

SHIFTING GEARS: MONETARY POLICY SPILLOVERS DURING THE RECOVERY FROM COVID-19

Advanced economies are expected to recover from the COVID-19 crisis faster than most emerging market economies, reflecting their earlier access to vaccinations and greater room to maintain supportive macroeconomic policies. Divergent economic recoveries could complicate the task of emerging market central banks should interest rates in advanced economies begin to rise when conditions in emerging market economies continue to warrant a loose monetary policy stance. The findings in this chapter confirm that monetary policy in advanced economies—especially in the United States—still has a large impact on financial conditions in emerging market economies. Aggressive policy easing by advanced economy central banks early in the pandemic thus provided much relief to financial markets in emerging market economies. Looking ahead to the recovery, clear guidance from advanced economy central banks on future scenarios for policy will be key to avoiding financial disruption to emerging markets. The analysis of the chapter suggests that, whereas a monetary policy tightening resulting from a stronger-than-expected US economy tends to be relatively benign for most economies, a surprise tightening, which could reflect a change in the US Federal Reserve’s expected reaction function, tends to curb global investor risk appetite and trigger capital outflows from emerging markets. The chapter’s analysis also suggests that emerging market economies with lower fiscal vulnerability are more insulated from external financial shocks than others, and countries with more transparent and rules-based monetary and fiscal frameworks enjoy greater monetary policy autonomy.

Introduction

At the end of February 2020, news of the global spread of COVID-19 hit financial markets with devastating force. One month later, global risk aversion

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had reached an intensity not observed since the peak of the global financial crisis, while capital flows began to cascade out of emerging market and developing economies (Figure 4.1).

Emerging market economies mounted a strongly countercyclical monetary policy response, on the heels of central banks in advanced economies, that cut policy rates wherever possible and introduced an array of asset purchase programs (APPs) to support credit markets (Figures 4.2 and 4.3).¹ The set of policy tools employed by central banks in emerging markets was notably broad—including not only conventional policy rate cuts, but also APPs in several economies (Figures 4.4 and 4.5).² Soon after these strong measures, sovereign default risk premiums in emerging markets began to recede.

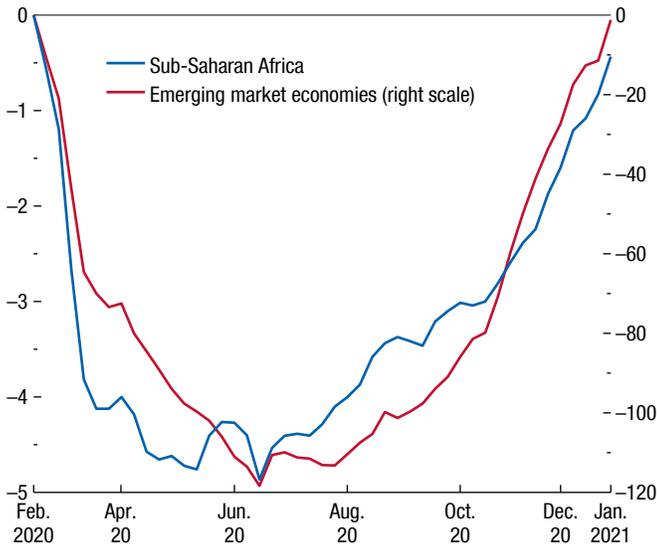
Since the announcement of several successful COVID-19 vaccine trials in late 2020, the global economic outlook has improved, but remains vastly differentiated. Given a more backloaded access to vaccinations and less policy space to provide lifelines and support economic activity, many emerging market and developing economies are projected to have a more protracted recovery than major advanced economies. This scenario raises the possibility that policymakers in emerging markets might face different challenges than during the recovery from the global financial crisis, when their countries enjoyed relatively strong growth.

During a multispeed economic recovery, many emerging markets might struggle to provide sizable fiscal policy support for a prolonged period, given their more constrained policy space (Végh and Vuletin 2012)—and even more so following last year’s sharp

¹This chapter largely focuses on financial conditions in emerging markets, defined as the *World Economic Outlook* (WEO) emerging market and developing economy group, excluding countries in the low-income and developing economy group. Only a limited number of countries in the latter group displays significant integration with global financial markets.

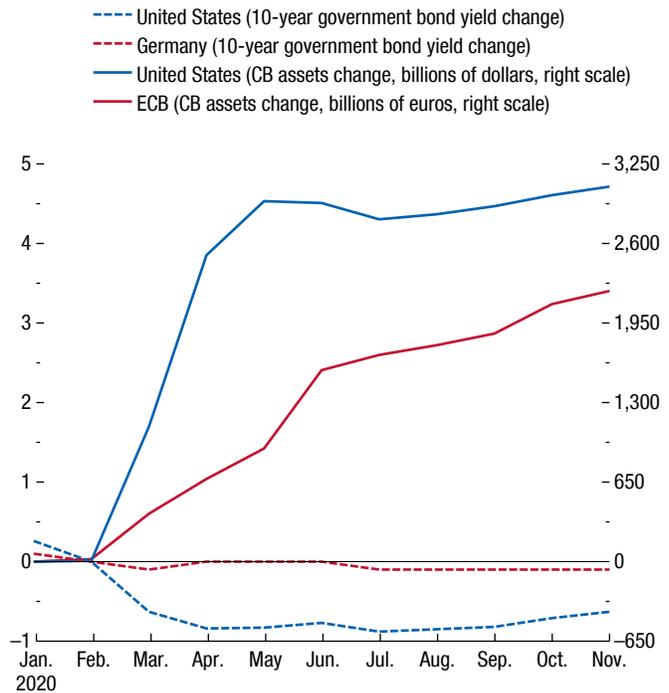
²Fiscal expansions were also instrumental in containing the fallout from the crisis, but they are not examined here. While focused on monetary policy, this chapter explores various instances where fiscal policy matters for a country’s sensitivity to international monetary policy spillovers and for the domestic monetary policy response to the pandemic.

Figure 4.1. Cumulative Portfolio Flows
(Billions of dollars)



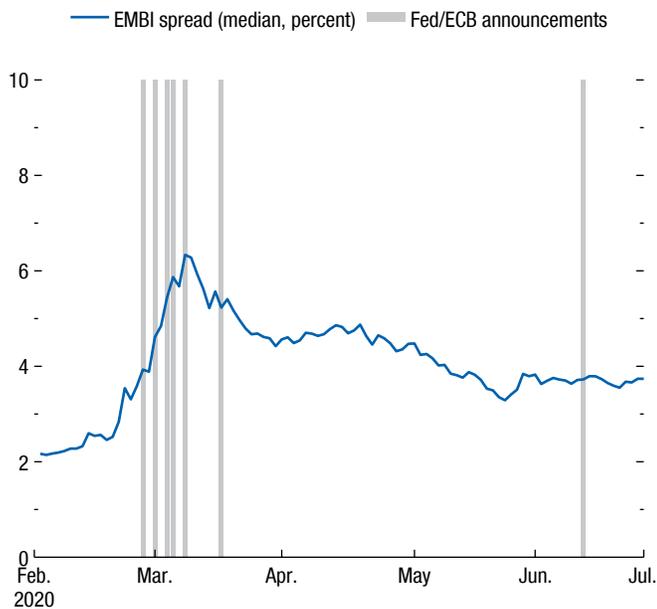
Sources: Bloomberg Finance L.P.; and EPFR Global.
Note: Cumulative EPFR fund flows for sub-Saharan Africa comprise those for Côte d'Ivoire, Ghana, Kenya, Namibia, Nigeria, Rwanda, South Africa, and Zambia.

Figure 4.2. Monetary Policy in Advanced Economies
(Percentage points, unless noted otherwise)



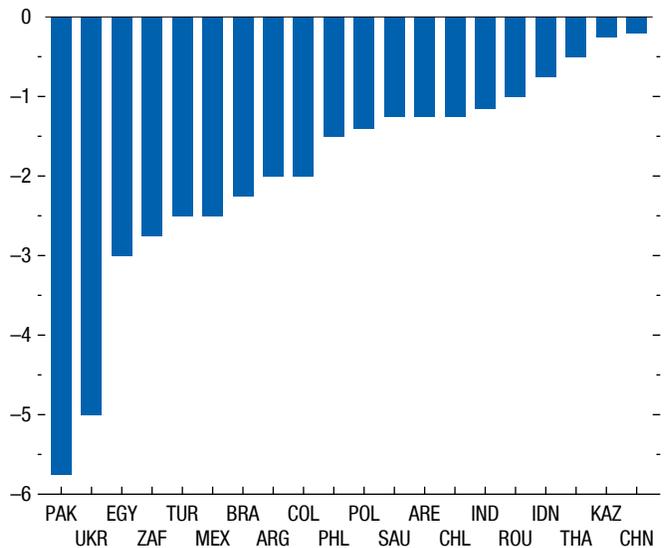
Sources: Federal Reserve Bank of St. Louis; and Haver Analytics.
Note: Ten-year government bond yields are in changes from the Feb. 2020 levels. Central bank assets are in changes from their Jan. 2020 levels. CB = central bank; ECB = European Central Bank.

Figure 4.3. Credit Risk Premiums in Emerging Market Economies
(Median, percent)



Source: Bloomberg Finance L.P.
Note: ECB = European Central Bank; EMBI = J.P. Morgan Emerging Market Bond Index; Fed = Federal Reserve.

Figure 4.4. Policy Rate Cuts in Emerging Market Economies between March and August 2020
(Percent)



Source: IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Figure 4.5. Asset Purchase Program Announcement Dates in Emerging Market Economies and the VIX (Index)



Sources: Haver Analytics; and IMF staff calculations.
Note: VIX = Chicago Board Options Exchange Volatility Index. Data labels use International Organization for Standardization (ISO) country codes.

increase in public debt. Constrained fiscal policy, in turn, would heighten the role of monetary policy. This prompts the question of how much autonomy policymakers in emerging markets would have in keeping monetary policy rates low at a time when improved economic conditions may lead central banks in advanced economies to begin increasing interest rates. On this point, a commonly held view is that, even with a flexible exchange rate, emerging markets have little monetary policy autonomy against a powerful global financial cycle that is strongly influenced by monetary policy in advanced economies (Rey 2015).³

Several arguments temper the concerns about monetary policy in emerging markets during the global economic recovery. First, flexible exchange rates offer imperfect but still significant insulation from the global financial cycle (Obstfeld, Ostry, and Qureshi 2019),

³One consideration that can stop central banks in emerging markets from countering the global financial cycle is a “fear of floating” (Calvo and Reinhart 2002). In addition, financial frictions in emerging markets may limit the pass-through of monetary policy to domestic financial conditions (Kalemli-Özcan 2019).

whose impact on capital flows may not be so dramatic after all (Cerutti, Claessens, and Rose 2019). Second, the commitment of central banks in advanced economies to maintain ample monetary accommodation until the recovery is well under way reduces the possibility of an early tightening in global financial conditions.⁴ The commitment is exemplified in the United States by the Federal Reserve Board’s new flexible inflation targeting framework. Third, aggressive monetary policy easing by emerging markets during the COVID-19 pandemic may indicate that these countries have gained further autonomy in setting their policies in line with domestic needs.

To provide a framework for thinking about the monetary policy challenges confronting emerging markets during the recovery, this chapter addresses the following questions:

- How do *monetary policy surprises* in advanced economies shape *financial conditions* in emerging markets? How has this influence changed over time, and how does it vary across countries?
- How does *economic news* in advanced economies affect *financial conditions* in emerging markets?
- Which *characteristics* of emerging markets are associated with greater ability to ease monetary policy at the onset of the pandemic? Are APPs *effective* in easing financial conditions in emerging markets?

The chapter includes two key streams of analysis. The first is a set of event studies that examines how monetary policy shifts in advanced economies affect financial conditions in emerging market and developing economies, leveraging two types of situations: (1) when a monetary policy announcement in advanced economies surprises markets because it does not appear directly attributed to observed changes in economic conditions—these surprises include a change in how central banks interpret data or react to it; and (2) when new information on the state of advanced economies changes market expectations of future monetary policy. The second stream of analysis looks at factors that could predict which emerging markets were able to provide greater monetary policy easing during the pandemic, focusing on both conventional

⁴The main measures of financial conditions in emerging markets presented in the chapter include yields on sovereign bonds denominated in local currency, spreads on dollar-denominated sovereign bonds, nominal exchange rates vis-à-vis the dollar, and investment fund inflows.

policy rate cuts and APPs. The main findings of the chapter are as follows:

- Monetary policy actions by the Federal Reserve have a significant influence on financial conditions in emerging markets, whereas spillovers from policies of the European Central Bank (ECB) are smaller and regional. As observed in the 2013 “taper tantrum” episode, signals of *unexpected* policy tightening in the United States raise emerging market yields, cause portfolio outflows, and depreciate emerging market currencies. The intensity of these effects is heterogenous over time and across countries: it seems to be stronger now than before the global financial crisis, and stronger for countries that are seen as riskier investments. This suggests that perceptions of risk (*risk channel*) are important in the transmission of the spillover. Notably, the change in domestic yields comes almost entirely from a change in the term premium, with an only marginal contribution from revised expectations of policy rates in emerging markets. Monetary easing by the Federal Reserve helped reduce yields in emerging markets by more than 100 basis points during the pandemic, and the announcement of central bank US dollar swap lines was effective in calming markets.
- The release of good news about the US economy, even as it is accompanied by expectations of tighter US monetary policy, is relatively benign for financial conditions in emerging markets. Following positive news about US employment, capital appears to flow into emerging markets, the Chicago Board Options Exchange Volatility Index (VIX) and risk premiums on emerging market dollar-denominated bonds fall, while yields on emerging market domestic bonds tend to rise. This could be attributed in part to a positive *risk channel* (greater global risk appetite) and in part to a positive *trade channel*, where positive growth news in the United States is also associated with improved growth prospects in emerging markets, leading to higher expected monetary policy rates in emerging markets. Surprise increases in US inflation also lead to an increase in US nominal yields, but do not seem to impact financial conditions in emerging markets. Finally, positive news about the development of vaccines against COVID-19 in advanced economies has been particularly beneficial for emerging markets as their domestic yields did not increase, nor did their currencies depreciate.
- Domestic monetary and fiscal frameworks help predict the extent to which emerging markets were able to provide more monetary policy accommodation during the pandemic. Countries with more flexible exchange rates, more transparent central banks, and rules-based fiscal and monetary policy frameworks cut their policy rates by more and were also more likely to announce an APP—controlling for the state of the economy. Countries with the most constrained fiscal position had instead a smaller likelihood of an APP. In general, APPs appear to have been effective in calming domestic financial conditions.

Given the uniqueness of the current episode, any attempt to use past experience to extrapolate lessons for the future must be made with caution. With this warning in mind, the findings of the chapter suggest that a multispeed global recovery, with growth picking up earlier in advanced economies, may not on its own lead to a premature tightening of global financial conditions in emerging markets. Assuming that inflation does not rise above target in a sustained manner, a quicker-than-expected resolution of the pandemic in advanced economies may drive strong capital inflows to emerging markets and frontier economies, especially if interest rates in advanced economies remain low. In this event, emerging markets could employ a variety of policy tools to curb the buildup of domestic financial risks (IMF 2020).

If, with the recovery taking hold, central banks in advanced economies were instead to suddenly signal greater concern for inflation risks, then a surprise tightening of global financial conditions similar to the 2013 taper tantrum might occur. To reduce this risk, central banks in advanced economies need to continue providing markets with clear communication and guidance about their policies, including on new policy frameworks. In emerging markets, actions to improve confidence about the sustainability of medium-term debt can help reduce the sensitivity of domestic financial conditions to spillovers. Strengthening fiscal and monetary frameworks would also help create room for a more forceful countercyclical monetary policy.

Spillovers on Emerging Market Financial Conditions

This section uses event studies to answer two questions: How do financial conditions in emerging markets change following a *surprise monetary policy*

announcement in advanced economies? How do financial conditions in emerging markets change following *surprises about the state of the economy* in advanced economies?⁵ The two questions are complementary. The first considers changes in financial conditions that can be entirely traced to the spillover effect of an *unexpected* monetary policy announcement by central banks in advanced economies. The second considers changes in financial conditions that instead can be entirely attributed to news about economic conditions in advanced economies and to the attending implications for, among others, the *expected* reaction of monetary policy in advanced economies. This would be the case, for instance, of positive news about payrolls or the development of COVID-19 vaccines.

Regardless of the type of shock considered, spillovers from advanced economies on financial conditions in emerging markets operate through a variety of channels. The chapter gives prominence to two. The first is a “risk channel,” where surprise monetary policy changes in advanced economies affect perceptions of risk and thus financial conditions in emerging markets. The second is a “trade channel,” where economic news in advanced economies changes economic conditions and investment opportunities in emerging markets. Monetary policy in emerging markets reacts to both types of changes, as discussed in the next section.

Spillovers from Monetary Policy Surprises in Advanced Economies

Analytical Framework

Monetary policy surprises in the United States and the euro area are defined as changes in the respective two-year government bond yields in a window of time around each monetary policy announcement. The choice of the two-year maturity follows Gertler and Karadi (2015) and Hanson and Stein (2015) and allows to capture the effects of forward guidance and asset purchases.⁶ For the euro area, the two-year yield is constructed as a weighted average of the correspond-

⁵In both exercises, the sample covers 60 emerging market economies, but country coverage is smaller for some indicators. For example, only 21 emerging market economies have data on government bond yields. The sample of low-income countries contains exchange rate data for 23 economies, but government bond yields for only five of them.

⁶For robustness to using yields of different maturity during zero lower bound periods, see Online Annex 4.1. All annexes are available at www.imf.org/en/Publications/WEO.

ing yields for Germany, France, Italy, and Spain. In the case of the Federal Reserve, the window covers the full announcement day, while for the ECB, it covers two hours around the ECB Governing Council’s press releases and press conferences.⁷ Spillovers from Federal Reserve or ECB monetary policy announcements on emerging markets are measured as changes in various emerging market asset prices and financial indicators during the two-day windows around monetary policy announcements, which allows for differences in time zones.

Impact on Emerging Markets

US monetary policy spills over strongly to domestic government bond yields in emerging markets, at all maturities (Figure 4.6). A surprise tightening of 100 basis points by the Federal Reserve translates into a 47-basis-point increase in two-year government bond yields in emerging markets.⁸ Euro area monetary policy surprises have smaller effects, which are statistically significant only at intermediate maturities or for emerging markets more economically integrated with the euro area.⁹

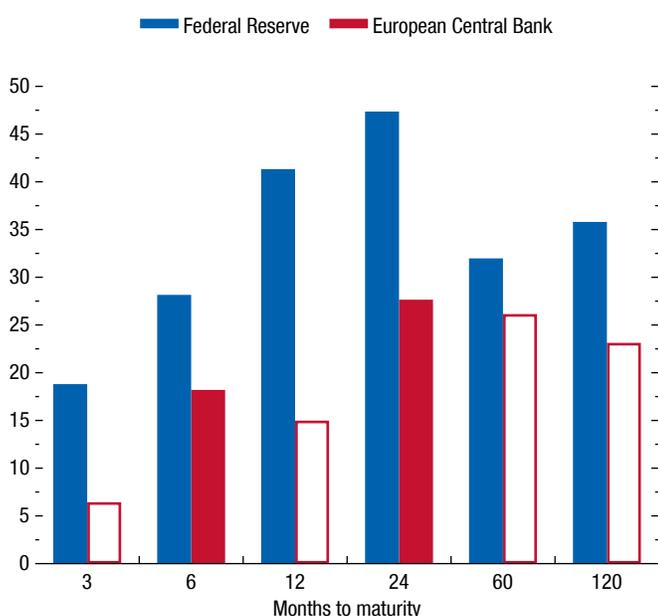
US monetary policy surprises also have significant effects on exchange rates and capital flows to emerging markets, but the evidence does not show systematic effects on emerging market stock prices or benchmark Emerging Market Bond Index spreads (Figure 4.7). Every 100-basis-point tightening of US monetary policy leads to an immediate 1 percentage point depreciation of emerging market currencies vis-à-vis the US dollar and portfolio outflows from

⁷For the United States, dates of official monetary policy statements were provided directly by the Federal Reserve Board. For the ECB, the intraday monetary policy surprises were taken from the online data set of Altavilla and others (2019) until April 2020, and merged with daily changes in yields for the remaining announcements in 2020. This produces 176 and 217 monetary policy surprises by the Federal Reserve and ECB, respectively, between 2000 and 2020. For more details on the econometric specification, see Online Annex 4.1.

⁸These estimates are consistent with those of Bowman, Londono, and Sapriza (2015); Curcuro and others (2018); Albagli and others (2019); Caballero and Kamber (2019); and Hoek, Kamin, and Yoldas (2020). A separate analysis indicates that US surprise monetary policy easings and tightenings have symmetric effects on emerging markets.

⁹For example, emerging markets with deeper trade links to the euro area experience stronger responses of three-month, six-month, and 10-year yields than other emerging markets. This suggests that financial conditions in central and eastern European economies are more affected by ECB monetary policy.

Figure 4.6. Change in Emerging Market Government Bond Yield Curves in Response to Monetary Policy Surprises
(Basis points)



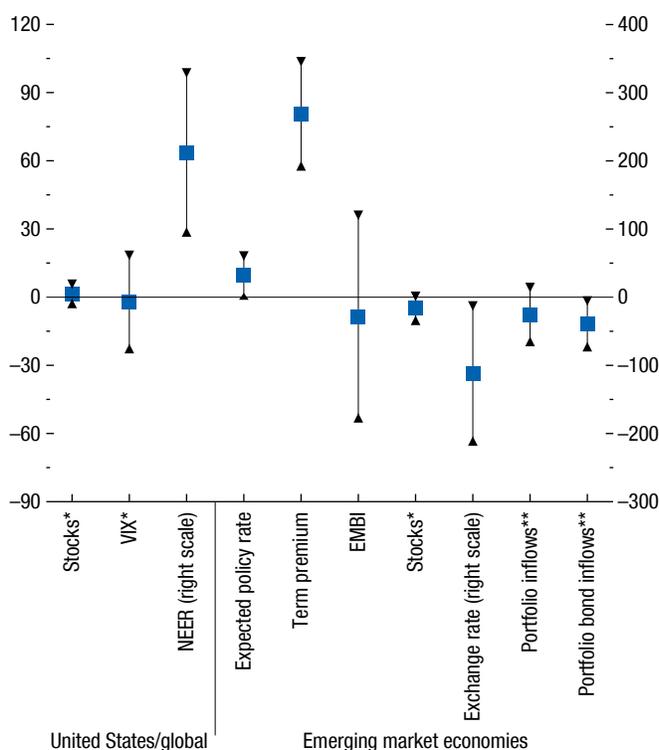
Source: IMF staff calculations.
Note: The figure shows the two-day changes in emerging market local currency government bond yield curves in response to a 100-basis-point surprise tightening of the United States or euro area monetary policy. Solid bars show maturities that are statistically significant; hollow bars show those that are not.

emerging markets of 7 basis points of annual GDP.¹⁰ While (trade-weighted) emerging market currencies do depreciate after tightening in the euro area, ECB monetary policy surprises do not seem to affect term premiums, expected future short-term interest rates, stock prices, portfolio flows, or bond spreads in the average emerging market. Given the relatively small spillovers from the ECB, the rest of the chapter focuses on spillovers from US monetary policy.

Looking over time, monetary policy spillovers from the United States were especially strong during the period that included the global financial crisis, the euro area crisis, and the 2013 taper tantrum (Figure 4.8). Although the sensitivity of emerging market yields

¹⁰The chapter focuses on the response of emerging market exchange rates vis-à-vis the US dollar. A large literature highlights the outsized role played by the dollar exchange rate in causing financial shocks in emerging markets (for example, because of liability dollarization) and demand shocks (because of dollar invoicing in international trade). See, for instance, Calvo and Reinhart (2002) and Gopinath and others (2020).

Figure 4.7. Effects of US Monetary Policy Surprises on Selected Variables
(Basis points; * = percentage points; ** = basis points of annual GDP)



Source: IMF staff calculations.
Note: The squares show the response of each variable to a 100-basis-point surprise monetary policy tightening in the United States. The whiskers show 90 percent confidence intervals. An increase in the nominal effective exchange rate (NEER) for the United States, or in the nominal exchange rate vis-à-vis the United States for the emerging market economies, denotes appreciation. EMBI = J.P. Morgan Emerging Bond Index; VIX = Chicago Board Options Exchange Volatility Index.

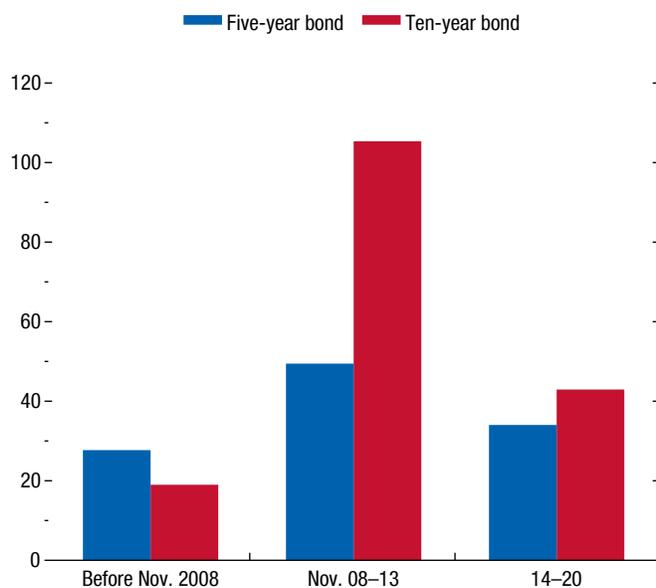
fell from 2014 onward, it seems to have remained higher than it was before the global financial crisis.¹¹

The “Risk Channel”

It is important to bear in mind that, beyond the average effects discussed above, there is significant heterogeneity in the way financial conditions in emerging markets react to monetary policy changes in advanced economies. Focusing on some features of this heterogeneity can provide a partial glimpse into specific

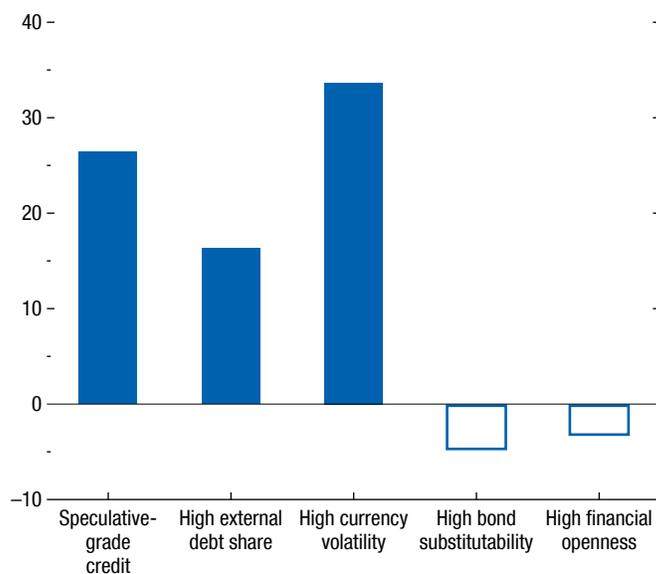
¹¹Although the sensitivity is higher, the difference is not statistically significant. A further exploration based on shocks on 10-year US Treasury securities suggests that this increased sensitivity does not seem to be driven by the adoption of unconventional monetary policy tools by advanced economies.

Figure 4.8. Time Variation in the Sensitivity of Emerging Market Yields to US Monetary Policy Surprises
(Basis points)



Source: IMF staff calculations.
Note: The bars show the effects of a 100-basis-point surprise US monetary policy tightening on five- and 10-year emerging market government bond yields during various periods. The 2014–20 bars are not statistically significantly higher than the pre-November 2008 bars.

Figure 4.9. Spillover Amplifiers from US Monetary Policy Surprises
(Basis points)



Source: IMF staff calculations.
Note: The figure shows how the sensitivity of emerging market 10-year yields to each 100-basis-point US monetary policy surprise depends on economy characteristics. “High” refers to the 75th percentile of the distribution of the economy characteristic in the latest available year. Not shown in the figure, the values for investment-grade credit rating, low external debt share, low currency volatility, low bond substitutability, and low financial openness are 0, 0, 14, -2, and 3, respectively. Solid bars show economic characteristics that are statistically significant; hollow bars show those that are not.

channels of transmission of international monetary policy spillovers. As shown in Figure 4.9, economies with a speculative sovereign debt credit rating experience an extra 27-basis-point increase in their 10-year bond yield following a surprise 100-basis-point US monetary policy tightening. Spillovers are also stronger for countries with a higher proportion of debt held externally or with higher currency volatility. For instance, moving from the 25th percentile in the cross-country distribution of external debt (for example, Armenia) to the 75th percentile (Brazil) raises the sensitivity of 10-year yields by 17 basis points. Similarly, going from a currency volatility at the 25th percentile of economies (for example, Romania) to the 75th percentile (Russia) increases the response of yields by 20 basis points.

The sensitivities of yields to these three indicators can be used to construct a “vulnerability index,” which is used in the next part of the chapter that looks at the determinants of monetary policy reactions in emerging markets during the pandemic. Moreover, all these indicators can be considered proxies for some form of risk. Sovereign default risk, in particular, is influenced by the level and expected path of public debt and therefore

provides a mechanism by which fiscal policy directly influences financial conditions in emerging markets and thus, indirectly, the conduct of monetary policy.

That countries with higher perceived sovereign risk experience stronger spillovers suggests that US monetary policy is transmitted to emerging markets through a “risk channel,” whereby monetary policy in the United States can change the objective riskiness of emerging market assets (for example, by increasing perceived default probabilities) or affect investors’ risk aversion (Chen, Griffoli, and Sahay 2014; IMF 2014; Bowman, Londono, and Sapriza 2015; Ahmed, Coulibaly, and Zlate 2017; Kalemli-Özcan 2019).¹²

¹²The conclusion on the possible presence of a *risk channel* is based here only on the observed heterogenous response of bond yields for different classes of sovereign borrowers (Figure 4.9). No evidence of a *risk channel* is instead found based on the behavior of the VIX (Figure 4.7), which is a measure of global risk aversion that many studies (for example, Bekaert, Hoerova, and Lo Duca 2013) but not all (for example, Bekaert, Hoerova, and Xu 2020) find to respond significantly to surprise changes in US monetary policy.

By contrast, the chapter finds no direct evidence that financial openness or greater correlation between the total return of emerging market sovereign bonds and US Treasury securities (a proxy for bond substitutability from the point of view of investors) are associated with a stronger response of domestic yields in emerging markets to US monetary policy shocks (Figure 4.9).¹³

Almost all the change in emerging market domestic yields can be accounted for by the change in term premiums, suggesting that the perceived riskiness of holding emerging market bonds rises after a surprise tightening in US monetary policy, consistent with the finding that countries with higher sovereign risk are more sensitive to spillovers. Markets do expect central banks in emerging market economies to follow a surprise Federal Reserve tightening with tightenings of their own, but only slightly. These conclusions are obtained by relying on dynamic factor models (Adrian, Crump, and Moench 2013) to split the changes in yields on five-year sovereign bonds in emerging markets into one component attributed to changes in the *expected* monetary policy rate in emerging markets and another residual *term premium*. The term premium represents the extra return required by investors to shoulder the greater risk (such as inflation, liquidity, and credit risks) associated with a fixed long-term rate of return (Figure 4.7).

Of course, the yield decomposition into expected monetary policy rates and term premiums must be treated carefully, given that it is sensitive to specific model assumptions. Moreover, market expectations of future monetary policy rates may be an imperfect indicator of actual future policy rates, especially over long time periods. Still, the results presented here suggest that, whereas overall financial conditions in emerging markets react strongly to changes in US monetary policy, monetary policy in emerging markets does not.

¹³Higher values for these two measures for an emerging market could imply that foreign investors in that emerging market are more inclined to change their portfolio composition after a US monetary policy announcement, which would indicate the presence of a “portfolio balance channel.” The fact that the two regressors are not significant may then suggest the “portfolio balance channel” has a limited role in transmitting monetary policy spillovers from advanced economies. The degree of substitutability of an economy’s government bonds with US Treasury securities is measured as the correlation between the total returns on its 10-year local currency government bonds, converted to US dollars at market exchange rates, and the total returns on 10-year US Treasury securities. Online Annex 4.1 provides more detail.

This finding implies a certain degree of monetary policy autonomy in emerging markets, consistent with the findings in Chapter 3 of the April 2017 *Global Financial Stability Report*. At the same time, the tightening—via risk premiums—of overall financial conditions following a surprise tightening in US policy can be expected to reduce growth in emerging markets. If central banks in emerging markets had full autonomy to adjust their own interest rate policy, then it could be reasonably argued that future monetary policy rates might be expected to fall to offset the rise in domestic yields. The fact that this does not happen (future policy rates are actually expected to go up slightly) may indicate the presence of only partial autonomy.

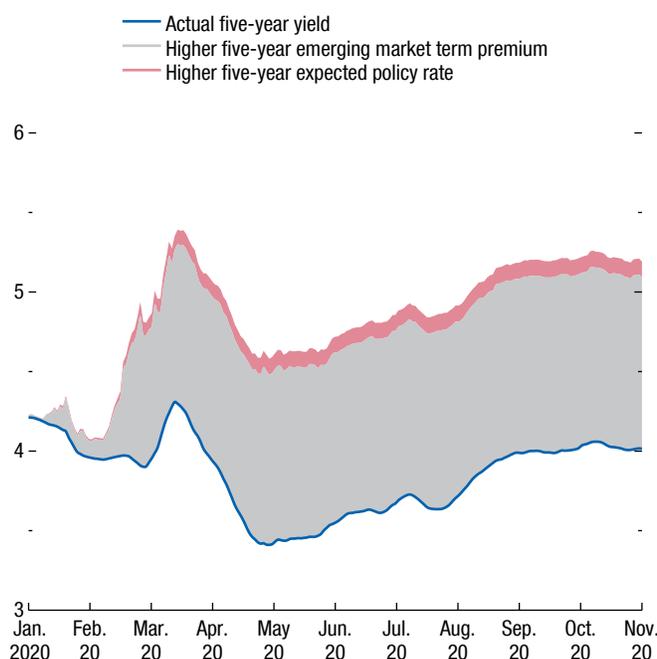
Spillovers from US Monetary Policy during the Pandemic

As Figure 4.10 shows, the GDP-weighted average of emerging market yields first increased in February 2020, then fell quickly until the end of April, then slowly crawled back toward 4 percent in late 2020. Although, as already noted, monetary policy spillovers are heterogenous across emerging markets, estimates in this chapter can be used to perform some back-of-the-envelope calculations to suggest that, had the Federal Reserve not eased monetary policy in March, average yields in emerging markets would have been more than 1 percentage point higher. Most of this effect would have come from higher term premiums. Of course, had the Federal Reserve not eased at a time of deep global crisis, the fallout in financial markets would have been severe; as such, the estimate in Figure 4.10 for the spillover effects of the March 2020 actions likely puts a lower bound on the true effect.

Some monetary policy actions taken by central banks in advanced economies during the pandemic were aimed at affecting financial conditions in foreign markets, including in emerging markets. One such example is the Federal Reserve’s announcement on March 19, 2020, of the establishment of temporary US dollar swap line facilities with nine other central banks.¹⁴ Brazil and Mexico were the only emerging markets included, and thus provide an interesting event study to assess the effectiveness of the tool in limiting US dollar funding pressures. Figure 4.11 shows that, following the

¹⁴Swap lines can be useful temporary sources of US dollars for the counterparty central banks, which may draw on them to lend US dollars to financial intermediaries while preserving their international reserves. Swap lines may also support investor confidence in liquidity conditions.

Figure 4.10. Counterfactual: Emerging Market Financial Conditions Absent Federal Reserve Easing
(Weighted average, percent a year)



Source: IMF staff calculations.
Note: Five-year denotes government bonds with a five-year maturity.

announcement, spreads on Brazilian and Mexican sovereign debt denominated in US dollars narrowed, while spreads continued to widen in other emerging markets. Similarly, the Brazilian *real* and Mexican peso appreciated, while the currencies of other emerging markets continued to depreciate. Therefore, it appears that the swap lines announcement was effective in stabilizing financial conditions in these two countries.

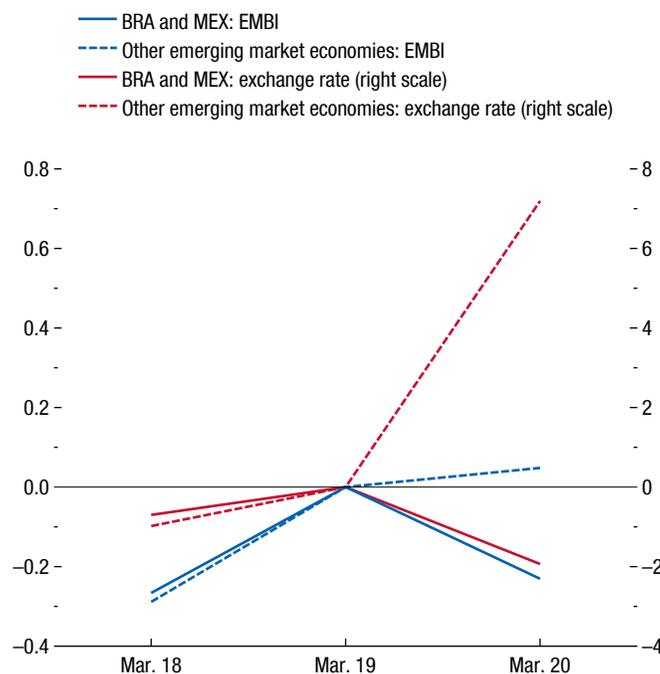
Spillovers from Economic News in Advanced Economies

Analytical Framework

The methodology here closely follows that used for examining spillovers from monetary policy surprises, but the shocks in advanced economies that are now considered include *news* about (1) economic activity in the United States, (2) inflation in the United States, and (3) the development of vaccines in advanced economies.

News about economic activity and inflation in the United States is proxied by surprises about nonfarm

Figure 4.11. Effects of Swap Line Announcements for Brazil and Mexico
(Percent; changes after March 19, 2020)



Sources: Bloomberg Finance L.P.; Haver Analytics; and IMF staff calculations.
Note: BRA and MEX denote Brazil and Mexico, respectively. EMBI spreads are in percentage point deviations from those of March 19; exchange rates are in percent changes from those of that date. Increases denote depreciation. EMBI = J.P. Morgan Emerging Market Bond Index.

payroll employment and core consumer-price inflation released from 2000 to 2020.¹⁵ News about the development of vaccines in advanced economies is proxied by whether the stock returns of Moderna and Pfizer-BioNTech are within the top or bottom 10th percentiles of their historical distribution, controlling for their usual comovement with a portfolio of health care stocks.¹⁶ In this case, the analysis covers April 1 through December 15, 2020, which saw positive news about the development of COVID-19 vaccines, though mostly ones that have stringent cold-chain requirements that make it difficult for them to be delivered in many emerging market and developing economies.

¹⁵Data were provided by Gürkaynak, Kisacikoğlu, and Wright (2020).

¹⁶Moderna and BioNTech are companies involved in the development of two vaccines that, during 2021, are expected to provide advanced economies with a relatively wide vaccination coverage, well beyond that of emerging markets.

Impact on Advanced and Emerging Market Economies

Good news about US economic activity lifts longer-term US interest rates (Figure 4.12). The effect is clear at all maturities and, on average, over the 20 years considered, is almost entirely down to expectations of higher monetary policy rates (with almost no change in US term premiums). Good news about the US economy lowers global uncertainty, measured by the VIX, and leads to a nominal effective appreciation of the dollar. Stock prices are not impacted significantly, likely because expectations of higher monetary policy rates counterbalance the effect on stock prices of better economic prospects for firms.¹⁷

The effect of good news about US economic activity on financial conditions in the average emerging market tends to be benign, in contrast to the impact of surprise monetary policy changes.¹⁸ Good US economic news still depreciates emerging market currencies, on average. However, in parallel with a reduction in the VIX, emerging market default premiums on dollar-denominated debt (Emerging Market Bond Index) now *fall* and portfolio capital *flows into* emerging markets (the effect on capital inflows has a moderate level of statistical confidence with a *p*-value of 13 percent). These findings are consistent with a positive *risk channel*, where good economic news in the United States reduces the risk aversion of international investors. In addition, domestic bond yields still appear to rise in the average emerging market (although with limited statistical significance), but the increase seems now to entirely reflect expectations of higher monetary policy rates, possibly driven by improved growth expectations. This, for instance, would be consistent with a positive “trade channel,” whose strength should be expected to be heterogeneous across countries, where higher aggregate demand in the advanced economies leads to more demand for tradable goods produced in emerging markets.¹⁹

The effect of positive news about COVID-19 vaccines in advanced economies has been positive, thanks in part to the muted response of US interest

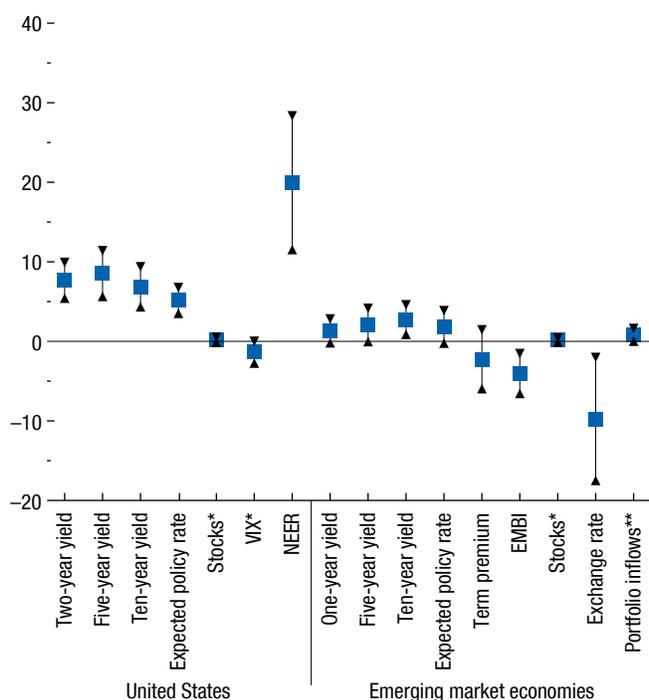
¹⁷For an explanation of the lack of a clear effect on US stock prices, see Gürkaynak, Kisacikoglu, and Wright (2020).

¹⁸This is consistent with previous studies, for example, IMF (2014) and Hoek, Kamin, and Yoldas (2020).

¹⁹Additional tests reveal that, after an increase in US employment, spreads on dollar-denominated bonds fall more and exchange rates depreciate less in those emerging markets that have stronger trade links with the United States. Online Annex 4.1 provides the details.

Figure 4.12. Effects of Positive News about US Economic Activity

(Basis points; * = percentage points; ** = basis points of annual GDP)



Source: IMF staff calculations.

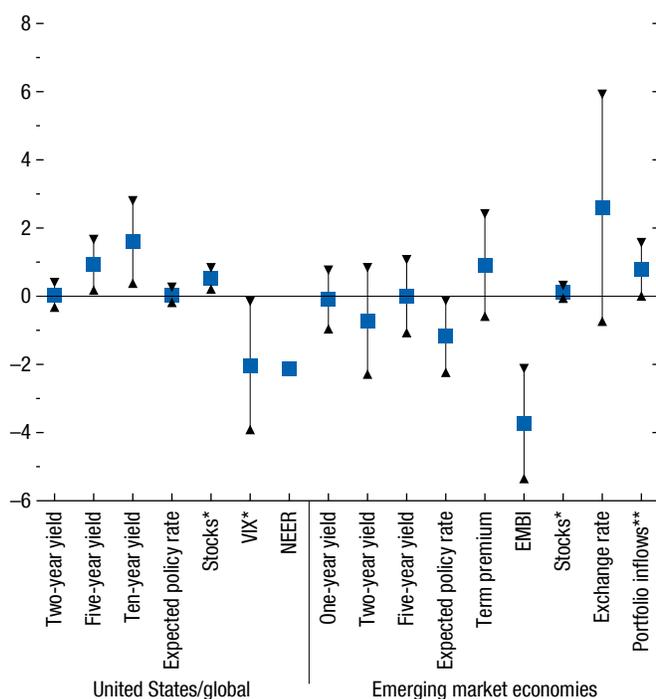
Note: The squares show estimates of the effect of a two-standard-deviation surprise in US nonfarm payrolls. The whiskers show 90 percent confidence intervals. Average expected policy rates are calculated at the 10-year maturity for the United States and at the five-year maturity for emerging market economies. An increase in the nominal effective exchange rate (NEER) for the United States, or in the nominal exchange rate vis-à-vis the United States for emerging market economies, denotes appreciation. Portfolio inflows denote bond inflows. EMBI = J.P. Morgan Emerging Market Bond Index; VIX = Chicago Board Options Exchange Volatility Index.

rates (Figure 4.13). Longer-term US yields have risen on the news, but two-year yields have not reacted, reflecting the Federal Reserve’s explicit commitment to maintaining an expansionary monetary policy stance until a firm recovery is under way.²⁰ Positive vaccine news has lifted corporate earnings expectations and the US stock market, in the context of a muted expected response of monetary policy, and the US dollar has not appreciated.

Domestic bond yields in the average emerging market have not reacted to vaccine news, and there have even been indications of an expected easing in

²⁰Even at the 10-year maturity, all the increase in US yields is attributed to rising term premiums and not to increases in conventional short-term policy rates.

Figure 4.13. Effect of Positive News about COVID-19 Vaccines
(Basis points; * = percentage points; ** = basis points of annual GDP)



Source: IMF staff calculations.

Note: The squares show estimates of the effect of positive vaccine news. The whiskers show 90 percent confidence intervals. Average expected policy rates are calculated at the 10-year maturity for the United States and at the five-year maturity for emerging market economies. An increase in the nominal effective exchange rate (NEER) for the United States, or in the nominal exchange rate vis-à-vis the United States for emerging market economies, denotes appreciations. Confidence bands on the NEER are wide; they are not shown due to space constraints. EMBI = J.P. Morgan Emerging Market Bond Index; VIX = Chicago Board Options Exchange Volatility Index.

domestic monetary policy. Domestic stock markets have risen, on average. As seen when economic news is positive, the VIX has fallen and, in parallel, benchmark emerging market bond spreads have shrunk, while capital has flowed *into* emerging markets (and the effect is now statistically significant). The beneficial effects of positive vaccine news on emerging market financial conditions are likely driven by a combination of the aforementioned *risk* and *trade* channels, together with the “low-for-long” expectation for US interest rates and, possibly, with improved prospects for vaccinations globally.

Finally, the chapter finds that longer-term nominal US yields also rise when US inflation comes in higher than expected, but such surprises do not seem to impact the US dollar, aggregate US stock prices, or the VIX. The spillovers from surprise US inflation to interest rates

in the average emerging market are minimal,²¹ and there is no evidence of effects on the average emerging market’s exchange rates, aggregate stock prices, or spreads on dollar-denominated debt. The lack of spillovers from US inflation could be consistent with a mixture of US demand and cost-push shocks, which would have opposite implications for growth in other countries. Future research could explore whether the specific source of the US inflation shock matters for spillovers.

Spillovers to Low-Income Countries

Financial conditions in low-income countries generally do not respond as much as conditions in emerging markets do to monetary policy surprises by the Federal Reserve or ECB, or to news about US economic activity or COVID-19 vaccines. There are, however, some exceptions. First, positive vaccine news in 2020 lifted 10-year government bond yields, on average, in the five low-income countries with data series (Ghana, Kenya, Nigeria, Uganda, Vietnam). Second, positive ECB monetary policy surprises tend to lift six-month government bond yields, on average, in the three low-income countries with data (Nigeria, Rwanda, Zambia). Third, the currencies of low-income countries depreciate by about 1.2 percent, on average, vis-à-vis the US dollar for each 100 basis points of surprise tightening by the Federal Reserve, similar to the response of emerging markets. That said, while the impact of monetary policy on financial conditions of low-income countries appears to be smaller than on emerging markets, its effect on commodity prices can still be significant, with overall important repercussions for commodity exporters.

Determinants of Emerging Market Monetary Policy Reactions

APPs and conventional policy rate cuts were emerging markets’ two major monetary policy instruments used to counter financial market turmoil and lessen the depth of the recession during the early months of the pandemic.²² This section uncovers the factors that drove the frequency and intensity of their use.

²¹Spillovers from US inflation to emerging market interest rates vary slightly by method, as explained in Online Annex 4.1.

²²An investigation of the role of macroprudential measures during COVID-19 is beyond the scope of this chapter. For a comprehensive analysis of the effectiveness of macroprudential measures, see Chapter 3 of the April 2020 WEO.

The econometric method seeks to ensure that the drivers explored are not endogenous to the repercussion of the pandemic shock and that appropriate controls are added to the specifications. Still, the identification of causal effects is challenging and the results are indicative of associations. A separate analysis of the effectiveness of APPs is also presented.

Asset Purchase Programs

Overview and Effectiveness

The COVID-19 crisis saw an unprecedented use of unconventional monetary policy instruments among emerging market and developing economies. Twenty-seven emerging market and developing economies launched APPs, with most announcing them for the first time—starting with Indonesia on March 2, 2020. Most emerging market and developing economy central banks justified APPs as a means to counter market dysfunction, with only a handful (Ghana, Indonesia, Mauritius) also stating the support of government financing as a motivation for the program.²³ The vast majority of countries announced that their purchases were confined to government bonds; only a few also announced purchases of corporate or bank bonds (Brazil, Chile, Hungary, Mauritius) or equities (Egypt).

The effectiveness of APPs can be assessed by looking at whether yields on government bonds fell with the launch of the programs. This is an important indicator of success, especially for those APPs whose aim was to reduce interest rate spikes caused by rising liquidity premiums in funding markets. Based on this yardstick, Box 4.1 concludes that APPs by emerging market and developing economies during the pandemic appear to have been effective.

Drivers of APPs

Countries with greater exchange rate flexibility, an inflation targeting framework, greater central bank transparency, a history of a more rules-based fiscal

policy framework, and lower sovereign risk were more likely to announce an APP between March and August 2020. The findings are based on logit regressions relating an indicator of whether a country announced an APP to groups of drivers that are each considered separately.²⁴ Depending on data availability for the different drivers, the sample size varies between 39 and 97 emerging market and developing economies (Online Annex 4.2 provides details).²⁵

Policy frameworks. Overall, the results indicate that the choice of announcing an APP is highly dependent on the country's monetary and fiscal policy frameworks. Countries with floating or freely floating exchange rate regimes had a 61 percentage point higher probability of launching an APP than countries with other exchange rate regimes (Figure 4.14), reflecting little scope for expanding the money supply when a financially open economy has an exchange rate target. The presence of a numerical inflation target raises the probability by 35 percentage points, while a one-standard-deviation increase in an index of central bank transparency (Dinçer, Eichengreen, and Geraats 2019) raises the probability by 19 percentage points. One extra rule in the fiscal policy framework is associated with a 10 percentage point higher probability.

Fiscal position. Countries with higher sovereign credit ratings (those that were perceived to have less sovereign default risk) were more likely to announce APPs (Figure 4.15). An investment grade rating increases the probability of an APP by 19 percentage points. The amount of “fiscal space” that the government has seems to matter as well. Intermediate levels of fiscal space (“some” or “at risk”) increased the probability of an APP by 58 percentage points compared with having, at the two extremes, “substantial” or “no fiscal space.”²⁶ On one hand, it is possible that countries with “substantial” fiscal space were unlikely to launch an APP because their sovereign bond markets were not disrupted. On the other hand, countries with “no” fiscal space may have resisted activating an APP, fearing that markets could interpret it negatively as an attempt at debt monetization (fiscal dominance). The unlikely

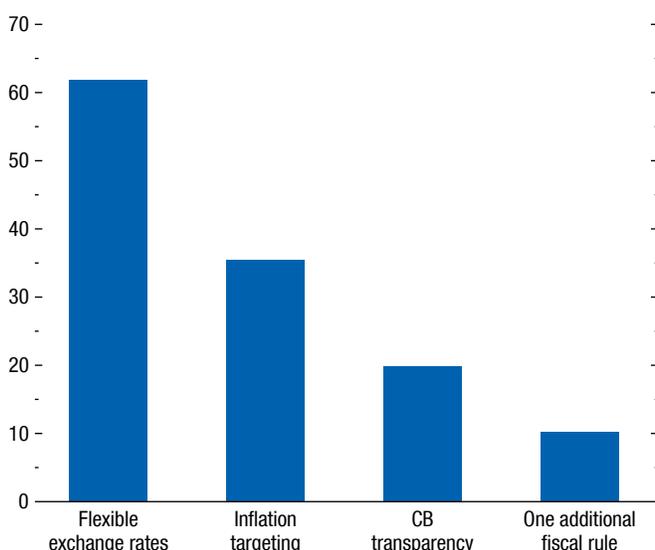
²³The data on APPs used in this chapter are from Fratto and others (2021), which also includes a detailed description of APPs during the COVID-19 crisis through 2020. The data cover all central bank purchases and sales of private and public securities on primary and secondary markets. They also include twist operations (purchase of long-term and sale of short-term government securities), the establishment of special purpose vehicles or investment funds to purchase equities and other private securities, direct monetary financing of the government, and purchases of loans made to small and medium enterprises. See also Arslan, Drehmann, and Hofmann (2020) and Chapter 2 of the October 2020 *Global Financial Stability Report*.

²⁴For the list of APPs in emerging market and developing economies during the pandemic, see Fratto and others (2021).

²⁵A separate analysis looks at whether the probability that a country announced an APP was associated with the strength of the country's trade links with other emerging market and developing economies that announced APPs during the pandemic. No evidence of such an effect was found.

²⁶The fiscal space variable is constructed by IMF staff for about 70 countries and published regularly in countries' Article IV Reports.

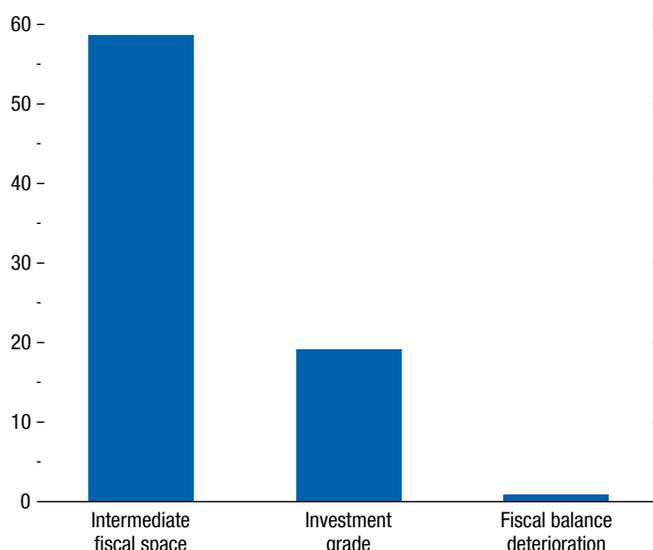
Figure 4.14. Determinants of Asset Purchase Program Choice during COVID-19: Policy Frameworks
(Change in probability, percentage points)



Sources: Dincer, Eichengreen, and Geraats 2019; IMF 2020; and IMF staff calculations.

Note: Flexible exchange rates and inflation targeting represent, respectively, floating and free floating exchange rate regimes and inflation-targeting central banks. CB transparency reports the effect of a one-standard-deviation increase in the transparency index. Coefficients are significant at the 5 percent level. CB = central bank.

Figure 4.15. Determinants of Asset Purchase Program Choice during COVID-19: Fiscal Position
(Change in probability, percentage points)



Sources: Standard & Poor's; and IMF staff calculations.

Note: The fiscal space indicator is calculated by the IMF. Investment-grade ratings are from Standard & Poor's. Fiscal balance deterioration is the change in the 2020 projected fiscal balance between the January 2020 *World Economic Outlook (WEO) Update* and the April 2020 WEO, relative to 2019 GDP. Bars are significant at the 5 percent level; the fiscal balance deterioration bar is not significant.

use of APPs as an indirect means of debt financing is corroborated by the lack of a statistically significant relationship between the activation of an APP and the deterioration in the projected 2020 fiscal balance.

Exposure to financial spillovers. Three proxies are used to measure the exposure. The first is a country-specific “vulnerability index” to monetary policy spillovers from Federal Reserve decisions, as derived in the preceding section of the chapter that deals with the spillover amplifiers from US monetary policy shocks. The second is a measure of financial openness mandated in law, and the third is an indicator of foreign reserves adequacy.²⁷ None of these proxies is significant in predicting an APP.

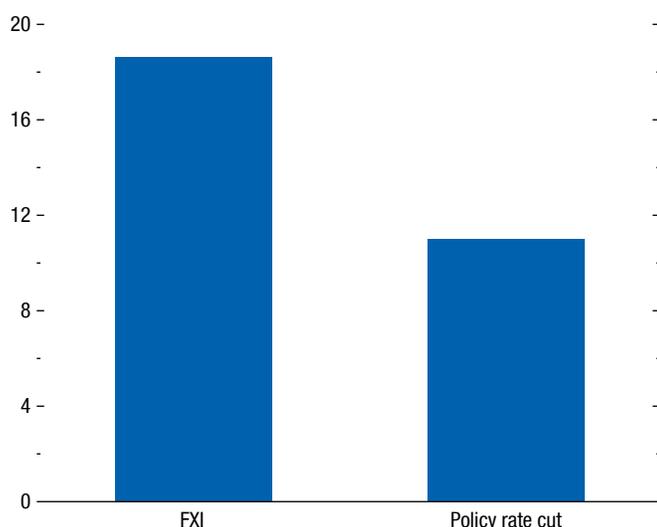
Other instruments. APPs are part of a larger set of policy instruments, which include conventional interest cuts (analyzed in detail in the next section) and foreign exchange interventions. A larger policy rate cut increases

²⁷Financial openness is proxied by the Chinn-Ito index for the year 2018 (see Chinn and Ito 2006 for a description of the index). The reserve adequacy measure is computed by IMF staff and describes reserve holdings relative to the reserve adequacy measure, updated to 2019 (see IMF 2015 for a description).

by 10 percentage points the probability that an APP will be announced, while use of a foreign exchange intervention raises that probability by 18 percentage points. The results (Figure 4.16) suggest that emerging market and developing economies use policy rate cuts, APPs, and foreign exchange interventions complementarily. They also use them for different objectives: lowering the domestic risk-free rate, tackling disruptions in the domestic bond market, and resolving disorderly conditions in the market for foreign exchange.²⁸

²⁸The size of the policy rate cut and the foreign exchange intervention indicator are added simultaneously to the regression. The foreign exchange intervention dummy is based on a collection of such interventions during the COVID-19 crisis by the IMF staff. It is highly correlated with the indicator for floating or free-floating exchange rates, which is added as a control to each regression. This may appear surprising as one would expect that countries with more flexible exchange rates do not rely much on foreign exchange interventions. However, this correlation reflects only the particular construction of the foreign exchange intervention indicator, which captures those interventions aimed specifically at addressing disorderly market conditions (and, so, have a goal similar to that of APPs). Therefore, the indicator does not include all foreign exchange interventions conducted as part of regular operations to maintain a managed exchange rate regime. For this reason, the regression in Figure 4.16 does not include controls for the exchange rate regime.

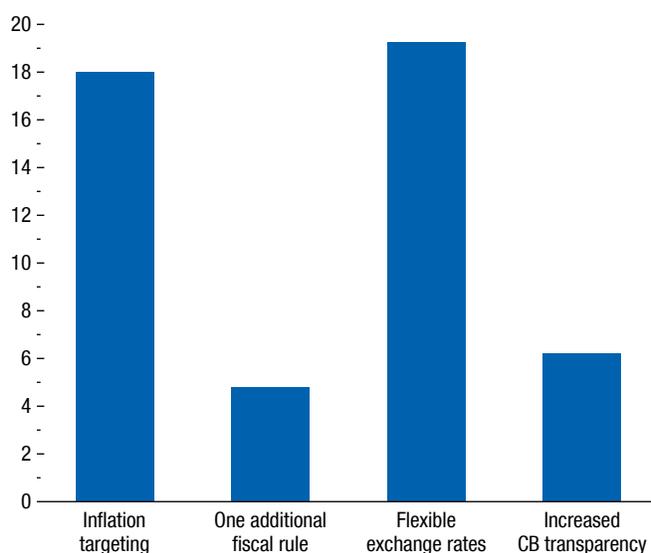
Figure 4.16. Determinants of Asset Purchase Program Choice during COVID-19: Other Instruments
(Change in probability, percentage points)



Sources: National authorities; and IMF staff calculations based on national central bank information.

Note: FXI is a dummy for countries that have used foreign exchange interventions to address disorderly market conditions during the COVID-19 crisis. Policy rate cut is based on a one-standard-deviation increase in the policy rate, as a percentage of its pre-pandemic level. Coefficients are significant at the 5 percent level.

Figure 4.17. Determinants of Policy Rate Cuts during COVID-19: Policy Frameworks
(Changes, percentage points)



Sources: Dinçer, Eichengreen, and Geraats 2019; IMF 2020; and IMF staff calculations.

Note: Flexible exchange rates and inflation targeting represent, respectively, floating and free floating exchange rate regimes and inflation-targeting central banks. CB transparency reports the effect of a one-standard-deviation increase in the transparency index. Coefficients are significant at the 5 percent level. CB = central bank.

Policy Rate Cuts

Analysis of the “risk channel” suggests that changes in the expected path of monetary policy rates in emerging markets are only marginally influenced by surprise changes in monetary policy rates in advanced economies. This section seeks to explain the differences between countries in how much the policy rate was reduced from March through August 2020.²⁹ Central banks in countries with greater exchange rate flexibility, an inflation targeting framework, greater central bank transparency, and a more rules-based fiscal policy framework are found to have delivered deeper interest rate reductions. Unlike for APPs, sovereign credit ratings are not correlated with the extent of interest rate cuts.

The econometric specification relates the change in monetary policy rates, expressed as a ratio to the policy rate before the crisis, to four groups of drivers. The first three are the same as those just explored. The fourth intends to capture how the policy rate cut depended

on *domestic economic conditions*, the standard driver of policy interest rates.³⁰

Policy frameworks. The same characteristics of policy frameworks that determine the use of APPs also explain the size of policy rate cuts (Figure 4.17). In countries with flexible exchange rates and inflation-targeting central banks, the policy rate cut was about 20 percent larger. A one-standard-deviation increase in the central bank transparency index raises the policy rate cut by 6 percent and the use of one additional fiscal rule makes it 5 percent larger.

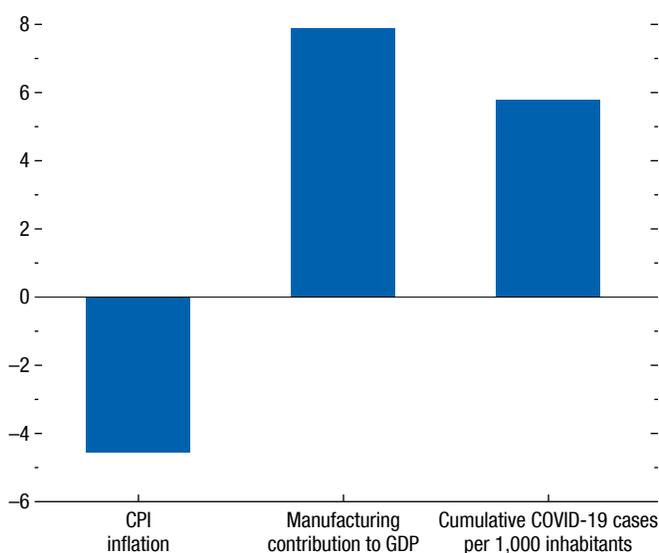
Fiscal position. Neither the sovereign debt rating nor the fiscal space indicator are significant predictors of interest rate cuts. The change in the fiscal balance is also insignificant.

Exposure to financial spillovers. Similar to the chapter findings about the exposure to monetary policy spillovers, the indicator of financial openness and the reserve adequacy ratio are not significant drivers

²⁹For a related analysis on determinants of the policy rate cuts, see Gelos, Rawat, and Ye (2020).

³⁰The same domestic economic conditions did not determine decisions to use APPs.

Figure 4.18. Determinants of Policy Rate Cuts during COVID-19: Domestic Conditions
(Changes, percentage points)



Sources: Johns Hopkins University; IMF, *World Economic Outlook*; and World Bank, World Development Indicators.

Note: Manufacturing contribution to GDP and cumulative COVID-19 cases per 1,000 inhabitants report the effects of a one-standard-deviation increase in the indicator. Coefficients are significant at the 10 percent level or less. CPI = consumer price index.

of conventional monetary policy cuts. This result is well aligned with the findings about spillovers from monetary policy surprises and appears to confirm that external monetary and financial conditions are not important drivers of domestic monetary policy rates.

Domestic economic conditions. Interest rate cuts were proportionally larger where pre-pandemic inflation was lower and where the domestic and foreign demand shocks were more negative (Figure 4.18). The policy rate cut was deeper in countries with a higher number of COVID-19 cases by September 1, 2020 (which proxies for the size of negative domestic demand and supply shocks, especially in the service sector). The country's manufacturing share in GDP captures the effect of falling foreign demand on GDP and is also associated with more conventional easing.

Conclusions

Prospects for a multispeed recovery, with advanced economies recovering more quickly than most other economies, raise concerns about the effects from an asynchronous withdrawal of monetary policy

support that tightens financial conditions for emerging market and developing economies. These concerns have been amplified by the fiscal packages in the United States, which could lead the Federal Reserve's asset purchases to be scaled back and US interest rates to rise at an earlier-than-expected date.

This chapter finds that changes to interest rates in the United States tend to have important ramifications for financial conditions in emerging market and developing economies. Yet, these effects depend on the circumstances behind the change and the evolution of global risk premiums:

- An unexpected signal of higher future US policy rates that is not driven by changes in economic conditions in the United States unambiguously leads to a tightening of financial conditions in emerging markets. The trigger could arise from markets revising their expectations of how soon or how much the Federal Reserve will react to the evolving information on the economy. This would potentially lead to a shift in global risk appetite, a reversal of capital flows to emerging markets, deleveraging by global banks, and a depreciation in emerging market currencies that exposes foreign exchange-related vulnerabilities.
- By contrast, positive news on US economic activity tends to have a relatively benign impact on financial conditions in emerging markets. The VIX and risk premiums on emerging market bonds fall, while capital tends to flow into emerging markets. Positive news from COVID-19 vaccine trials triggered strong effects in the same direction. These findings can be attributed in part to a positive *risk channel*, where favorable economic developments in advanced economies reduce the risk aversion of international investors, and in part to a *trade channel*, which reflects the tendency of better economic news in the United States to imply better growth prospects for emerging markets as well.
- Upside surprises on US inflation also lift expected US rates, but do not appear to systematically impact financial conditions in emerging markets. Although the source of inflation may matter, on average, the repercussions for emerging markets seem to be limited.

The analysis suggests that a gradual and well-telegraphed normalization of US interest rates driven by a recovering US economy would likely be manageable for most emerging market economies, though

some would be at risk. In fact, many emerging markets (especially those with substantial exports to advanced economies) could see a period of strong capital inflows as economic conditions in advanced economies improve, monetary policy accommodation is withdrawn gradually, and global risk appetite remains favorable. A stronger-than-expected inflation recovery in advanced economies could temper global financial risk appetite somewhat, but with likely limited repercussions if inflation expectations remain well anchored. This is particularly true, given that the Federal Reserve has clearly communicated that it is targeting a temporary overshooting of its medium-term inflation goal and would not raise interest rates until inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time. However, some emerging market economies with fiscal and external vulnerabilities and a lack of trade ties to advanced economies may find that global financial tightening outweighs the benefits of stronger external demand. Moreover, the current health and economic crises are different from anything seen in recent decades, making evidence from the past an imperfect guide to the future. Today's high debt levels may accentuate any financial spillovers, and efforts to contain the virus may limit the benefits of trade links.

It is not assured that the economic recovery and interest rate normalization in advanced economies will be smooth, and central bank communications will be a critical factor as the recovery progresses. The chapter's findings suggest that a rapid upward revision in expected US monetary policy rates—for example, if markets were suddenly to revise down their expectations for the inflation level that the Federal Reserve would tolerate before it tightened monetary policy under its flexible average inflation targeting framework—could lead to rising risk premiums and significant capital outflows from emerging market and developing economies. As such, it will be important for the Federal Reserve to continue to emphasize its policy approach and how it will implement its new monetary policy strategy to anchor expectations about its policy reaction. In general, it will be important for advanced economy central banks to signal early if they judge that economic conditions are evolving in a way that will warrant scaling back of asset purchases and, eventually, raising policy rates.³¹

³¹See Sahay and others (2014) for a stocktaking of lessons from the taper tantrum episode.

Even if global financial risk appetite remains buoyant for some time, emerging market policymakers need to keep in mind that advanced economy central banks will eventually reduce monetary policy accommodation. Even with central banks providing a high degree of transparency and early communication of changes in their policy stance, markets may still misinterpret intentions, and financial conditions can shift for reasons that are beyond the control of policymakers. Moreover, as the recovery picks up, risk appetite and term premiums may increase, as happened on the back of expected US fiscal stimulus in the second half of February. Combined with a faster expected normalization of US monetary policy, the decompression of term premiums has steepened the US yield curve and has spilled over into higher emerging market bond yields as well, triggering a slowdown in capital flows. This episode foreshadows the bumps that may lie ahead for emerging markets as the global economic recovery progresses and extraordinary policy support is withdrawn.

How can emerging market economies insulate themselves from external financial spillovers? The correlations documented in the chapter suggest that monetary policy in emerging markets could probably react countercyclically in downside scenarios. However, the strength of the policy easing could be limited and heterogeneous across countries. For instance, higher public debt might discourage some countries from using APPs with the same intensity as in the earlier phases of the pandemic. Moreover, if public debt and other fiscal concerns were to start weighing on the perceived independence of monetary policy and on its rules-based frameworks, the ability of central banks to deploy large conventional rate cuts without raising long-term inflation expectations could also be called into question. Maintaining credible fiscal and monetary frameworks is therefore essential for emerging market and developing economies to be able to support domestic activity amid unexpected negative shocks. In addition, taking steps to lengthen maturities on debt and smooth out concentrations in debt service obligations, manage leverage through macroprudential measures and strong financial supervision, reduce currency mismatches, and ensure an adequate level of international reserves can also help limit the buildup of vulnerabilities (see Chapter 3 of the April 2020 WEO). A strong international financial architecture, including robust mechanisms for liquidity support for countries, would have a key role to play too.

Box 4.1. Emerging Market Asset Purchase Programs: Rationale and Effectiveness

Most Countries Deployed Asset Purchase Programs while Short-Term Policy Rates Were Still Positive

This partly reflected the reported aim to smooth volatility and provide liquidity to the domestic market. In only 9 percent of cases were asset purchase programs (APPs) reported to be aimed at providing monetary stimulus. For 62 percent, market dysfunction and the need to boost confidence was the main concern. Supporting fiscal needs was stated as the main objective in 10 percent of cases, with the rest citing the need to alleviate costs of the COVID-19 pandemic on the population. The exchange rate was one of the objectives in only one case. Purchases of long-dated government bonds (or private sector securities) were sometimes used in combination with policy rate cuts (11 out of 27 cases). The size of APPs, both announced and implemented, was comparable to that in small advanced economies.¹

Overall, Such Unconventional Monetary Policy Measures Lowered Local Bond Yields but Had No Salient Effect on Exchange Rates or External Borrowing Costs

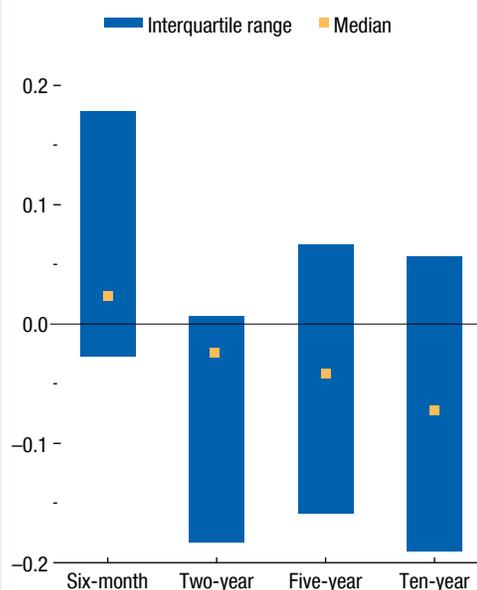
The results of a multiday event study, using a sample of (only 15, given data limitations) emerging market and developing economies, point to heterogeneous effects. On average, the estimated effect on domestic bond yields is negative and statistically significant (Figure 4.1.1), slightly stronger than that of conventional monetary policy transmission, and higher in emerging market and developing economies than in advanced economies. The results are broadly consistent with the literature (Arslan, Drehmann, and Hofmann 2020; Hartley and Rebucci 2020; Sever and others 2020).² The estimated effects on the exchange rate are instead inconclusive. Looking at the second-round effects, the announcements have predominantly an insignificant effect on emerging market benchmark bonds. Panel regressions, controlling for policy and global factors, confirm the results.

The authors of this box are Chiara Fratto, Brendan Harnoy Vannier, Borislava Mircheva, David de Padua, and H el ene Poirson.

¹This box draws on the analysis in Fratto and others (2021) and is based on a data set of APP announcements and implementation during March through August 2020.

²Results shown exclude the announcements coinciding with policy rate cuts to avoid capturing spillover effects from conventional monetary policy.

Figure 4.1.1. Asset Purchase Program Announcement: Effect on Bond Yields
(Percentage point change)



Source: Fratto and others (2021).

Differences in Implementation and Country Characteristics Can Explain Some of the Heterogeneity in the Effectiveness of APPs

Some country-specific factors (central bank credibility, larger monetary policy space, low share of nonresident holdings of government bonds) and implementation modalities (quantity-based programs, smaller announced size, single as opposed to repeated announcements) seemed to increase the impact of APPs on yields. No statistically significant differences were found between purchasing assets on the primary and the secondary market, nor between single announcement and announcements made in coordination with other national authorities. Overall, the results suggest that APPs can be usefully deployed by emerging market and developing economies in response to domestic market stress, but may not work in dampening external market pressures more broadly.

References

- Adrian, Tobias, Richard K. Crump, and Emanuel Moench. 2013. "Pricing the Term Structure with Linear Regressions." *Journal of Financial Economics* 110 (1): 110–38.
- Ahmed, Shaghil, Brahim Coulibaly, and Andrei Zlate. 2017. "International Financial Spillovers to Emerging Market Economies: How Important are Economic Fundamentals?" *Journal of International Money and Finance* 76: 133–52.
- Albagli, Elias, Luis Ceballos, Sebastian Claro, and Damian Romero. 2019. "Channels of US Monetary Policy Spillovers to International Bond Markets." *Journal of Financial Economics* 134 (2): 447–73.
- Altavilla, Carlo, Luca Brugnolini, Refet S. Gürkaynak, Roberto Motto, and Giuseppe Ragusa. 2019. "Measuring Euro Area Monetary Policy." *Journal of Monetary Economics* 108: 162–79.
- Arslan, Yavuz, Mathias Drehmann, and Boris Hofmann. 2020. "Central Bank Bond Purchases in Emerging Market Economies." BIS Bulletin 20, Bank for International Settlements, Basel.
- Bekaert, Geert, Marie Hoerova, Marco Lo Duca. 2013. "Risk, Uncertainty and Monetary Policy." *Journal of Monetary Economics* 60: 771–88.
- Bekaert, Geert, Marie Hoerova, Nancy R. Xu. 2020. "Risk, Monetary Policy, and Asset Prices in a Global World." https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3599583.
- Bowman, David, J. Londono, and H. Sapriza. 2015. "US Unconventional Monetary Policy and Transmission to Emerging Market Economies." *Journal of International Money and Finance* 55: 27–59.
- Caballero, Ricardo J., and Gunes Kamber. 2019. "On the Global Impact of Risk-Off Shocks and Policy-Put Frameworks." NBER Working Paper 26031, National Bureau of Economic Research, Cambridge, MA.
- Calvo, Guillermo A., and Carmen M. Reinhart. 2002. "Fear of Floating." *The Quarterly Journal of Economics* 117 (2): 379–408.
- Cerutti, Eugenio, Stijn Claessens, and Andrew K. Rose. 2019. "How Important Is the Global Financial Cycle? Evidence from Capital Flows." *IMF Economic Review* 67: 24–60.
- Chen, Jiaqian, Tommaso Mancini Griffoli, and Ratna Sahay. 2014. "Spillovers from United States Monetary Policy on Emerging Markets: Different This Time?" IMF Working Paper 14/240, International Monetary Fund, Washington, DC.
- Chinn, Menzie D., and Hiro Ito. 2006. "What Matters for Financial Development? Capital Controls, Institutions, and Interactions." *Journal of Development Economics* 81 (1): 163–92.
- Curcuru, Stephanie E., Steven B. Kamin, Canlin Li, and Marius Rodriguez. 2018. "International Spillovers of Monetary Policy: Conventional Policy vs. Quantitative Easing." FRB International Finance Discussion Paper 1234, Federal Reserve Board, Washington, DC.
- Dinçer, Nergiz, Barry Eichengreen, and Petra Geraats. 2019. "Transparency of Monetary Policy in the Postcrisis World." In *The Oxford Handbook of the Economics of Central Banking*. Oxford: Oxford University Press.
- Fratto, Chiara, Brendan Harnoys Vannier, Borislava Mircheva, David de Padua, and Hélène Poirson. 2021. "Unconventional Monetary Policies in Emerging Markets and Frontier Countries." IMF Working Paper 2021/14, International Monetary Fund, Washington, DC.
- Gelos, Gaston, Umang Rawat, and Hanqing Ye. 2020. "Have Emerging Market and Developing Economies Escaped the Monetary Policy Procyclicality Trap? Evidence from the COVID-19 Crisis." VoxEU, August 20.
- Gertler, Mark, and Peter Karadi. 2015. "Monetary Policy Surprises, Credit Costs, and Economic Activity." *American Economic Journal: Macroeconomics* 7 (1): 44–76.
- Gopinath, Gita, Emine Boz, Camila Casas, Federico J. Diez, Pierre-Olivier Gourinchas, and Mikkel Plagborg-Møller. 2020. "Dominant Currency Paradigm." *American Economic Review* 110 (3): 677–719.
- Gürkaynak, Refet S., Burçin Kısacikoğlu, and Jonathan H. Wright. 2020. "Missing Events in Event Studies: Identifying the Effects of Partially Measured News Surprises." *American Economic Review* 110 (12): 3871–912.
- Hanson, Samuel G., and Jeremy C. Stein. 2015. "Monetary Policy and Long-Term Real Rates." *Journal of Financial Economics* 115 (3): 429–48.
- Hartley, Jonathan S., and Alessandro Rebucci. 2020. "An Event Study of COVID-19 Central Bank Quantitative Easing in Advanced and Emerging Economies." NBER Working Paper 27339, National Bureau of Economic Research, Cambridge, MA.
- Hoek, Jasper, Steven B. Kamin, and Emre Yoldas. 2020. "When is Bad News Good News? US Monetary Policy, Macroeconomic News, and Financial Conditions in Emerging Markets." FRB International Finance Discussion Paper 1269, Federal Reserve Board, Washington, DC.
- International Monetary Fund (IMF). 2014. Spillover Report. Washington, DC.
- International Monetary Fund (IMF). 2015. Staff Report on Assessing Reserve Adequacy—Specific Proposals. Washington, DC.
- International Monetary Fund (IMF). 2020. "Toward an Integrated Policy Framework." IMF Policy Paper 20/046, Washington, DC.
- Kalemlı-Özcan, Sebnem. 2019. "US Monetary Policy and International Risk Spillovers." NBER Working Paper 26297, National Bureau of Economic Research, Cambridge, MA.
- Obstfeld, Maurice, Jonathan D. Ostry, and Mahvash S. Qureshi. 2019. "A Tie That Binds: Revisiting the Trilemma in Emerging Market Economies." *The Review of Economics and Statistics*, MIT Press 101 (2): 279–93.

- Rey, H el ene. 2015. "Dilemma Not Trilemma: The Global Financial Cycle and Monetary Policy Independence." NBER Working Paper 21162, National Bureau of Economic Research, Cambridge, MA.
- Sahay, Ratna, Vivek Arora, Athanasios Arvanitis, Hamid Faruqee, Papa N'Diaye, and Tommaso Mancini Griffoli. 2014. "Emerging Markets Volatility: Lessons from the Taper Tantrum." IMF Staff Discussion Note 2014/9, International Monetary Fund, Washington, DC.
- Sever, Can, Rohit Goel, Dimitris Drakopoulos, and Evan Papageorgiou. 2020. "Effects of Emerging Market Asset Purchase Program Announcements on Financial Markets during the COVID-19 Pandemic." IMF Working Paper 2020/292, International Monetary Fund, Washington, DC.
- V egh, Carlos A., and Guillermo Vuletin. 2012. "Overcoming the Fear of Free Falling: Monetary Policy Graduation in Emerging Markets." NBER Working Paper 18175, National Bureau of Economic Research, Cambridge, MA.

