asset (June) and Bank Bond (March) Purchase Programs that were in direct response to the COVID-19 crisis were included, and not the Nov. 2019 central bank debt buyback program through which the central bank bought back about 1.2% of GDP of its own debt in 2020. Bank of Thailand also authorized a Corporate Stabilization Fund for short-term financing not included here. Papua New Guinea, Jamaica, Sri Lanka, and the Central African Economic and Monetary Community (through the Bank of Central African States) are not included in the table but announced asset purchases of various forms. Brazil outlined plans to purchase corporate bonds in June, but had yet to do so. The BSP (Philippines) opened its purchase window in March prior to written public announcement in April. bn = billion; OMO = open market operations; tn = trillion.

*Chile's central bank did not gain the legal ability to purchase government bonds until August 12.

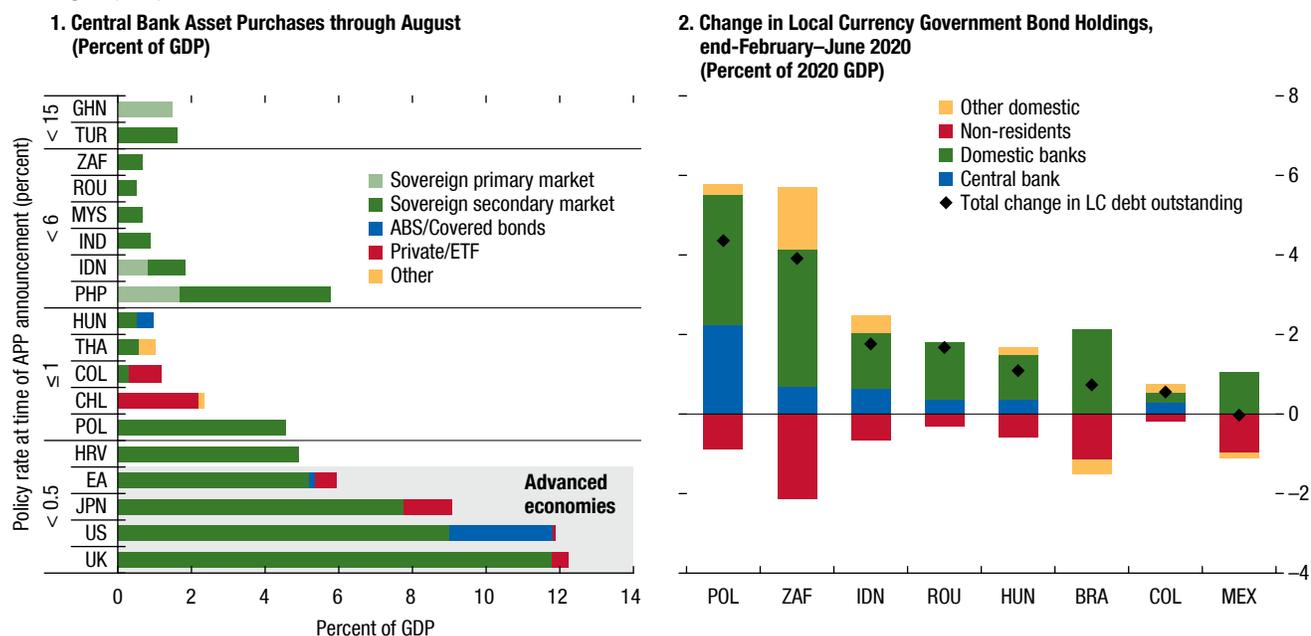
**Indonesia includes staff estimates of secondary market purchases, primary market purchases prior to July, and the full 397.6 tn in July burden sharing agreement, though only about 60 percent of the agreed purchases had been completed through mid-September.

***Philippines includes staff estimates of secondary market purchases and the three-month repurchase agreement of 540 bn (3.0% of GDP) with the central government added in parentheses, and the BSP closed out a previous 300 bn repurchase agreement in September.

Figure 2.3. Central Bank Asset Purchases in Emerging Markets

Asset purchase programs in emerging markets differ in scope, size, and duration from those in advanced economies and are often used with higher policy rates.

Central bank purchases helped offset portfolio outflows during the crisis period in some economies.



Sources: Bloomberg Finance L.P.; Haver Analytics; national sources; World Bank; and IMF staff calculations.

Note: Data in panel 1 and panel 2 may in some cases have different sourcing related to definitional and availability reasons. Asset purchases in Hungary did not begin until May. In panel 1, sovereign purchases for Poland include those from the state development bank (BGK) and the state development fund (PFR), which are excluded in panel 2. Purchases for Chile include only those under Special Asset (June) and Bank Bond (March) Purchase Programs. Primary market purchases for the Philippines refer to the 300 bn (~1.6% of GDP) repurchase agreement in April 2020, which was repaid in September. In panel 1, Indonesia primary market purchases include only the share of the burden sharing agreement completed through August, not the entirety of the 397.6 trillion plan. In panel 2, total change for South Africa differs slightly from aggregated holdings as it includes Treasury bills separately. Data are not adjusted for inflation-linked bonds. Indonesia central bank holdings are defined as net of monetary operations. Data labels use International Organization for Standardization (ISO) country codes. ABS = asset-backed securities; APP = asset purchase program; ETF = exchange-traded fund.

tighten as a result of changes in policy rates or external spreads—as a reflection of the cost of funding—the LSI focuses on local market liquidity and stress indicators (such as bid-offer spreads, realized volatility, and other risk premium measures).⁴

The level of stress in local markets during the COVID-19 sell-off, as measured by the LSI, was comparable to that of the global financial crisis, but the period of stress was considerably shorter. In aggregate (Figure 2.4, panel 1), the level of stress was well above that of previous episodes, such as the 2013 taper tantrum and 2014–15 stress episodes. However, markets have been normalizing much faster than during previous episodes (Figure 2.4, panel 2).

A large part of the increase (and subsequent partial reduction) in stress in local bond markets originated from

developments in the global financial markets. In line with past episodes of sharp tightening in global financial conditions, the spillovers in FX markets emanating from the United States and the European Union rose sharply (Figure 2.4, panel 3) as currencies played their role as shock absorbers.⁵ However, unlike what happened during past tightening episodes, the spillovers to local bond markets were more pronounced (Figure 2.4, panel 4). Most emerging markets have seen a large increase in non-resident participation in their local bond markets since the global financial crisis, which may have exacerbated increased volatility spillovers during the recent sell-off.

The stress in FX markets was lower than during 2008–09, with less noticeable demand for dollar liquidity.

⁵Spillover indices in Figure 2.4, panel 1, are calculated using the approach in Diebold and Yilmaz (2012), in which time-varying spillovers are constructed using rolling generalized forecast error decompositions. The index is the contribution from a shock to market X to the overall variability in any other market Y.

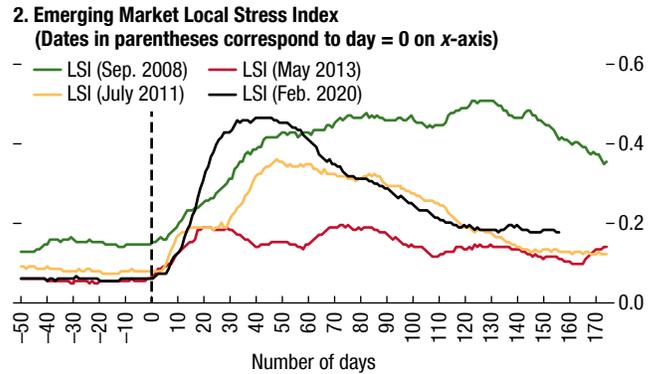
⁴For details, see Online Annex 2.1, available at www.imf.org/en/Publications/GFSR.

Figure 2.4. Stress in Local Currency Bond and FX Markets

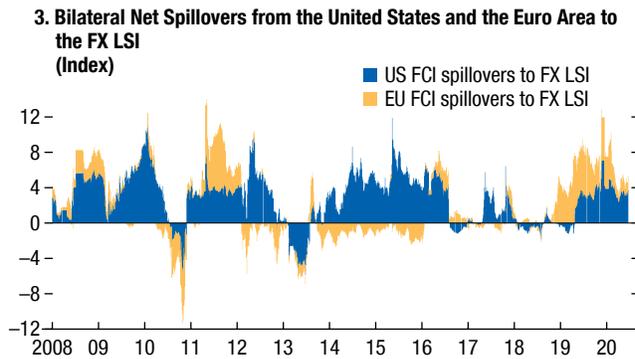
The COVID-19 shock led to significant market dysfunction comparable to that of the 2008 global financial crisis.



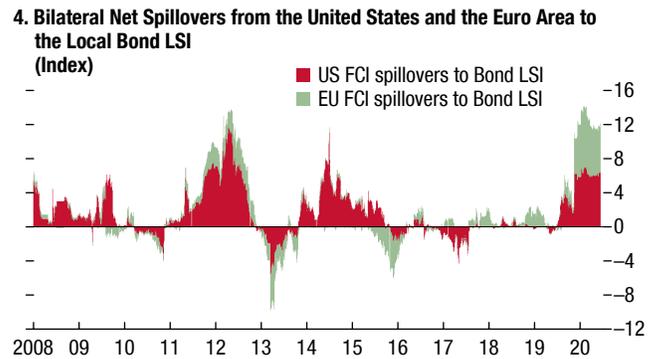
Stress dissipated faster than in previous episodes but remains elevated.



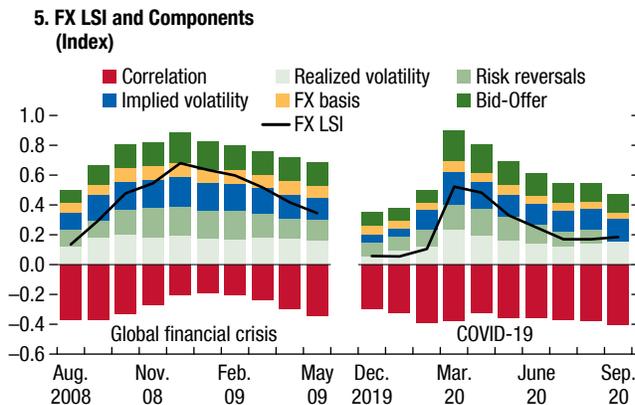
The spillovers of tightening US/EU financial conditions to emerging market currencies were of the same magnitude as in the past ...



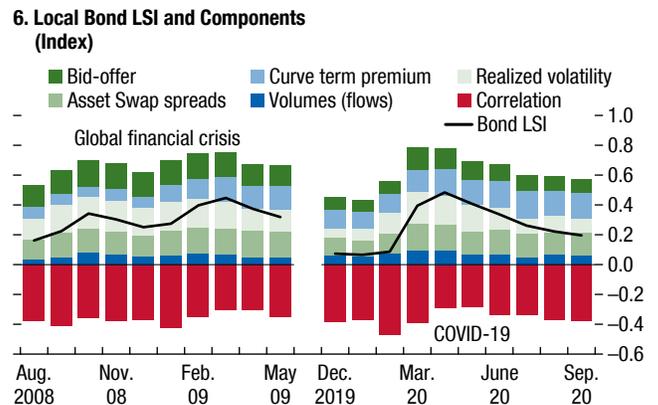
... while the spillover to emerging market bond market conditions is far more pronounced now than in the past.



Policy actions in FX markets normalized conditions quickly, but ...



... local bond markets have remained more dysfunctional, triggering asset purchase programs.



Sources: Bloomberg Finance L.P.; and IMF staff calculations.

Note: The local stress index (LSI) is calculated from the country LSIs of 16 countries. For more information see Online Annex 2.1. FCI = financial conditions index; FX = foreign exchange; GFC = global financial crisis.

For example, increases in measures such as risk reversals, which indicate the level of hedging demand for a sharp depreciation against the dollar, have been more muted.⁶ In addition, the wider cross-currency basis—a measure of dollar funding liquidity stress (Figure 2.4, panel 5)—was more short-lived. These developments were likely a result of:

- The rapid establishment of central bank swap line facilities and bond repo facilities for foreign central banks by the Federal Reserve and the European Central Bank.⁷
- Structural shifts in the operation of FX markets since the global financial crisis (Schrimpf and Sushko 2019),⁸ including increased turnover in emerging market currencies and electronic trading and a larger set of market-making institutions.

Unlike FX markets, local bond markets became more stressed and triggered policy responses in the form of asset purchase programs. A notable aspect is the increase in the risk premiums of long-end government bonds relative to short-end bonds and onshore swap rates (Figure 2.4, panel 6). Despite the positive impact of asset purchase programs on market conditions (see next subsection), stress levels have been more elevated, likely as a result of:

- High local bond supply risks that weigh on yields through risk premiums.
- Weak foreign flows to local bond markets, which had a negative impact on liquidity.
- Relatively limited depth of local currency government bond markets. Unlike FX markets, local bonds are still traded largely domestically, and market depth has not matched higher foreign participation, which could induce volatility (see Chapter 3 of the April 2020 GFSR). In countries with a shallower domestic investor base (see “Looking Ahead: Trade-offs of Asset Purchase Programs” section), domestic banks are the sole liquidity providers in times of stress.

⁶In fact, during the early stages of the shock in February, the depreciation pressures in emerging markets were more acute against the euro, likely because of unwinding of euro-funded carry trades relative to high-yield currencies, such as the Russian ruble and the Mexican peso.

⁷The IMF flexible credit lines for Chile and Peru in the second quarter of 2020, and the renewal of the flexible credit line for Colombia, also boosted confidence and provided insurance against downside risks.

⁸Another structural shift worth noting is the shift toward more flexible exchange rate regimes since the 2008 global financial crisis (for example, in Russia).

Domestic Asset Purchases Eventually Helped Reduce Market Stress

The announcement of asset purchase programs in the second half of March did not have an immediate impact on local stress indices, given that global financial conditions were very tight and market conditions were hampered by illiquidity, strong risk aversion, and fiscal concerns (Figure 2.5, panel 1).⁹ However, as external conditions started to improve in April and countries stepped up implementation of asset purchase programs, country-level local stress indices showed some improvement and differentiation.¹⁰ A large part of the improvement was seen in market liquidity measures, such as bid-offer spreads and a reduction in intraday volatility. Yet term premiums in some local bond markets remain elevated as investors are facing bond supply risks over a longer horizon given the uncertainty of pandemic-related government financing requirements.

Evaluating the effectiveness of asset purchase programs with respect to their stated goal of improving market conditions is complex, and more work is needed. Asset purchase programs helped reduce market stress, eventually, and several factors contributed to this reduction. The size of announced asset purchase programs in emerging markets has been small overall (except in Chile, Indonesia, the Philippines, and Poland) and short-lived, as is evident in the slow-down of asset purchases since May for most countries (Figure 2.5, panel 2). In addition, announcements and implementations of asset purchase programs can affect market conditions differently, and the lack of local currency bond inflows had a negative impact on market liquidity, especially in markets with a large foreign presence. The introduction of asset purchase programs at the height of the crisis is likely to have served as a useful circuit breaker, preventing further escalation of stress. Purchases of government bonds and other assets signaled that emerging market central banks were ready to stand as buyer of last resort (Arslan, Drehmann, and Hofmann 2020). Moreover, the empirical analysis presented in the following section suggests that asset

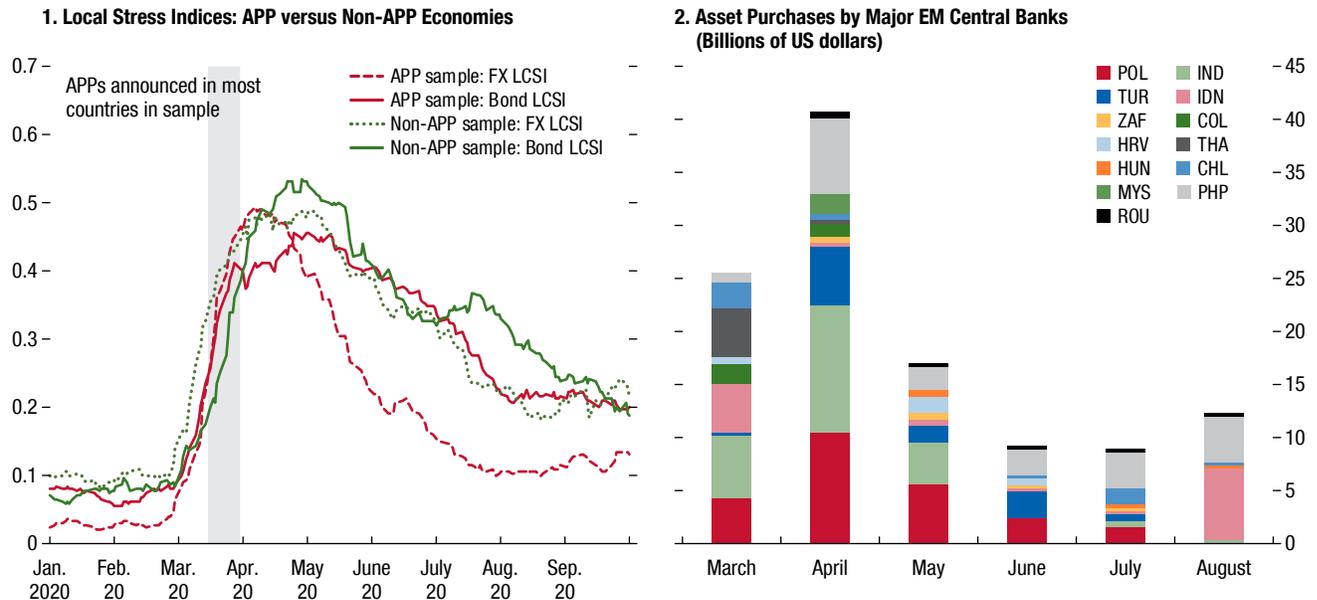
⁹This is in line with developments in the United States, where the Federal Reserve’s March 15 announcement of additional US Treasury purchases did not relieve market stress.

¹⁰Figure 2.5, panel 1, aggregates countries that have different characteristics, which could be the main driver of the results rather than APPs. Online Annex 2.1 presents event studies around the asset purchase announcements that show country-level developments.

Figure 2.5. Bond Stress and Asset Purchase Programs in Emerging Market Economies

Stress has eased somewhat faster for countries with asset purchase programs than for those that do not have them.

Emerging market asset purchases rose significantly in March and April but moderated thereafter.



Sources: Bloomberg Finance L.P.; Haver Analytics; JPMorgan Chase and Co.; national authorities; and IMF calculations. Note: Non-APP economies are Brazil, Chile, China, Mexico, Peru, and Russia. In panel 2, Indonesia uses change in gross holdings as proxy for asset purchases. Monthly purchases are IMF staff estimates otherwise. Data labels in panel 2 use International Organization for Standardization (ISO) country codes. APP = asset purchase program; EM = emerging market; FX = foreign exchange; LCSI = local currency stress index.

purchase program announcements had a positive impact on yields on the announcement date and several days beyond, even after controlling for external factors. Nevertheless, large-scale APPs, especially when open-ended, carry risks and may negate their initial effectiveness.

Domestic Asset Purchases Lowered Bond Yields and Had Little Effect on Currencies

Event studies show that asset purchase program announcements¹¹ had a significant immediate impact on asset prices and helped turn sentiment around.¹² Financial conditions were tightening going into the announcements but were inflected following the announcements, with a corresponding sharp reduction in government bond yields (Figure 2.6, panel 1) and term premiums (Figure 2.6, panel 2), but with

relatively limited impact on currencies (Figure 2.6, panel 3). The reaction seen in intraday data for selected countries—to control for the effect of global and exogenous factors on end-of-day levels—shows a similar trend, with declining government bond yields but relatively less impact on currencies (Figure 2.6, panel 4; Arslan, Drehmann, and Hofmann 2020).

This section discusses empirical analysis of the effect of domestic asset purchase program announcements on local currency government bond yields.¹³ The model controls for policy rate cuts by emerging market central banks and global factors, such as the VIX and the VIX rate of change and asset purchase program announcements by the Federal Reserve. The analysis uses daily data from 13 emerging market economies from January to mid-May 2020 and controls for unobserved country-specific factors using country fixed effects (see Online Annex 2.1). The analysis is based on the local projections method (Jordà 2005; Teulings and Zubanov 2014), which capture the full dynamics of sovereign bond yields in the aftermath of

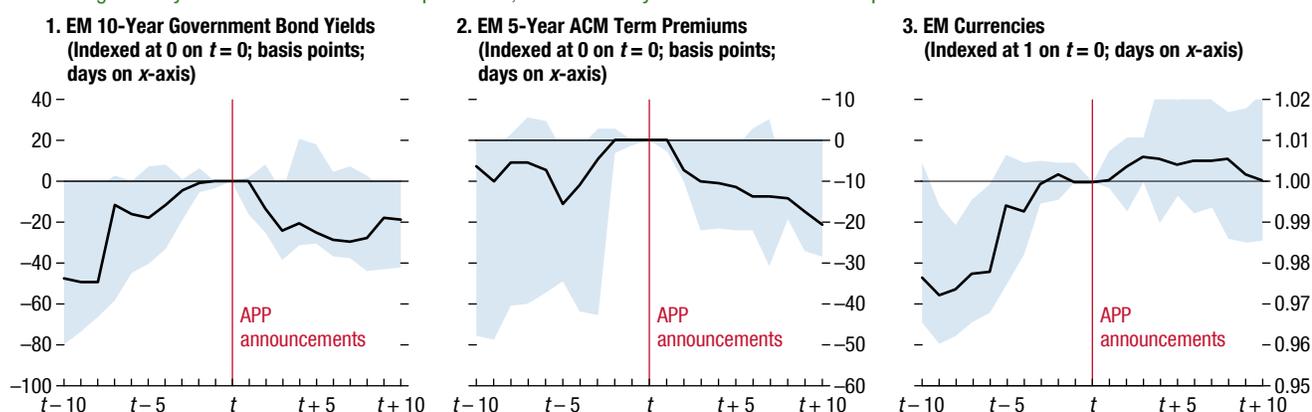
¹¹The size of the announced programs may also have influenced the market reaction, although it is not considered (in line with the literature) given the lack of consistency across announcements and divergent market expectations.

¹²Results in this section draw upon Drakopoulos and others (forthcoming).

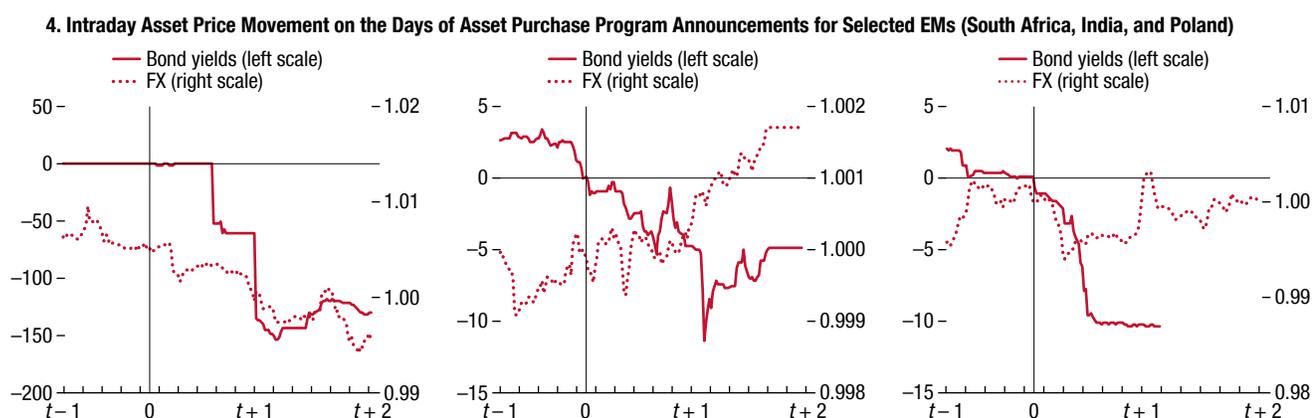
¹³Drakopoulos and others (forthcoming) discusses also the effect of APPs on equity markets.

Figure 2.6. Market Reaction to Domestic Asset Purchase Program Announcements

Event studies around emerging market asset purchase program announcements show a significant change following the event, including a decline in sovereign bond yields and a decline in term premiums, but a relatively small and short-lived impact on EM currencies.



Intraday price reaction showed a similar trend, with government yields reacting very sharply, but relatively limited impact on emerging market currencies.



Sources: Bank for International Settlements; Bloomberg Finance L.P.; BNP Paribas; national authorities; and IMF staff calculations.

Note: In panel 2, term premium calculations are based on the methodology detailed in Adrian, Crump, and Moench (2013). In panels 3 and 4, a declining trend in the foreign exchange lines implies an appreciation of the local currency versus the US dollar. In panels 1–3, the black line denotes the median across our sample, while the blue range highlights the interquartile range across the events. The sample comprises Chile, Colombia, Hungary, India, Indonesia, Malaysia, the Philippines, Poland, South Africa, and Turkey (across a total of 16 dates). ACM = Adrian, Crump, and Moench (2013); APP = asset purchase program; EM = emerging market; FX = foreign exchange.

the announcements by central banks.¹⁴ The dependent variable is the cumulative change in bond yields, and the main variable of interest is the indicator for the dates of asset purchase program announcements (Figure 2.7). A challenge in this analysis is to isolate the impact of asset purchase program announcements on bond yields from the effect of policy rate cuts and announcements by the Federal Reserve around the same time. To that end, two empirical specifications

are presented to account for the direct effect of the additional asset purchase announcement by the Federal Reserve (Figure 2.7, panels 1, 3, and 5) and the VIX as a proxy for global risk appetite (Figure 2.7, panels 2, 4, and 6). Both specifications control for domestic policy rates.

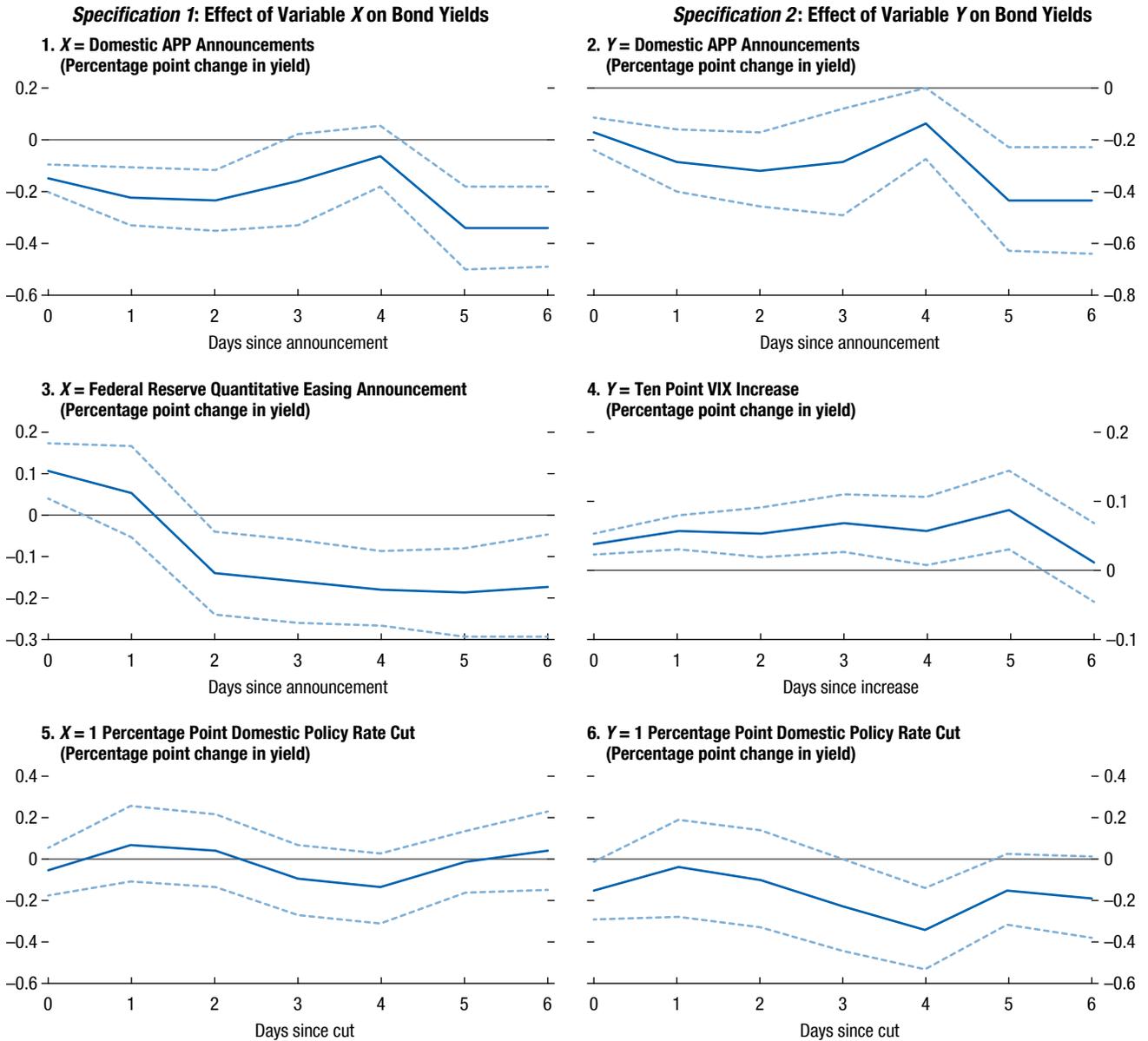
Both specifications find that emerging market central bank asset purchase program announcements reduce long-end bond yields in a significant and persistent way (Figure 2.7, panels 1 and 2), even controlling for the Federal Reserve asset purchase program announcement (Figure 2.7, panel 1) or the change in global risk appetite (Figure 2.7, panel 2). The size

¹⁴Some evaluations of the effectiveness of asset purchases by the Federal Reserve use the surprise announcement of 10-year equivalents on term premiums, but such an approach is beyond the scope of the analysis here.

Figure 2.7. Asset Purchase Program Announcements and Sovereign Bond Yields

Panels 1, 3, and 5 show the impulse response functions to APP announcements by emerging market central banks, controlling for Federal Reserve actions and emerging market rate cuts.

Panels 2, 4, and 6 show the impulse response functions of APP announcements by emerging market central banks, controlling for the VIX as a proxy for global risk appetite and emerging market rate cuts.

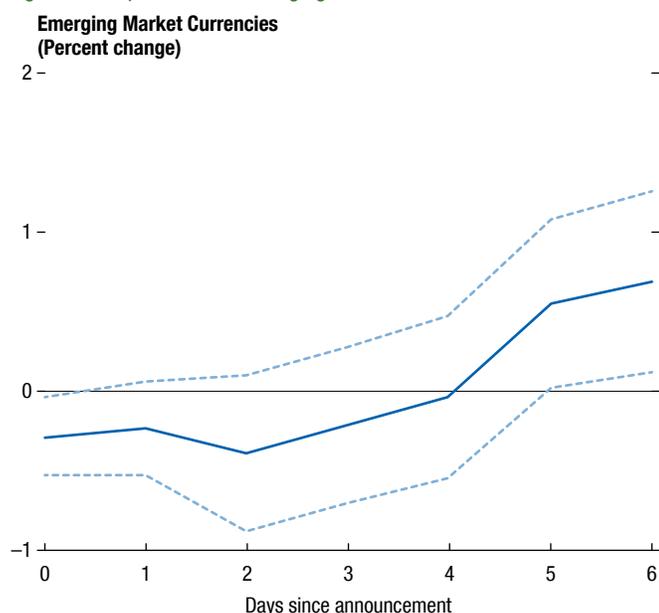


Source: IMF staff calculations.

Note: Results are based on the local projections method (Jordà 2005; Teulings and Zubanov 2014) using panel data from 13 emerging markets at daily frequency from the beginning of January to mid-May 2020. The dependent variable is the cumulative change (in percentage points) in local currency sovereign bond yields. The first specification controls for the APP announcement by the Federal Reserve and domestic rate cuts (panels 1, 3, and 5). The second specification controls for the Chicago Board Options Exchange Volatility Index (VIX) and domestic rate cuts (panels 2, 4, and 6). Country fixed effects are included in both specifications. Coefficient estimates are reported with one standard error confidence interval. The x-axes represent the number of trading days following each episode. See Online Annex 2.1 for more details. APP = asset purchase program; VIX = Chicago Board Options Exchange Volatility Index.

Figure 2.8. Asset Purchase Program Announcements and Domestic Currencies

Announcements of asset purchase programs did not lead to a significant depreciation of emerging market currencies.



Source: IMF staff calculations.

Note: Results are based on the local projections method (Jordà 2005; Teulings and Zubanov 2014) using panel data from 13 emerging markets at daily frequency from the beginning of January to mid-May 2020. The dependent variable is the cumulative change (in percent) in the value of domestic currencies vis-à-vis the US dollar. The specification controls for the asset purchase program (APP) announcement by the Federal Reserve and domestic rate cuts, as well as country fixed effects. Coefficient estimates are reported with a one standard error confidence interval. The x-axis shows the number of trading days following each episode. See Online Annex 2.1 for more details.

of the impact of domestic asset purchase program announcements on yields ranges from 20 to 60 basis points and is statistically significant within one standard error confidence interval. The size of the effect is in the range of Arslan, Drehmann, and Hofmann (2020) and Hartley and Rebucci (2020). By contrast, in both specifications, domestic rate cuts do not appear to have a significant effect on yields, controlling for other factors, such as asset purchase programs¹⁵ (Figure 2.7, panels 5 and 6).

The improvement in external conditions also had a significant and persistent impact on lowering long-end yields. Both the Federal Reserve asset purchase program announcement on March 23 (Figure 2.7, panel 3) and the improvement in global risk appetite

¹⁵This might also reflect that the rate cuts were already priced in or that risk premiums remained high.

(Figure 2.7, panel 4) had a positive effect on decreasing yields, reflecting the sensitivity of domestic bond yields to global factors (April 2020 GFSR). This is also consistent with the finding by Beirne, Renzhi, and Sugandi (2020) of evidence of spillovers to emerging market bond yields from quantitative easing by central banks in advanced economies (see Chapter 1). The magnitudes of the effect of the asset purchase program announcements by emerging market central banks and the Federal Reserve are broadly similar.

Announcements of asset purchase programs did not lead to a significant depreciation of emerging market currencies (Figure 2.8), in line with intraday event studies (Figure 2.6, panel 4). This may reflect the relatively small size of the programs and the fact that the purchases were sterilized in many cases. Furthermore, the restoration of stability and the decisive actions taken by advanced and emerging market central banks may have also contributed to investor confidence and reversal of the earlier considerable FX sell-off.

Looking Ahead: Trade-offs of Asset Purchase Programs

The experience with emerging market asset purchase programs has been largely positive so far, though further expansion of duration or size could create risks and thus warrant an ongoing evaluation of risks. APPs had a catalyzing effect on lowering local currency government bond yields without indications of immediate risks to financial stability. In some cases, purchases may have intermediated an orderly exit of investors from local currency bond markets, but this was likely done in the interest of preserving investor confidence and avoiding more costly and widespread market disruptions. Central bank communication and benign market perception in terms of the scope, timing, and temporary nature of these programs were essential in containing perceived risks of fiscal dominance that would likely have led to higher bond yields and weaker currencies.

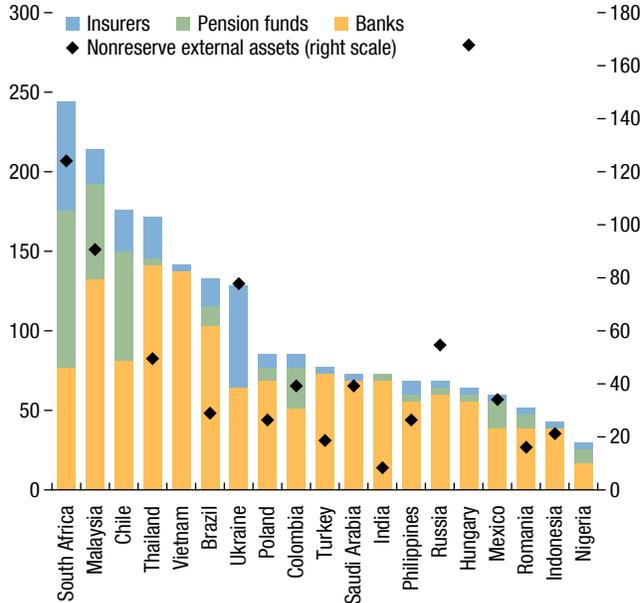
Beyond the pandemic, this positive experience may motivate more emerging market central banks to consider unconventional monetary policy as a key additional part of their policy toolkit, especially where conventional policy space becomes limited.¹⁶

¹⁶For a deeper discussion of the use of unconventional monetary policy in emerging market economies see Hofman and Kamber (forthcoming).

Figure 2.9. Considerations for Asset Purchase Programs

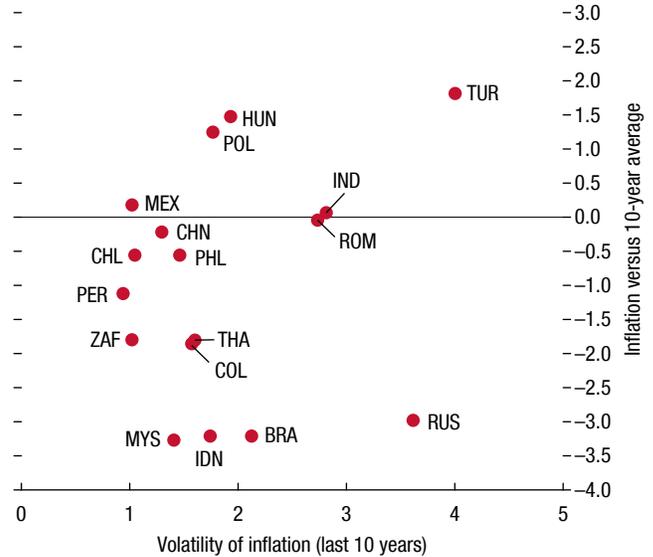
The depth of the domestic investor base and its ability to repatriate foreign assets may affect the need for APPs.

1. Domestic Institutional Investor Base
(Assets, percent of GDP, latest data available)



Credible monetary policy frameworks and sound governance are prerequisites for APPs.

2. Inflation: Volatility versus Deviation from Trend
(Percent)



Sources: Bloomberg Finance L.P.; Haver Analytics; World Bank; and IMF staff calculations.

Note: In panel 1, data are as of latest vintage available, though gaps exist for select countries and series. Data labels in panel 2 use International Organization for Standardization (ISO) country codes. APPs = asset purchase programs.

APPs may be suitable for countries constrained by their own effective lower bound, with inflation expectations steady, where the concern over capital outflows and FX depreciation is low or where the domestic absorption capacity of new bond supply is limited (Figure 2.9, panel 1). The goal of an APP in such cases is to exert control over the medium- to long-end of the yield curve (even when policy rates remain substantially above zero) to lower government financing costs and to temporarily ease pressure on domestic investors when there is increased issuance or foreign investor outflows. There are important caveats when it comes to this goal, however. Longer-term yields play a less central role in most emerging market economies than they do in advanced economies. Similarly, the fragilities behind higher short-term rates are likely to limit the scope for attempts to lower longer-term yields.

Policymakers should consider both the benefits and potential significant costs of APPs with respect to monetary policy and financial stability. If large-scale APPs are used beyond the current pandemic-related extraordinary situation, the following risks could arise,

especially for open-ended programs (see Figure 2.9, panel 2, for select country characteristics to take into consideration while deploying APPs, and Hofman and Kamber, forthcoming):

- **Institutional and central bank credibility may be weakened.** Credible monetary policy frameworks and sound governance are prerequisites for effective unconventional policy actions such as APPs. Early evidence suggests that APPs by central banks with higher institutional quality tended to have a greater reduction of their bond local stress index, introduced earlier in this chapter. Increased balance sheet exposure to long-term debt may raise concerns about the central bank’s ability to raise interest rates when conditions warrant or to achieve price stability.
- **Asset purchases may invite concerns about fiscal dominance.** When central banks become buyers of last resort, with large-scale and open-ended APPs in economies with weak monetary and fiscal policy frameworks, it can lead to fiscal dominance, resulting in higher risk premiums and steeper government bond yield curves.

- ***APPs may intensify capital outflow pressure, especially in countries with weaker fundamentals.*** Expectations of large-scale APPs may put downward pressure on long-term yields and foreign exchange rates, putting capital flows at risk, especially during risk-off periods, when emerging market assets are seen as risky. Investors may decide to rebalance their portfolios more decisively if APPs result in an excessive gap between domestic and peer-group risk premiums.
- ***The lasting presence of central banks as buyers in the local currency bond market may distort market dynamics.*** APPs can end up substantially increasing the role of the central bank as a market maker, impairing the price discovery process, especially in primary markets,¹⁷ and the development of the financial market. Considerations should also be given to the effect of APPs on collateral availability in the banking system and its impact on the policy rate transmission (Singh and Goel 2019) as well as possible overvaluation of assets.

The motivation, effectiveness, and associated risks of APPs vary considerably from country to country and depend on additional considerations, such as the structure and liquidity of capital markets, availability of high-quality domestic assets, extent of foreign investor participation, and level of development of the financial sector (Hofman and Kamber, forthcoming). Focused use of APPs as part of the crisis toolkit of emerging and frontier market economy central banks with credible monetary policy frameworks and good governance has a role to play. But continuing evaluation is needed as more data become available on the effectiveness of unconventional monetary policy in emerging markets, especially for open-ended programs.

The Role of the Official Sector in Frontier Market Economy Debt Restructuring

Frontier market economies¹⁸ entered the pandemic in a vulnerable position, with a number of countries

¹⁷In markets that lack financial depth and where the government has large crisis-related short-term financing needs, there may be scope for the central bank to provide, under conditions, temporary support directly to the primary market to assist with the absorption of large issuance.

¹⁸Frontier economies comprise 43 countries, defined in Online Annex 2.1, the bulk of which are part of JP Morgan's Next Generation Markets Index.

already deemed to be at a high risk of debt distress (see the October 2019 GFSR) and with relatively little policy space compared with major emerging market economies. The postcrisis period of easy global financial conditions allowed frontier market economies to raise unprecedented amounts of capital in private markets (Figure 2.10, panel 1), all the while increasing their rollover risk. Markets reflected these concerns, as bond spreads rose to their highest level since the global financial crisis during the initial stages of the market sell-off, but spreads have since erased a significant amount of the widening (Figure 2.10, panel 2).

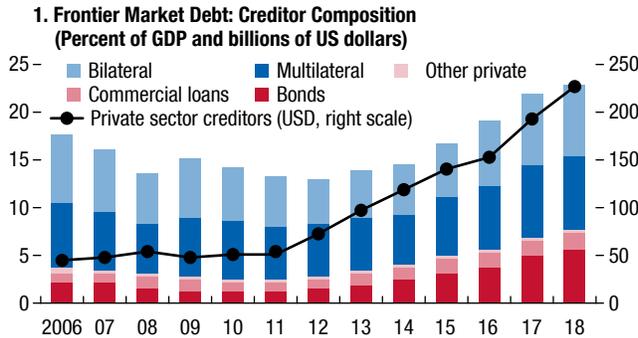
To help alleviate the strains facing frontier economies, the Group of Twenty (G20) announced the Debt Service Suspension Initiative (DSSI) to temporarily ease the financing constraints of the poorest countries by freeing up scarce money that they can use to mitigate the human and economic impact of the COVID-19 crisis. While some countries have already begun to participate in the initiative, some have been reluctant, in part because of fears of loss of market access (see also Chapter 1).

Markets, however, are not pricing in a significant risk from DSSI participation, despite concerns about possible negative actions by the credit rating agencies. On average, spreads of countries eligible for the DSSI have outperformed those of other frontier countries, even excluding countries eligible for the DSSI that do not intend to participate (Figure 2.10, panel 3). This outperformance could be a result of investor expectations that the initiative can allow these countries to better weather the outcome of the pandemic. For now, the initiative is providing relief primarily through a moratorium on bilateral debt, whereas private sector groups have begun assessing potential ways to assist. Even though the DSSI helps free up scarce money to mitigate the human and economic impact of COVID-19, once the impact of the pandemic becomes clearer, official sector relief may prove insufficient for some countries. Overall, bilateral creditors represent about one-third of debt payments owed by countries eligible for the DSSI over the next few years (Figure 2.10, panel 4). For many countries, private sector debt represents a much larger proportion of their external debt (Figure 2.10, panel 5).

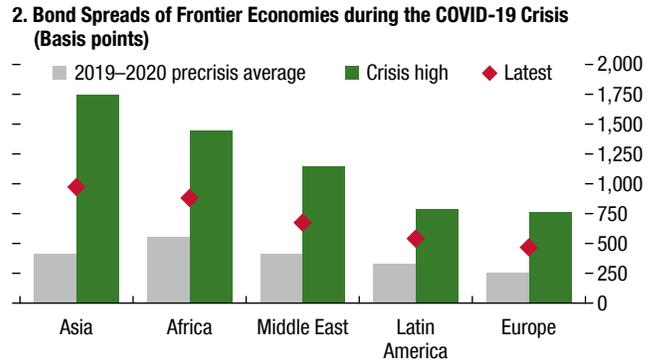
For some countries, to achieve a necessary debt reduction, it is impractical for only the official sector to proactively alleviate the debt burden. Putting off debt relief by private sector creditors may eventually

Figure 2.10. Frontier Economies Have a Challenging Road Ahead

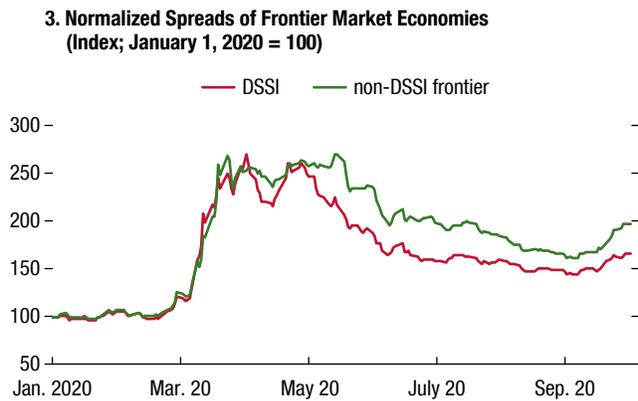
Frontier economies have become more dependent on private sector debt in recent years.



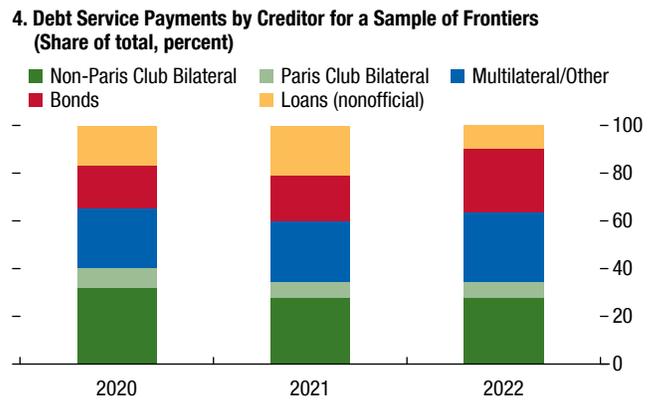
Market conditions have deteriorated substantially since the onset of the COVID-19 crisis.



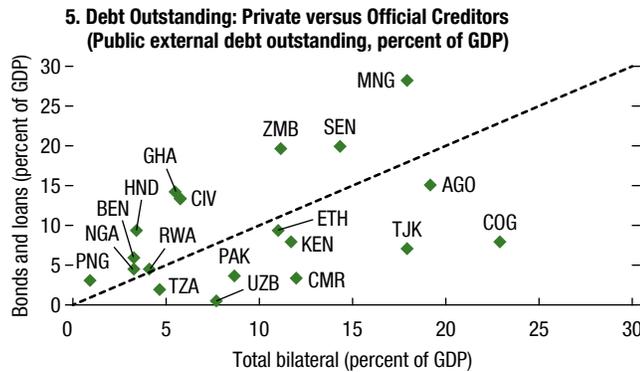
Countries eligible for the Debt Service Suspension Initiative have outperformed somewhat since April.



Bilateral creditors, primarily non-Paris Club creditors, represent about a third of debt payments over the next few years ...



... but for several countries, private creditor debt is significant.



Sources: Bloomberg Finance L.P.; Bond Radar; JPMorgan Chase and Co; World Bank; and IMF staff estimates.
Note: Panel 1 refers to public and publicly guaranteed debt. Panel 4 comprises a sample of 22 frontier economies that are DSSI-eligible. The broad frontier universe comprises 43 countries defined in Online Annex 2.1. Panel 5 uses data from the World Bank as of 2018. Data labels in panel 5 use International Organization for Standardization (ISO) country codes. DSSI = Debt Service Suspension Initiative; Latam = Latin America.

call for a larger debt write-down, which could disproportionately affect private sector debt. Markets appear to perceive already that, in a default situation, they would be forced to take a larger haircut than bilateral creditors would.

Why this would drive higher spreads can be demonstrated in a hypothetical example. If a country requires a given overall debt reduction to make its debt sustainable, but one class of creditors is treated as senior, other creditors would need to take a greater burden (Figure 2.11, panel 1). Panel 2 of Figure 2.11 demonstrates the impact that different levels of senior debt would have on a bond's spreads at given levels of expected probability of default.¹⁹ A country whose debt is entirely “junior,” or private sector, would have a much lower spread than one for which half of the debt is considered senior. This spread impact increases as the credit quality decreases (higher expected default probability). A model for sovereign bond spreads shows that investors do expect a larger haircut than bilateral creditors.²⁰ The results of the model are consistent with investors expecting that bilateral creditors would take a 30 percent haircut in the case of a country that requires an overall 40 percent haircut. This analysis does not consider differences among groups of bilateral creditors or whether the impact is less or more for Paris Club creditors. Considering that bilateral loans are often extended at concessional levels, or at times when countries are not able to consistently borrow from private markets, it is not surprising that they would be expected to receive more favorable treatment in a restructuring scenario.

Policies for Recovery and Resilience

Unprecedented policy measures put in place by advanced and emerging market policymakers after the onset of the COVID-19 pandemic averted the worst outcome and helped stabilize domestic financial conditions. Emerging market central banks actively used available and new tools to soften the blow from

the spike in global risk aversion and intervened to smooth excess volatility of domestic currencies and contain the spillovers of tighter global financial conditions to domestic financial conditions. Appropriate use of FX intervention, macroprudential policies, and capital flow management measures in the face of shocks, such as the global pandemic, can contribute to financial stability and enhance monetary policy autonomy.

This chapter finds that global factors played a more important role in driving currencies than FX intervention did, probably because of the global nature of the shock. The short-lived FX intervention is consistent with using the currency as a key shock absorber when other vulnerabilities are in check. Countries with shallow FX markets may experience macroeconomic destabilization after such shocks, and FX interventions to lean against market illiquidity to mute excessive volatility can be appropriate (IMF 2020a).

Most notably, many emerging and frontier market central banks for the first time embarked on APPs to ensure the smooth functioning of bond markets and provide accommodation in an environment of very low policy rates. The apparent success in helping reduce bond yields without risking financial stability so far prompts the question of whether APPs should be part of the emerging and frontier market policy toolkit in the future.

For *central banks with APPs in progress*, transparency and clear communication²¹ are crucial to minimize risks to their credibility—especially in countries with weaker institutional frameworks. In most cases, APPs should be limited in time and scale and should be linked to clear objectives. This chapter's findings suggest that APPs can be helpful, but that they are not a panacea to improve market conditions. They appear to be more effective when used jointly as part of a broader macroeconomic policy package.

Central banks considering APPs for the first time or seeking to restart them should design programs that aim to affect segments of the yield curve that are an effective pricing benchmark to maximize transmission to the real economy. Purchases should preferably be made in secondary markets, as purchases in the primary market or at below market rates can disrupt the price

¹⁹This stylized exercise assumes a 10-year bond with an 8 percent coupon.

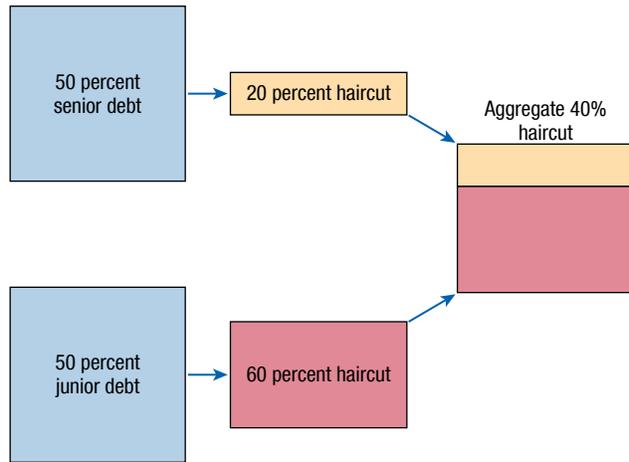
²⁰This is based on a variant of the emerging market hard currency bond valuation model introduced in the October 2019 GFSR. The domestic fundamentals include expectations for growth and inflation, current account balance, external debt, net issuance of foreign currency government debt, and foreign currency reserves. External factors include global risk-appetite and growth expectations. The model was modified to also include the share of bilateral and multilateral debt.

²¹Communication and transparency regarding the cost of sterilization can also be crucial, especially in cases where central bank purchases are done below market rates. Large sterilization costs can increase concerns about central bank losses and monetary policy independence.

Figure 2.11. Large Shares of Senior Creditors Could Lead to Higher Spreads

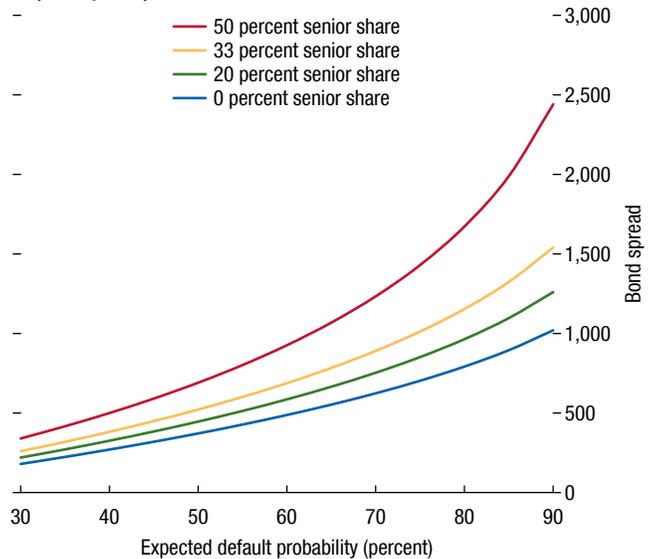
If one class of creditors receives smaller haircuts, other creditors need to bear a greater burden.

1. Stylized Example of Issuer Requiring a Total 40 Percent Haircut with Debt Evenly Split



Investors pricing a larger required haircut in case of default could meaningfully impact spreads.

2. Bond Spread under Different Recovery Assumptions and Expectations of Default (Basis points)



Source: IMF staff calculations.

Note: Panel 2 assumes a bond with an 8 percent coupon and 10-year maturity. It assumes that an overall debt reduction of 40 percent is required, with senior debt holders accepting only a 20 percent haircut.

discovery process and invite fiscal dominance. APPs should take into consideration the efficacy of the portfolio balance channel and whether investors have the ability to allocate their investments in other domestic assets, such as corporate or covered bonds. In the absence of such domestic alternatives, both foreign and domestic investors might choose to exit their country position altogether, which could increase the sensitivity of the exchange rate to APP policies. The resultant currency depreciation in countries with large currency mismatches in private sector balance sheets could at least partly offset the stimulatory effect of APP policies by tightening overall financial conditions. The experience of advanced economy central banks with exit strategy plans may also be important for emerging market central banks to consider, particularly when the size of the program is meaningful.

APPs should be designed so as not to become barriers to the development of domestic capital markets or the growth of a stable and diversified local investor base. In countries with relatively small bond markets, large and prolonged APPs could end up substantially increasing the role of the central bank as a market

maker in bond markets, impairing the price discovery process and financial market development. Specific measures for further local market development include (1) developing efficient money market frameworks; (2) strengthening primary market practices to enhance transparency and predictability of issuance; (3) bolstering market liquidity, including the use of repo facilities for local dealers in times of stress; and (4) developing a robust market infrastructure, including local clearing and settlement and other services (as detailed in IMF 2020b). For countries with adequate preparation in terms of legal barriers and market infrastructure, authorities should work toward enabling settlement and clearance of local currency debt in international capital markets so that domestic markets can benefit from access to wider liquidity pools.

Frontier market economies with unsustainable debt dynamics, limited market access, and high external financing requirements should preemptively and cooperatively seek debt resolution with their creditors. Countries that maintain market access at reasonable rates should decrease rollover risks as part of their debt management strategy.

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