CHAPTER 1

FINANCIAL STABILITY IN THE NEW HIGH-INFLATION ENVIRONMENT

Chapter 1 at a Glance

- Global financial stability risks have increased since the April 2022 *Global Financial Stability Report* and the balance of risks is skewed to the downside. Amid the highest inflation in decades and extraordinary uncertainty about the outlook, markets have been extremely volatile. Despite some gains midyear, prices of risk assets such as equities and corporate bonds have declined sharply, on balance, with investors aggressively pulling back from risk taking in September. A deterioration in market liquidity appears to have amplified price moves.
- Financial conditions have continued to tighten globally since April. In many advanced economies, financial conditions are tight by historical standards. In some emerging markets they have reached levels last seen during the height of the COVID-19 crisis. In contrast, conditions have eased some in China, as policymakers have provided additional support.
- With conditions worsening in recent weeks, key gauges of systemic risk, such as dollar funding costs and counterparty credit spreads, have risen. There is a risk of a disorderly tightening in financial conditions that may interact with preexisting vulnerabilities. Investors may further reassess the outlook if inflationary pressures do not abate as quickly as currently anticipated or the economic slowdown intensifies.
- In emerging markets, rising rates, worsening fundamentals, and large outflows have pushed up borrowing costs notably. The impact has been especially severe for more vulnerable economies, with 20 countries either in default or trading at distressed levels. Unless market conditions improve, there is a risk of further sovereign defaults in frontier markets. Large emerging market issuers with stronger fundamentals, by contrast, have proved resilient thus far.
- In China, the property downturn has deepened as sharp declines in home sales during lockdowns have exacerbated pressures on developers, with heightened risk of spillovers to the banking, corporate, and local government sectors. In many other countries, the housing market is still showing signs of overheating and there is a risk of a sharp fall in house prices as mortgage rates rise, affordability falls, and lending standards tighten.
- Global stress tests for banks show that, under a severe downturn scenario, up to 29 percent of emerging market bank assets could breach minimum capital requirements; in advanced economies most banks would remain resilient. Corporate credit is also facing increased risk of default, with sub-investment-grade firms more exposed to a turn in the credit cycle and deteriorating investor risk appetite.
- Central banks must act resolutely to bring inflation back to target, to keep inflationary pressures from becoming entrenched, and to avoid de-anchoring of inflation expectations that would damage credibility. The high uncertainty clouding the outlook hampers policymakers' ability to provide explicit and precise guidance about the future path of monetary policy. But clear communication about their policy function, their unwavering commitment to achieve their mandated objectives, and the need to further normalize policy is crucial to avoid unwarranted market volatility.
- Ensuring effective transmission of monetary policy is crucial during policy normalization. The Transmission Protection Instrument announced by the European Central Bank is a welcome step to address euro area fragmentation risks.
- According to the IMF's Integrated Policy Framework, where appropriate, some emerging market economies managing the global tightening cycle could consider using some combination of targeted foreign exchange interventions, capital flow measures, and/or other actions to help smooth exchange rate adjustments to reduce financial stability risks and maintain appropriate monetary policy transmission.

- Policymakers should contain a further buildup of financial vulnerabilities. While considering country-specific circumstances and the near-term economic challenges, they should adjust selected macroprudential tools as needed to tackle pockets of elevated vulnerabilities. Striking a balance between containing the buildup of vulnerabilities and avoiding procyclicality and a disorderly tightening of financial conditions is essential.
- Implementation of policies to mitigate market liquidity risks is key to avoid possible amplification of shocks, especially during monetary policy normalization. Counterparties should strengthen their liquidity risk management practices.

Financial Conditions Tighten as Central Banks Act Aggressively to Tame Inflation amid Extraordinary Uncertainty

The world economy is experiencing stubbornly high inflation, a challenge it has not faced for decades, amid heightened economic and geopolitical uncertainties and disruptions in energy and commodity markets stemming from the COVID-19 pandemic and Russia's ongoing war in Ukraine. Following the global financial crisis, with inflationary pressures muted, central banks kept interest rates extremely low for years and investors became accustomed to a low-volatility environment. The ensuing easing of financial conditions supported economic growth, but it also contributed to risk taking and a buildup of financial vulnerabilities—a risk highlighted in previous *Global Financial Stability Reports* (GFSRs).

Now, with inflation at multidecade highs, monetary authorities in advanced economies are accelerating the pace of policy normalization to prevent inflationary pressures from becoming entrenched and inflation expectations from de-anchoring. Policymakers in emerging markets, which had started to hike interest rates earlier in 2021, have continued to tighten policy against a backdrop of rising inflation and currency pressures, albeit with significant regional differences. Global financial conditions have tightened notably this year, partly an intended consequence of policy normalization, leading to capital outflows from many emerging and frontier market economies with weaker macroeconomic fundamentals. With the global economy facing a number of challenges and policymakers continuing to normalize policy to tame high inflation, there is a risk of a disorderly tightening of global financial conditions that may be amplified by vulnerabilities built over the years. This chapter will focus on some of the most pertinent conjunctural and structural vulnerabilities in advanced economies and emerging markets in the current macro-financial environment—an environment that is new to many policymakers and market participants.[1]

The global economic outlook has worsened materially since the April 2022 GFSR. A number of downside risks have crystallized, including higher-than-anticipated inflationary pressures; a worse-than-expected slowdown in China on the back of COVID-19 outbreaks, lockdowns, and a further deterioration in real estate; and additional spillovers from Russia's invasion of Ukraine. As a result, the slowdown of the global economy has intensified, while inflation has remained stubbornly high (see the October 2022 *World Economic Outlook* [WEO]).

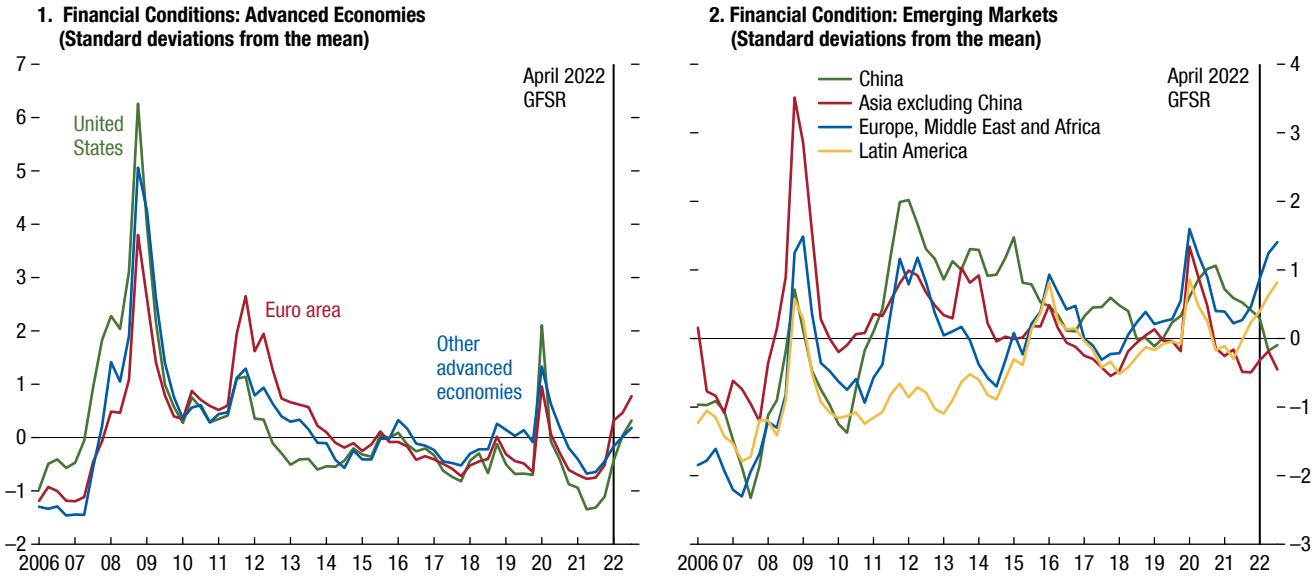
Most monetary authorities around the world have continued to tighten policy to tame inflation and restore price stability. In advanced economies, central banks have accelerated the pace of normalization. In emerging markets, where policymakers had already started to hike interest rates in 2021, tightening has continued to keep pace with rising inflation and currency pressures that have been exacerbated by higher rates in the United States and elsewhere. The global monetary policy stance has become tighter, with the number of central banks hiking the policy rate increasing markedly, but some differences are noteworthy. The Federal Reserve policy tightening cycle is leading other central banks in advanced economies. In contrast, in Japan, yield curve control has continued. Among emerging markets, the People's Bank of China policy easing stands in sharp contrast to other countries. The US dollar strength may contribute to inflationary pressures in some countries and lead to further tightening of policy in some countries.

Global financial conditions have tightened further, on balance, since the April 2022 GFSR, partly as

[1]Unless otherwise stated, the data cutoff date is September 28, 2022.

Figure 1.1. Global Financial Conditions

Financial conditions in advanced economies and emerging market economies have tightened further on net.



Sources: Bloomberg Finance L.P.; Haver Analytics; national data sources; and IMF staff calculations.
Note: The FCIs are calculated using the latest available variables. In the US, the Q2 and Q3 proxies use estimated real house prices based on the FHFA US house price index mom changes. In panel 2, the group "Europe, Middle East and Africa" excludes Russia, Türkiye and Ukraine. In Türkiye, local price signals have become less relevant recently due to idiosyncratic policy measures that incentivize holding lira assets. Panels 1 and 2 show quarterly averages for 2006–19 and monthly averages for 2020–22. Standard deviations are calculated over the period 1996–present. The IMF financial condition index is designed to capture the pricing of risk. It incorporates various pricing indicators, including real house prices. Balance sheet or credit growth metrics are not included. For details, please see the October 2018 GFSR annex. GFSR = *Global Financial Stability Report*.

an intended consequence of tighter monetary policy and partly due to rising uncertainty about the outlook (Figure 1.1, panel 1). In advanced economies, financial conditions have tightened rapidly and are now above historical averages in most countries, with higher interest rates and lower corporate valuations the key drivers behind the tightening.[2] Financial conditions are even tighter in some emerging markets. In central, eastern, and southern Europe, as well as in the Middle East and Africa, financial conditions are at levels last seen during the height of the COVID-19 crisis (Figure 1.1, panel 2). Weaker currencies and wider spreads on dollar funding have pushed up external borrowing costs. In contrast, conditions have eased somewhat in China, where policymakers have provided additional support to offset a rise in corporate credit borrowing costs stemming from strains among property developers and a deterioration in the economic outlook.

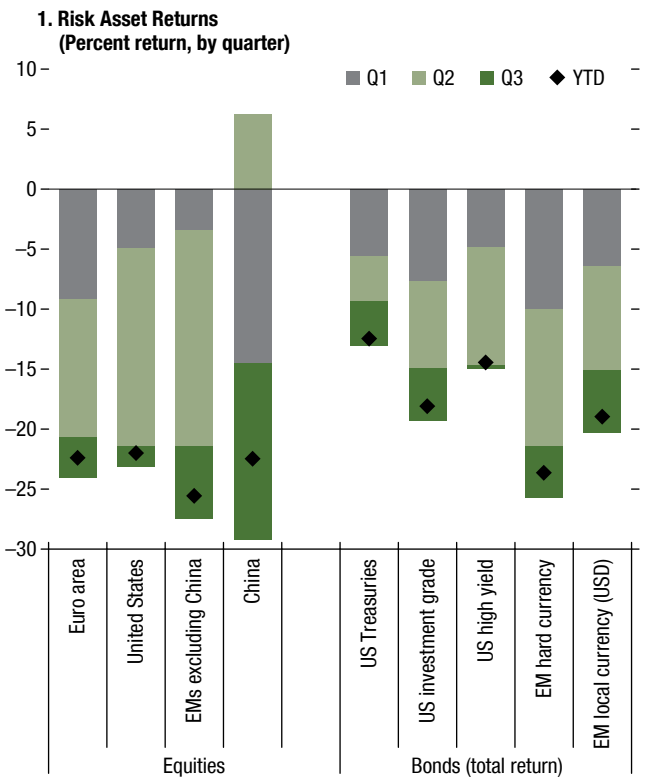
Interest rates and prices of risk assets (such as equities, corporate bonds, commodities, and currencies) have been very volatile since April, reflecting high levels of uncertainty about the inflation and growth outlook and implications for monetary policy. Risk assets sold off sharply through June on fears that central banks would have to step up the pace of interest rate hikes to fight high inflation and prevent inflation expectations from becoming unmoored. Markets pivoted for a while midyear as investors became increasingly concerned about rising recession risks. Boosted by hopes that the monetary cycle in advanced economies could end sooner than previously anticipated, risk assets experienced a relief rally, long-term interest rates fell, and financial conditions eased somewhat in July. In recent weeks, conditions in financial markets have deteriorated as major central banks have strongly reaffirmed their resolve to fight inflation and meet their price stability mandates.[3]

[2]Gains in house prices, albeit slowing since the beginning of the policy normalization process, have partly offset the tightening in financial conditions resulting from rising interest rates and sharply falling corporate valuations.

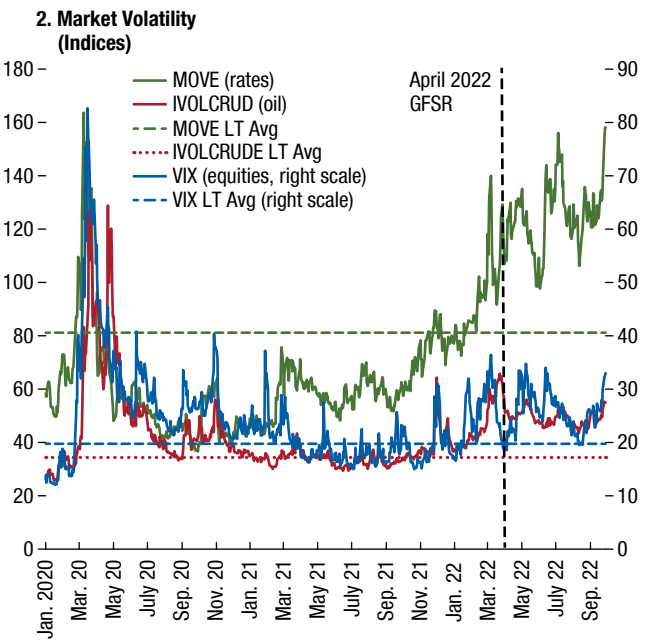
[3]See, for example, recent speeches delivered at the 2022 Jackson Hole policy symposium on "Monetary Policy and Price Stability," by Jerome Powell, chair of the Federal Reserve, and on "Monetary Policy and the Great Volatility," by Isabel Schnabel, member of the European Central Bank executive board.

Figure 1.2. Sell-Off in Risk Assets and Jump in Volatility

Risk assets have sold off ...



... and market volatility has risen in recent weeks.



Sources: Bloomberg Finance L.P.; MSCI; and IMF staff calculations.
Note: For panel 2, long-term averages are computed from January 2006 to September 2022. EMs = emerging markets; GFSR = *Global Financial Stability Report*; IVOLCRUD = index of three-month, at-the-money implied volatility on oil options; LT Avg = long-term average; MOVE = yield-curve-weighted index of normalized implied volatility on one-month Treasury options; Q1, Q2, Q3 = first, second, and third quarters; USD = US dollars; VIX = Chicago Board Options Exchange Volatility Index; YTD = year to date.

Equity prices have fallen sharply and credit spreads have materially widened, as investors have aggressively pulled back from risk taking. Market liquidity has deteriorated markedly, including in benchmark sovereign bond markets. Cross-currency-basis swap spreads have also widened to their highest level since March 2020, in particular for the euro and the yen, reflecting the premium that investors have to pay to access dollar funding.

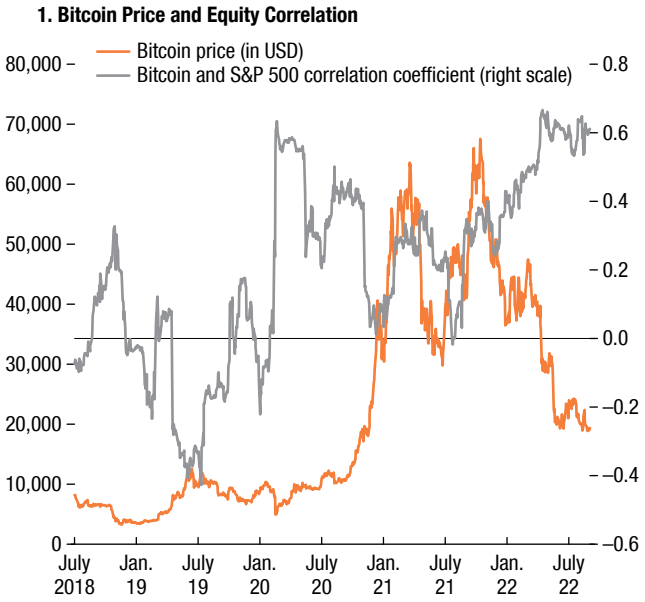
Overall, risk assets have performed very poorly in 2022 (Figure 1.2, panel 1). Emerging market assets have suffered large losses, partly reflecting the strength of the US dollar relative to most currencies, though with considerable heterogeneity. After declining in the summer, volatility has recently increased significantly across most asset classes. Rate volatility in particular has remained very elevated—at levels not witnessed since March 2020—reflecting the uncertainty about the magnitude of the policy tightening and the economic outlook (Figure 1.2, panel 2).

Amid rising correlation with equities and poor market liquidity, crypto markets have seen extreme volatility (Figure 1.3, panel 1). Bitcoin lost over 50 percent of its value, some of the riskiest segments collapsed, and some crypto funds were unwound. During this period, Terra, the largest non-collateralized algorithmic stablecoin, experienced an investor run as its value fell below parity with the US dollar and eventually collapsed. Tether, the largest collateralized stablecoin, briefly traded below parity and saw significant outflows. By contrast, cash-backed and more transparent stablecoins received some inflows and were able to maintain parity during this volatile period (Figure 1.3, panel 2).

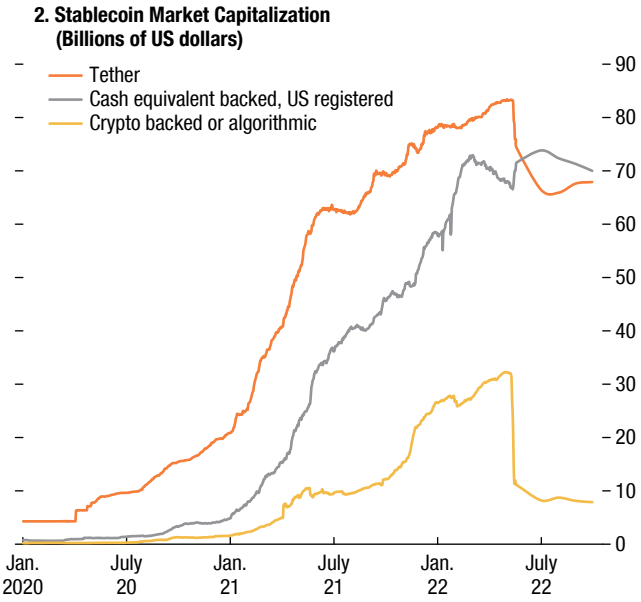
According to IMF staff models, the fall in equity prices has been driven by both rising rates and

Figure 1.3. Riskiest Segments of Crypto Markets Have Been Very Volatile

Crypto has experienced larger losses than equities ...



... and the riskiest stablecoins have collapsed.



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: The correlation coefficient between the daily returns of Bitcoin and the S&P 500 are based on a 60-day moving average. SP500 = S&P 500; USD = US dollars.

expectations of lower earnings growth, in particular over the medium term (Figure 1.4, panel 1). Large firms have reported a contraction in profit margins due to higher costs, while downward revisions to global earnings growth forecasts appear to be gaining momentum on concerns about a possible recession. As central banks continue to normalize policy and the economic outlook deteriorates, and economic uncertainty rises, there is a risk of a further repricing in equity markets should investors require higher compensation to bear equity risk—as measured by equity risk premia. Risk premia in other risk asset markets would then also be expected to widen.

In credit markets, conditions have worsened and corporate bond spreads in advanced economies have been close to two-year highs, including for investment-grade bonds (Figure 1.4, panel 2). With corporate downgrades increasing, investors have grown increasingly concerned about an ensuing default cycle and pulled back from risk taking. As a result, access to credit has become more challenging, especially for sub-investment-grade firms. Reflecting higher government bond yields and wider credit spreads, corporate bond yields—the cost of new funding—have risen materially. Emerging market companies are particularly vulnerable as balance sheet leverage has risen since the onset of the pandemic and could amplify losses during an economic slowdown.

Rising interest rates in advanced economies, coupled with intensifying global risk-off sentiment, have put significant pressure on sovereign spreads and borrowing costs in emerging markets. The effect has been especially severe for the more vulnerable economies. The spreads on foreign-currency debt for frontier markets (developing economies with less liquid bonds and only limited track records for bonds issuance) and other emerging markets with high-yield sovereign ratings have risen nearly to levels last seen at the peak of the pandemic sell-off in March 2020 (Figure 1.4, panel 3).[4] Despite the July tightening, spreads on the high-yield and frontier market sovereign indices are above 900 basis points (bps), approximately 500 bps higher than their pre-pandemic levels. Currently, 14 sovereigns have spreads exceeding 1,000 bps, a level at which they are commonly considered distressed and at high risk of default. Six more have already defaulted or engaged in debt restructuring (see the "Emerging Markets: Policy

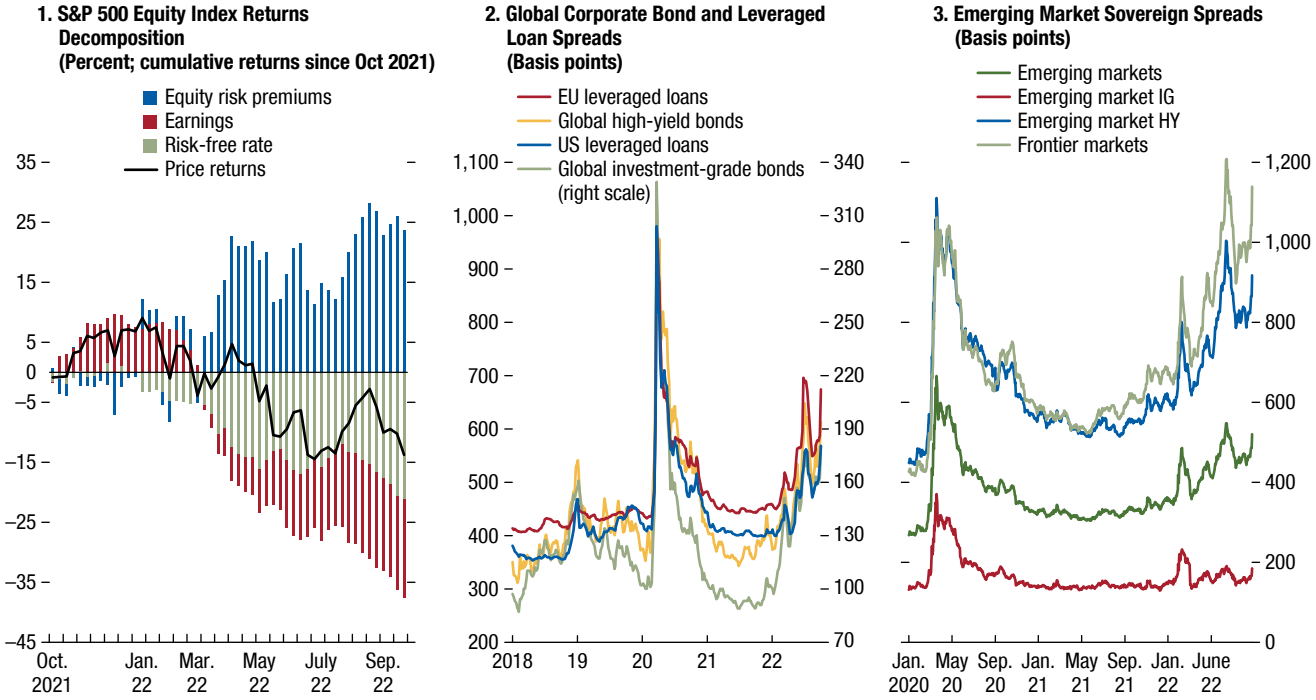
[4]The frontier market classification comprises 43 countries that are included in the J.P. Morgan NEXGEM (Next Generation Markets) index or are low-income countries with international bond issuance that are not part of the index.

Figure 1.4. Markets Have Repriced Economic Risks

Equity returns have been hit by higher interest rates and lower forecast earnings growth ...

... and corporate credit spreads have continued to widen since the April 2022 GFSR.

Emerging market credit spreads have widened sharply on net, with differentiation by rating.



Sources: Bloomberg L.P.; ICE Bond Indices; JPMorgan Chase & Co.; PitchBook Leveraged Commentary and Data; Refinitiv Datastream; and IMF staff calculations.
Note: In panel 1, lower equity risk premiums, lower risk-free rates, and higher earnings contribute positively to stock market returns, and vice versa. EU = European Union; GFSR = *Global Financial Stability Report*; HY = high yield; IG = investment grade; US = United States.

Space Continues to Erode" section).[5] By contrast, for many highly rated investment-grade sovereigns, which generally entered this tightening cycle in a stronger position, spreads have remained within a tight range, widening only modestly, on net, this year.

Large currency depreciations against the US dollar in some jurisdictions, particularly in Europe and Japan, have partly tracked widening interest rate differentials related to the faster pace of rate hikes by the Federal Reserve (Figure 1.5, panel 1) and, in the case of Europe, also mounting concerns about growth prospects.[6] Outside of Latin America, which benefited from proactively raising rates in 2021 and from the earlier rise in commodity prices, emerging market currencies have broadly depreciated this year. They have been pressured by higher rates in the United States and, more recently, increased fears of recession and lower commodity prices (Figure 1.5, panel 2). The ongoing US dollar appreciation presents a challenge for both advanced and emerging central banks. Several have resorted to intervention in the foreign exchange market (Chile, Czech Republic, Indonesia, Japan, Philippines, and Malaysia, among others), or have signaled their readiness to do so, with the objective of limiting currency volatility and the impact on inflation from higher import prices.

European financial markets have shown significant strains, reflecting the unprecedented energy crisis triggered by Russia's war in Ukraine, continued supply chain disruptions, and heightened concerns about the economic outlook.[7] Since the April 2022 GFSR, asset prices have sold off sharply and energy prices have reached record-high levels in the summer as a

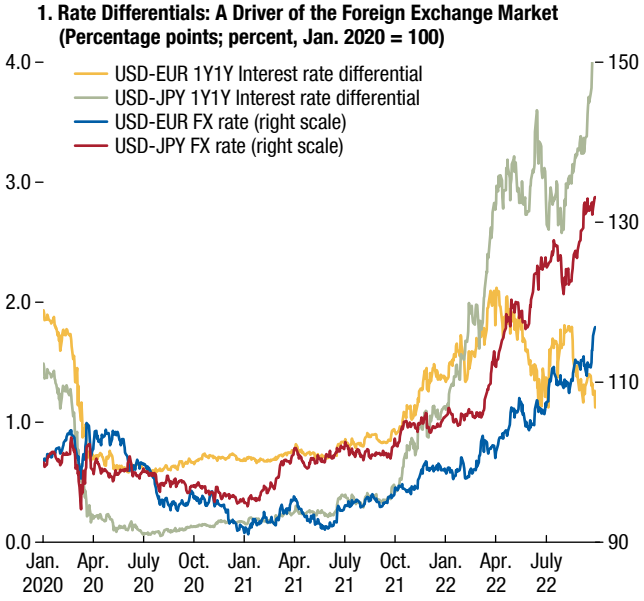
[5]The six countries are Belarus, Lebanon, Sri Lanka, Suriname, Russia, and Zambia. On August 10, 2022, Ukraine's foreign creditors (for example, bondholders) backed its request for a two-year freeze (deferral) on debt service payments.

[6]Japan's worsening external balance is another factor cited by some market participants.

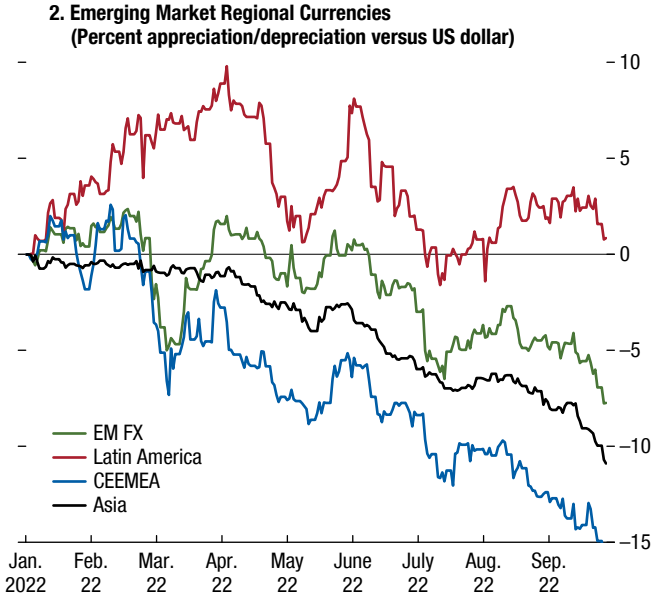
[7]See the "Commodities Special Feature" in Chapter 1 of the October 2022 WEO.

Figure 1.5. Currencies Have Experienced Large Moves in Advanced Economies and Emerging Markets

Interest rate differentials are a key driver of recent depreciation of the euro and the yen.



Emerging market currencies have also depreciated against the US dollar, but with marked regional differences.



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: Panel 2 is the regional median. Asia comprises India, Indonesia, Malaysia, Pakistan, the Philippines, and Thailand. CEEMEA comprises Hungary, Morocco, Poland, Romania, and South Africa. Latin America comprises Brazil, Chile, Colombia, Mexico, and Peru. 1Y1Y = one-year, one-year forward; CEEMEA = central and eastern Europe, Middle East, and Africa; EM = emerging market; EUR = euro; FX = foreign exchange; JPY = Japanese yen; USD = US dollar.

result of disruptions in natural gas supplies from Russia (Figure 1.6, panel 1). The large swings in gas and electricity prices have also raised concerns about the funding conditions and possible cash shortages at some European utility companies. Skyrocketing energy prices and high volatility have led to large margin calls on derivatives positions used by utilities to lock in future electricity price sales. As a result, companies have to post extra collateral to maintain their positions—a development that appears to have contributed to a widening of government bond swap spreads in the euro area (Figure 1.6, panel 1, black line). Concerns over short-term liquidity of energy utilities have prompted several European governments to implement emergency support schemes in the form of short-term liquidity line and loan guarantees, while measures such as freezing energy bills were also implemented to support households and energy-intensive businesses.[8]

In the euro area, with the European Central Bank (ECB) starting to normalize policy, concerns about fragmentation risk have resurfaced, as investors have focused on fiscal vulnerabilities in some member states. Spreads of southern European government bond yields over (similar-maturity) German yields have widened, on net, since April. However, the ECB's active use of its asset reinvestment policy and the announcement of the new "Transmission Protection Instrument" designed to ensure a smooth transmission of monetary policy, have helped so far contain a disorderly widening of spreads (Figure 1.6, panel 2; Box 1.2).

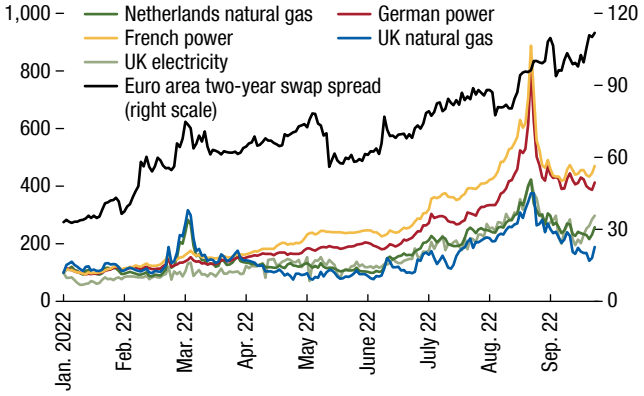
In the UK, investor concerns about the fiscal and inflation outlook after the announcement of large debt-financed tax cuts and fiscal measures to deal with high energy prices weighed heavily on market sentiment in late September. Amid high market volatility, the British pound depreciated abruptly, while yields on UK sovereign bonds rose sharply (Figure 1.6, panels 3 and 4). The scale and speed of yield increases, especially at the long end of the curve, reportedly had a significant impact on levered positions held by UK institutional investors, particularly pension funds. Large mark-to-market losses and associated margin calls raised the specter of pernicious fire sales and

[8]Several European countries have set up new schemes to provide liquidity support for energy companies, including Finland, Germany, Sweden, and the United Kingdom. The United Kingdom also introduced the Energy Price Guarantee to limit energy prices.

Figure 1.6. The European Energy Crisis Is Deepening amid Growing Investor Concerns about Fragmentation Risk in the EU and Fiscal Concerns in the UK

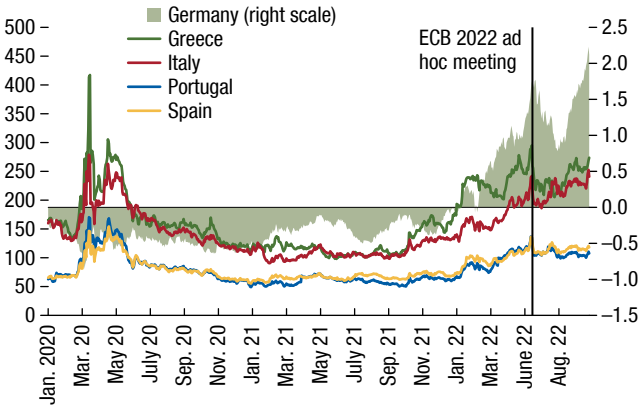
Energy prices in Europe have skyrocketed ...

1. European Energy Prices (One-Year Forward) and Euro Area Swap Spreads
(Index: Jan. 2022 = 100; basis points)



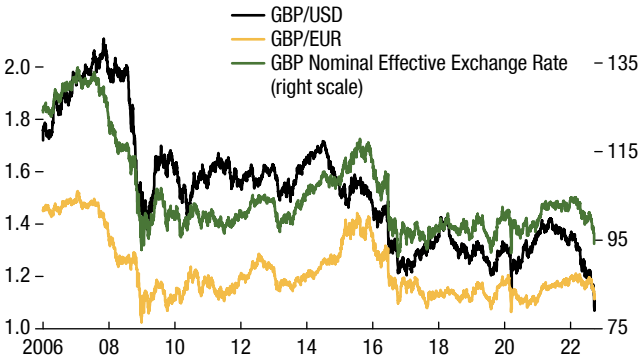
... while investor concerns about fragmentation risk have resurfaced.

2. German 10-Year Yields and Sovereign Spread
(Basis points; percent)



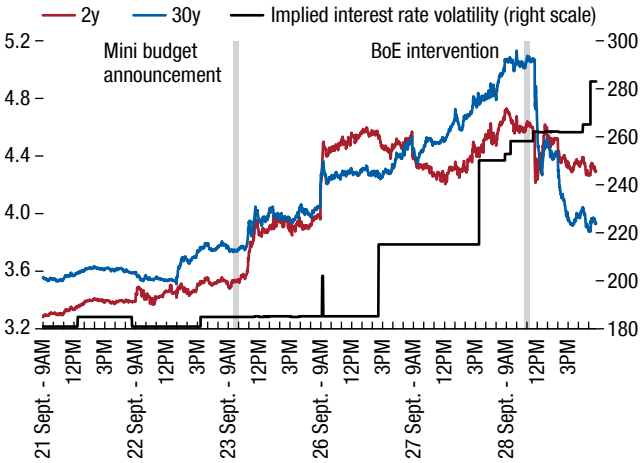
The pound depreciated sharply amid concerns over fiscal deterioration and higher inflation ...

3. The Pound Exchange Rate
(GBP/USD, GBP/EUR; index)



... and yields on UK sovereign debt rose sharply and the curve inverted.

4. UK Gilt Yields
(Percent, basis points)



Sources: Bloomberg Finance L.P.; IMF GDS database; and IMF staff calculations.
Note: In panel 3, swap spread shows the difference between the 2-y swap rate and German bond yield of the same maturity. BoE = Bank of England; ECB = European Central Bank. An effective exchange rate (also known as a trade-weighted exchange rate) is a weighted average of the individual exchange rates of a particular country with its main trading partners. The bilateral exchange rates are weighted according to the importance of each partner country's share of trade with the reporting country. In panel 4, the implied interest rate volatility is the GBP 3 month 10 year swaption implied volatility.

self-fulfilling price dynamics—causing yields to rise further. To prevent dysfunction in the gilt market from posing a material risk to UK financial stability, the Bank of England, in line with its financial stability mandate, announced on September 28 temporary and targeted purchases of long-dated UK government bonds. It also indicated that purchases, scheduled to end on October 14, would be unwound in a smooth and orderly fashion once risks to market functioning were judged to have subsided. In addition, to reiterate that these purchases were made purely on financial stability grounds, the Bank of England noted that it would not hesitate to hike interest rates by as much as needed to achieve its 2 percent target in the medium term. Following the announcement, the British pound appreciated while yields on UK government debt reversed a portion

of their earlier increases, particularly at the long end. Advanced economies' yields also fell in sympathy, in line with the recent elevated correlations. Anticipating that policymakers will have to tighten more to counter the inflationary consequences of the announced fiscal measures, investors have repriced the expected path of UK monetary policy. They now expect the Bank of England to hike the policy rate by about 240 basis points by year end, bringing it to nearly 6 percent in 2023.

With investors aggressively pulling back from risk taking recently as they reassess their economic and policy outlook, there is a danger of a disorderly repricing of risk. In particular, volatility and a sudden tightening in financial conditions could interact with, and be amplified by, preexisting financial vulnerabilities—including those that have emerged since the pandemic. The IMF staff's indicator-based framework shows that balance sheet vulnerabilities are currently most prominent in the sovereign sector (Box 1.1, Figure 1.1.1). In most jurisdictions, the public sector has cushioned some of the impact of the pandemic shock on the balance sheets of households and nonfinancial firms at the cost of deterioration of the fiscal position and a large increase in sovereign debt. In addition, balance sheet vulnerabilities are elevated in the nonbank financial intermediation sector, reflecting high liquidity and maturity transformation—and exposure to credit and duration risk—as well as interconnectivity with the banking sector. In the nonfinancial corporate sector, vulnerabilities have declined as large firms have benefited from easy financing conditions and ample liquidity (especially in the United States), but some sectors and lower-rated firms have started to see a deterioration in conditions and a pickup in credit rating downgrades that could presage a rise in default rates from below-average levels. In the housing sector, vulnerabilities remain elevated in emerging markets and some advanced economies; the house-price-to-income ratio has reached its highest level in two decades in many countries at a time of rising mortgage rates and tighter lending standards (for more details, see the "Housing Markets: At a Tipping Point?" section).

The significant worsening in market liquidity experienced across asset classes is another important source of fragility and potential shock amplifier (see Figure 1.17). Poor market liquidity conditions reflect both fundamental and technical factors (for details, see the "Poor Market Liquidity: A Shock Amplifier" section). Market liquidity has deteriorated even in typically highly liquid markets, such as advanced economy government bond markets, and conditions have become more challenging even in more standardized and exchange-traded products, such as stocks, foreign exchange, and exchange-traded futures.

Against a backdrop of tighter financial conditions and extraordinary uncertainty about the outlook, global economic growth for 2022 has been marked down to 3.2 percent, 0.4 percentage point lower than projected in the April 2022 WEO. As a result, the balance of risks is squarely skewed to the downside, and global financial stability risks have materially worsened since the April 2022 GFSR (Figure 1.7, panel 1). The IMF growth-at-risk framework indicates that downside risks are very high compared to historical norms (Figure 1.7, panel 2). The probability of growth falling below zero is currently about 10 percent for 2022.

Advanced Economies: Central Banks Still Aiming for a Smooth Landing

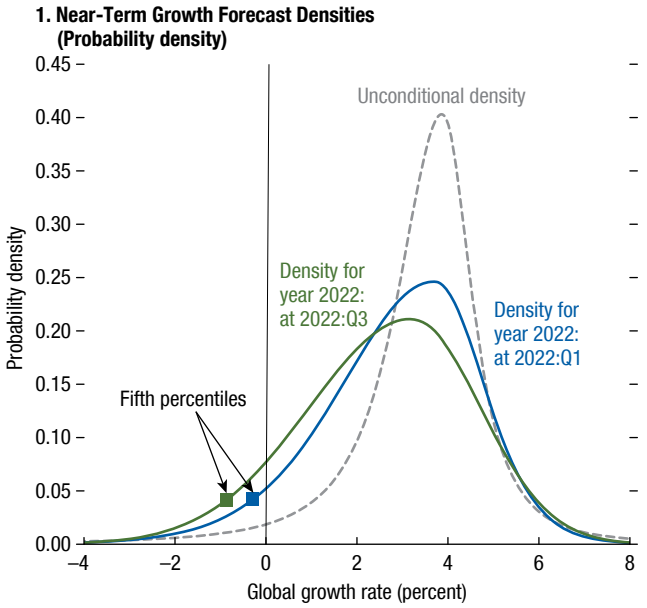
Many central banks in advanced economies have accelerated their pace of tightening since the April 2022 GFSR to prevent inflationary pressures from becoming entrenched and avoid a de-anchoring of inflation expectations. Some have tightened aggressively and may have to continue to do so—possibly even more than currently priced in markets—to bring inflation credibly back to target.

Since the April 2022 GFSR, the Federal Reserve has initiated the process of balance sheet reduction (quantitative tightening) and raised the target range for the federal funds rate by 275 basis points—including three 75 basis point increases, a magnitude not seen since 1994. The ECB has ended its net asset purchases, raised its key policy rates by 125 basis points (after eight years of negative rates on the deposit facility), and designed a new tool to prevent fragmentation in the euro area. The Bank of England also announced that it will reduce its gilts holding held in the Asset Purchase Facility (APF) by 80 billion pounds over the next 12 months.[9] Active sales of gilts via auction, originally

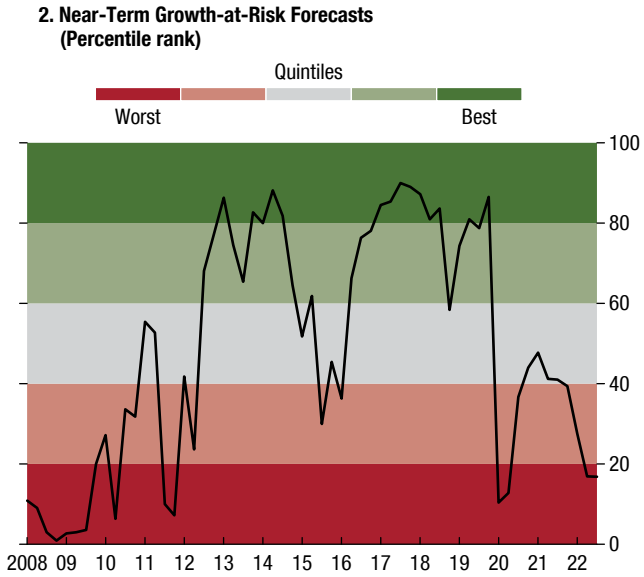
[9]The Bank of England set its gilt sales auction schedule on a quarterly basis. The bank will hold short, medium, and long-term auctions and announced it plans to sell GBP580MM per auction in each of these buckets. See Market Notice setting out the schedule for the gilt sales operations for Q4 2022: https://www.bankofengland.co.uk/markets/market-notices/2022/september/apf-gilt-sales-22-september.

Figure 1.7. Global Growth-at-Risk

Risks to growth are squarely skewed to the downside ...



... and high compared with historical norms.



Sources: Bank for International Settlements; Bloomberg Finance L.P.; Haver Analytics; IMF, International Financial Statistics database; and IMF staff calculations.
Note: Forecast density estimates are centered around the IMF *World Economic Outlook* (WEO) forecasts for 2022, as of 2022:Q1 and 2022:Q3, respectively. The latter reflects the current available estimate of the third quarter forecast for 2022. To gauge downside risks over time, in panel 2, the black line traces the evolution of the 5th percentile threshold (the growth-at-risk metric) of near-term growth forecast densities. The color of the shading depicts the percentile rank for the growth-at-risk metric, from 1991 onward. See the April 2018 *Global Financial Stability Report* for details.

scheduled to commence on October 3, 2022, have been postponed to October 31 following the Bank of England's announcement on September 28 of temporary and targeted purchases of long-dated UK government bonds. Given the uncertain growth and inflation outlook, the Federal Reserve, the ECB, and the Reserve Bank of Australia have indicated that they would no longer provide precise forward policy guidance about the expected path of policy, moving instead to a meeting-by-meeting approach based on incoming data. Several other central banks in advanced economies—including the Bank of England, Bank of Canada, Reserve Bank of New Zealand, and Swiss National Bank—have also taken significant steps toward policy normalization.

Reflecting the more aggressive tightening stance, the near-term market-implied expected path of policy rates has shifted higher in most advanced economies since the April GFSR (Figure 1.8, panel 1). With investors frequently reassessing their economic and policy outlook based on incoming data, medium- and long-term interest rates have been quite volatile, ending the period higher in some countries (Figure 1.8, panel 2). Real yields have risen markedly, driven by a combination of a higher expected path of short-term real rates (as measured by the risk-adjusted real yield) and, to some extent, rising real term premiums.[10] Rising real term premiums point to greater uncertainty about the path of policy and the growth outlook. Meanwhile, inflation breakevens (market-implied proxies for future inflation) have generally declined across tenors. In the euro area and the United Kingdom, after declining midyear, five-year breakevens rose sharply in August as the energy crisis intensified. However, breakevens have come down recently in both regions.

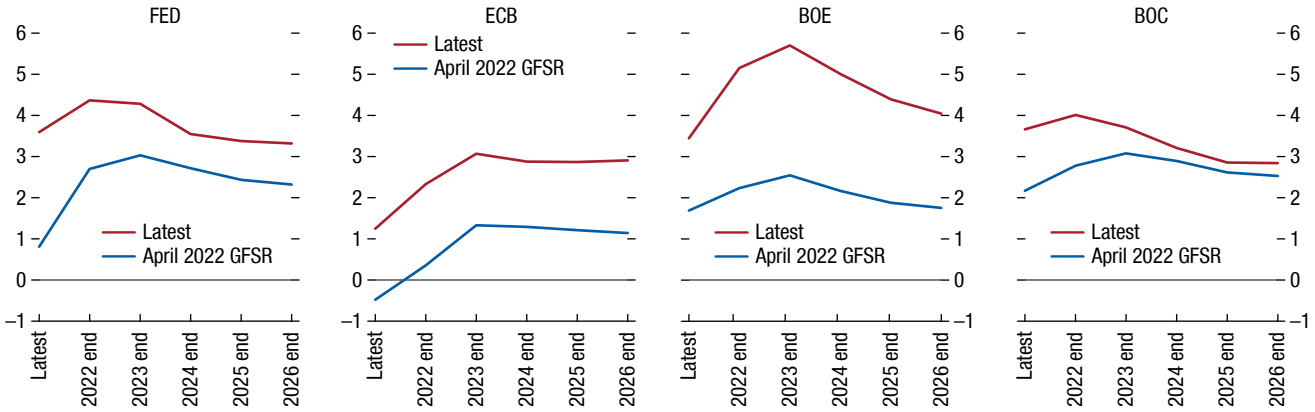
Evidence based on inflation options suggests that investors are assigning significant probability to inflation outcomes being greater than 3 percent in coming years, particularly in the euro area and the United Kingdom (Figure 1.9, panel 1). However, disagreement among investors around the most likely outcomes appears to be more notable than it was at the end of last year. In the case of the United States

[10]For details on the underlying yield-curve-decomposition methodology applied here, see Goel and Malik (2021).

Figure 1.8. Drivers of Advanced Economy Bond Yields

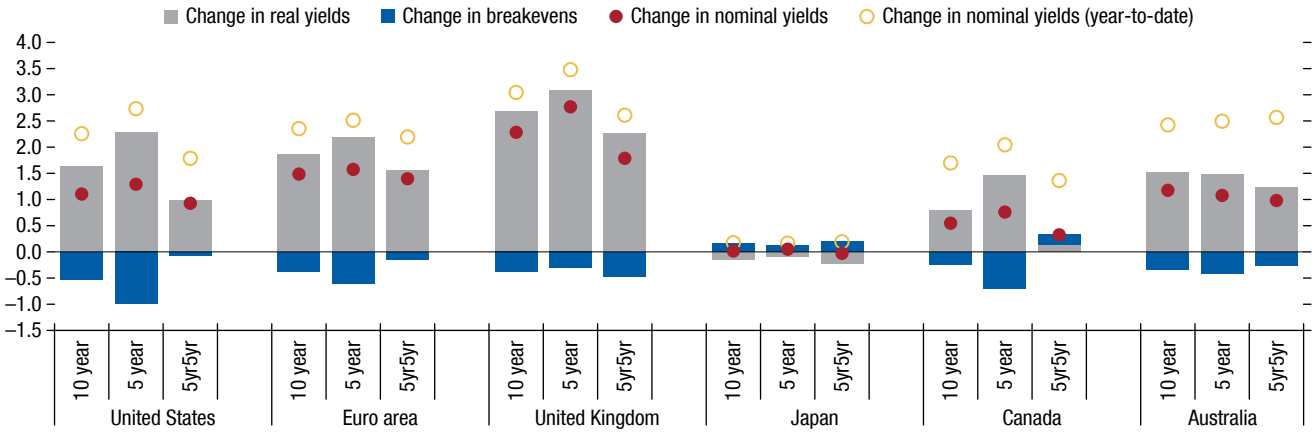
Market-implied expectations of policy rates have risen since the previous GFSR.

1. Policy Rate Expectations: Advanced Economies
(Percent)



Medium- and long-term rates have increased notably, driven by higher yields.

2. Change in Yields since the April 2022 GFSR
(Percentage points)



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: 5yr5yr = five-year, five-year forward; BOC = Bank of Canada; BOE = Bank of England; ECB = European Central Bank; FED = Federal Reserve; GFSR = *Global Financial Stability Report*.

and the euro area, there are now meaningful odds of both low- and high-inflation outcomes—likely a consequence of greater concern about a slowdown in aggregate growth (Figure 1.9).[11]

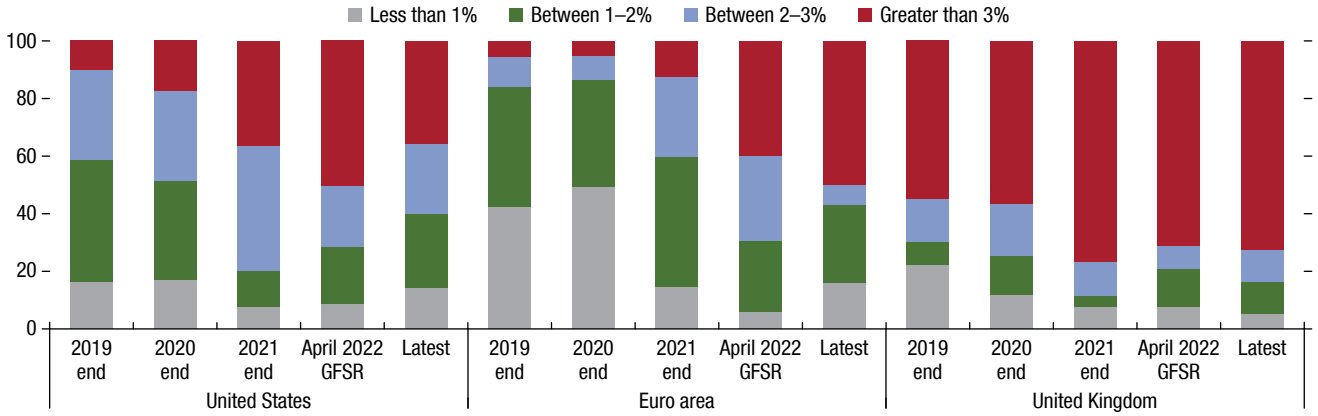
Fears that central banks may be raising policy rates well above neutral levels to tackle inflationary pressures have raised investor concerns about a possible recession in advanced economies. In the United States, for example, the median September 2022 Federal Open Market Committee (FOMC) participant anticipates the federal funds rate to significantly exceed the FOMC projection of the nominal neutral rate over the entire forecast period (Figure 1.10, panel 1). In real terms, the federal funds rate is expected to climb from deeply negative levels in 2022 to more than 150 basis points in 2023, well above the neutral real rate—nearly 300 basis points of real policy tightening (Figure 1.10, panel 2).

[11]In the euro area, survey-based measures suggest that consumers are more concerned about high inflation, pointing to a risk of expectations de-anchoring. See ECB Consumer Expectations Survey and I. Schnabel's speech in Jackson Hole, "Monetary Policy and the Great Volatility," which can be found at https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220827~93f7d07535.en.html.

Figure 1.9. Market-Implied Probability of Future Inflation Outcomes

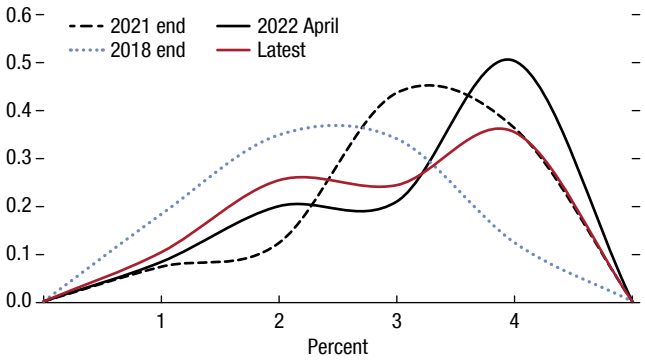
The probability of high-inflation outcomes remains significant, especially in the euro area and UK ...

1. Option-Implied Probability of Various Inflation Outcomes (Percent, over five years)

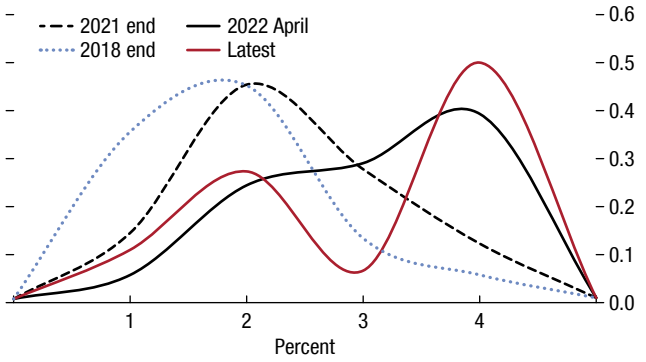


... but with notable disagreement among investors.

2. Option-Implied Probability Distributions of Inflation Outcomes: United States (Probability density)



3. Option-Implied Probability Distributions of Inflation Outcomes: Euro Area (Probability density)



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: "Latest" refers to the time of the October 2022 GFSR. Probabilities in panel 1 are derived from inflation caps and floors. GFSR = *Global Financial Stability Report*.

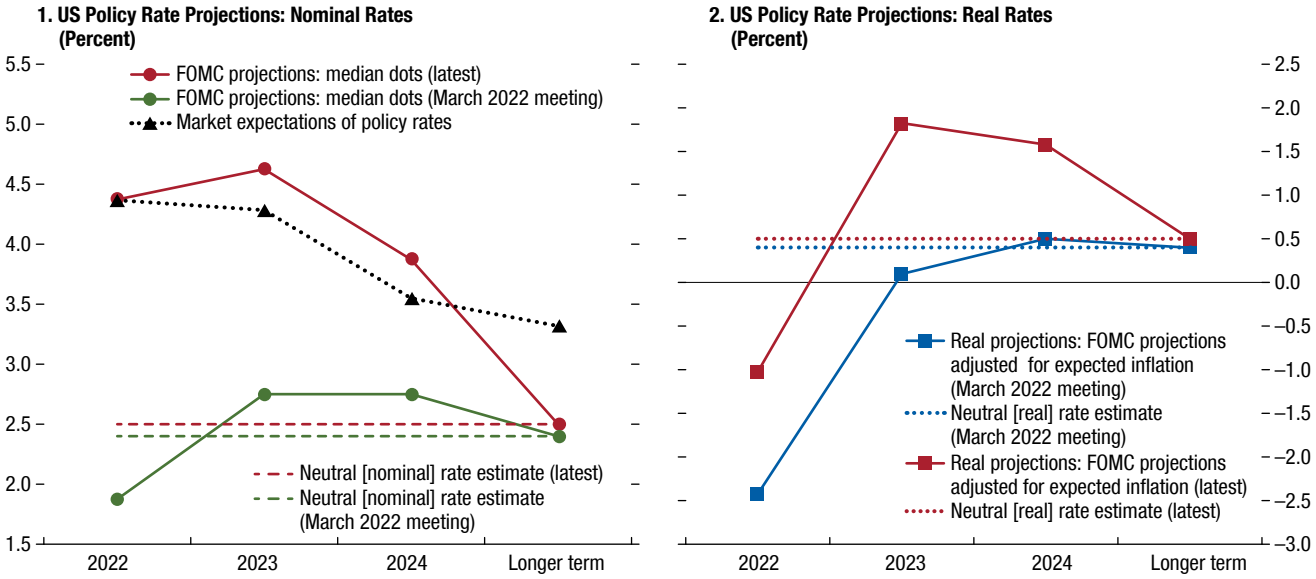
Such recession fears may well be justified based on historical evidence. Every time the Federal Reserve has raised the federal funds rate close to, or above, measures of the neutral nominal rate, the US economy has entered a recession soon thereafter (Figure 1.11). The only exception over the past four decades was the tightening cycle in 1994, perhaps in part because inflation was not excessively high around this period—when considered within a long-term historical context—and because the policy rate was cut within a year following the peak of the tightening cycle (see Box 1.3 for a discussion of how US rates and other financial variables behaved during previous tightening cycles).

Emerging Markets: Policy Space Continues to Erode

Emerging market and frontier market central banks have also continued to tighten monetary policy, but regional differences remain significant. Latin American central banks have been more proactive, hiking policy rates earlier and more aggressively in response to inflationary pressures. Central banks in central and eastern Europe began tightening policy later and at a slower pace initially, contributing to investor concerns about high inflation and weaker regional currencies, although they have subsequently accelerated the hiking cycle. Türkiye is a notable outlier: the central bank

Figure 1.10. Policy Rates versus Neutral Levels

The assessment by the Federal Open Market Committee (FOMC) of appropriate monetary policy has shifted higher, with the federal funds rate expected to possibly exceed the current projection of the neutral rate over the forecast period.



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

has continued to cut rates despite rising inflation and ongoing currency weakness. Reflecting an initially more benign inflation outlook, Asian central banks have started to hike rates only recently and more modestly relative to their emerging market peers. Markets are pricing in an end to rate hikes in most countries by the end of this year or early next year (excluding Asia) and substantial rate cuts by some emerging market central banks in 2023 (Figure 1.12, panel 1).

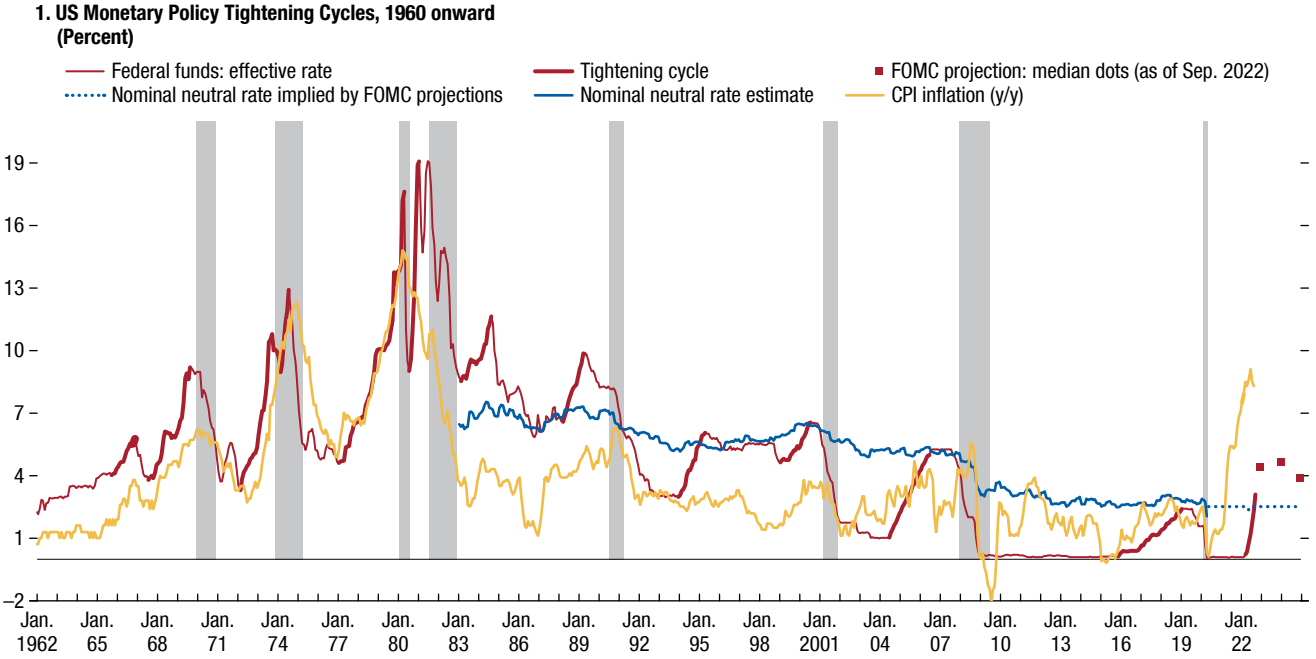
Conditions in local currency bond markets have worsened materially in many emerging and frontier markets, reflecting concerns about the macroeconomic outlook and policy credibility, as well as deterioration in the fiscal position since the pandemic. Sovereign bond term premiums have increased sharply, especially for central and eastern Europe (Figure 1.12, panel 2). Term premiums tend to rise when domestic central banks tighten, but the size and speed of increases in some markets have taken investors by surprise, especially as US term premiums have been relatively stable. Volatility in local bond market yields has also risen globally and has approached peak historical levels in some emerging markets (Figure 1.12, panel 3). Tensions in domestic bond markets are likely to persist, especially as rising US real policy rates compress rate differentials and pressure emerging market central banks (Figure 1.12, panel 4). Expected policy easing may be difficult to deliver if advanced economy central banks hike rates more than expected or keep policy rates higher for longer.

Tight Conditions Are Squeezing the Most Vulnerable Emerging Markets

Emerging markets face a multitude of risks stemming from high external borrowing costs, stubbornly high inflation, volatile commodity markets, heightened uncertainty about the global economic outlook and the war in Ukraine, and pressures from policy tightening in advanced economies. So far, investors have continued to differentiate across emerging market economies; unlike in previous crisis episodes, many of the largest emerging markets seem to be more resilient to external vulnerabilities and classic balance of payments shocks. Many frontier markets, however, are facing potential loss of market access and a high probability of sovereign default, and more than half of all low-income countries are judged by the IMF to be already in, or to have a high probability of entering, debt distress.

Figure 1.11. Monetary Policy Tightening and Recessions: A 60-Year Record

Historically, each time the Federal Reserve has raised the federal funds rate close to, or above, the neutral nominal rate, the US economy has entered a recession soon thereafter.



Sources: Bloomberg Finance L.P.; Federal Reserve; US Bureau of Labor Statistics; and IMF staff calculations.
Note: Measurement of the neutral rate is subject to uncertainty, with different approaches proposed in the literature; see for example, Aronovich and Meldrum (2020, 2021), Kiley (2020), Del Negro and others (2017), and Johannsen and Mertens (2016). The nominal neutral rate estimate shown here is constructed based on the real neutral rate measure proposed by Holston, Laubach, and Williams (2017), in which the former is equal to the real neutral rate plus inflation expectations. The inflation expectations series used here—corresponding to the five-year, five-year forward horizon—is published by the Federal Reserve Board going back to the mid-1980s and is based on the model by D'Amico, Kim, and Wei (2018). Gray shaded areas indicate National Bureau of Economic Research recession periods. Consumer price inflation (CPI) corresponds to headline inflation (urban consumers). FOMC = Federal Open Market Committee; y/y = year over year.

In addition, there is a growing risk that authorities in advanced economies will respond to concerns about supply chain vulnerabilities by adopting more inward-looking policies. A disorderly restructuring of global supply chains—involving higher trade barriers and increased uncertainty about trade policy—would undermine a key engine of growth for emerging markets, amplify macroeconomic and capital flow volatility, and reduce emerging markets' access to international capital markets.[12]

Local currency bond markets have seen large net *portfolio outflows* from nonresident investors this year, reflecting continuing pessimism about the outlook for emerging market sovereign bonds. Despite a modest rebound in August, sentiment appeared to deteriorate again in September. Equity flows are down moderately for 2022 on net, with India in particular partially reversing some of the large outflows seen in previous months in August (Figure 1.13, panel 1). In China, investors withdrew about $75 billion from local currency bonds between February and August 2022, including nearly 15 percent of foreign holdings of government bonds, but still a small share of the overall bond market.[13] The compression of yield differentials, largely due to diverging monetary policy, has likely been the primary driver of outflows from China, although the rise of benchmark-driven investors may also be playing a supporting role.[14] Taking a longer view, nonresident portfolio flows into local currency debt for emerging markets excluding China have been stagnant in recent years, a trend

[12]See Gopinath (2022).

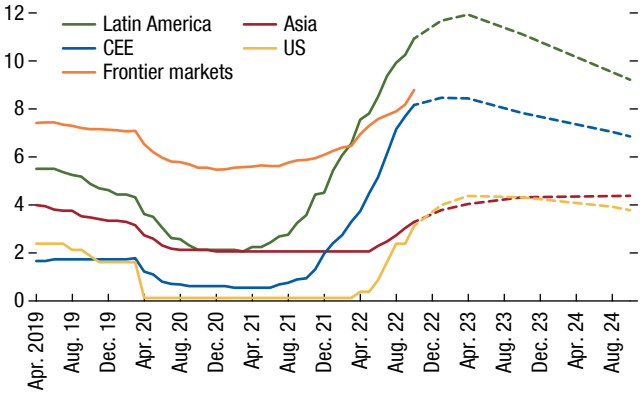
[13]This figure includes Chinese government bonds, policy bank bonds, corporate and bank bonds, and asset-backed securities, though foreign holdings are primarily concentrated in government and policy bank bonds.

[14]Arslanalp and others (2020).

Figure 1.12. Monetary Policy Outlook and Local Bond Markets in Emerging Markets

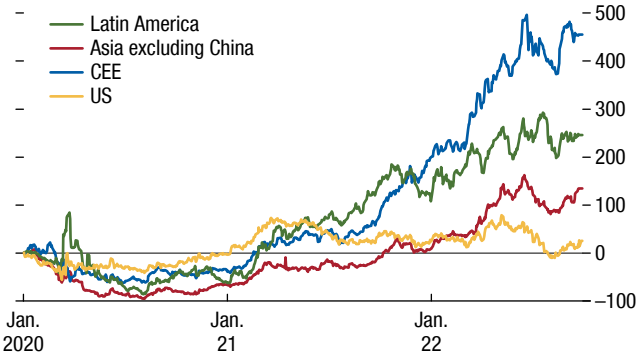
Market pricing suggests differences in tightening cycles across emerging markets will persist ...

1. Historical and Market-Implied Policy Rates across Regions (Percent)



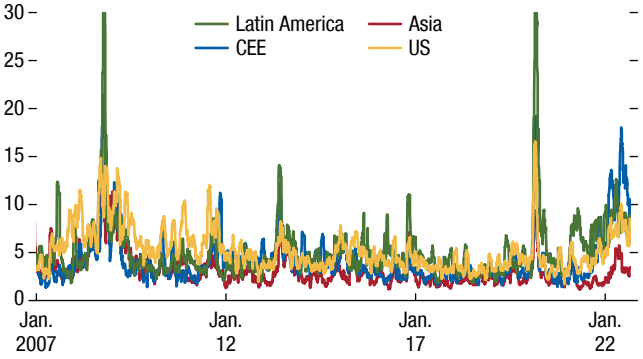
... while term premiums have increased sharply in some regions.

2. Change in Five-Year Term Premiums since January 2020 (Basis points)



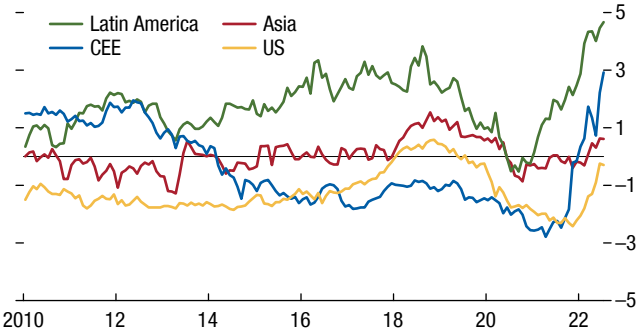
Local bond markets in some countries have been unusually volatile ...

3. Standard Deviation of 20-Day Moving Average in Emerging Market Local Yields (Basis points)



... particularly as rapidly rising US real rates put pressure on emerging market markets to respond.

4. Short-Term Real Rates (Ex ante one-year rates, percent)



Sources: Bloomberg Finance L.P.; BNP Paribas; Consensus Forecasts; and IMF staff calculations.
Note: Panel 3 uses local currency yields from the JPMorgan Government Bond Index–Emerging Markets (GBI-EM) for emerging markets and the 10-year US Treasury yield for the United States. In panel 4, the ex ante median rate in a region is calculated as the one-year-ahead forward rate minus the Bloomberg consensus for inflation in the year ahead. CEE = central and eastern Europe; US = United States.

exacerbated by the COVID-19 shock (Figure 1.13, panel 2).[15] Recent outflows account for only a relatively small fraction of accumulated inflows over the past decade.

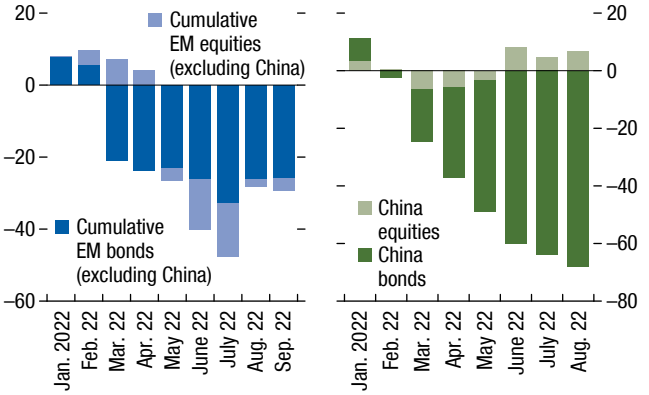
Regarding *investment fund* flows, bond funds dedicated to emerging markets (hard and local currency combined) have seen record dollar outflows of over $60 billion[16] through late-September 2022, nearly 10 percent of assets under management (Figure 1.13, panel 3).[17] However, when measured on an assets under management-adjusted basis, these outflows have still been lower than during past episodes of distress such as the 2013 taper tantrum episode. China-dedicated funds also account for a significantly larger share of the asset class in 2022 compared to

[15]The sample comprises 24 emerging markets excluding China.
[16]This figure relies only on weekly reported fund data from EPFR.
[17]Portfolio flows represent cross-border transactions in local markets. By contrast, fund flows capture retail and institutional investors buying and selling hard and local currency funds focused on emerging markets, which gives an indication of market demand but may or may not have implications for the capital account. Fund flow data also include some domestically domiciled local currency funds.

Figure 1.13. Emerging Market Portfolio Flows, New Issues, and Market Pricing

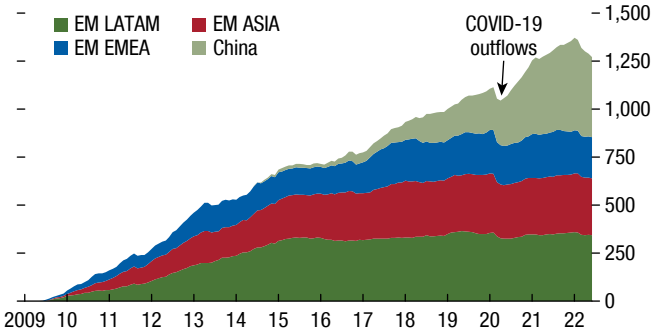
Local currency bond outflows have been substantial in 2022, while equity outflows have been modest.

1. Local Currency Bond and Equity Flows
(Cumulative, billions of US dollars, monthly)



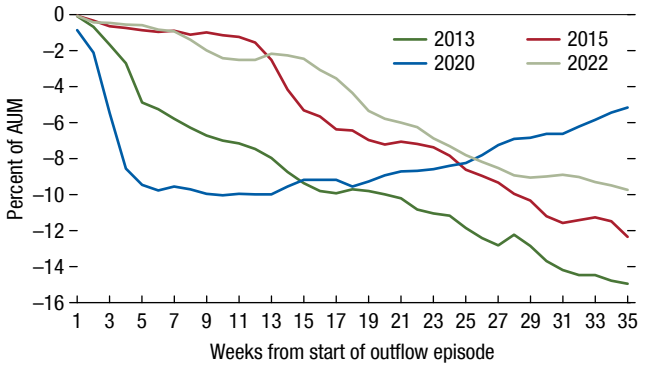
Recent outflows have been relatively small compared to the overall stock of foreign holdings.

2. Cumulative Flows to Local Currency Bond Markets by Region
(Billions of US dollars)



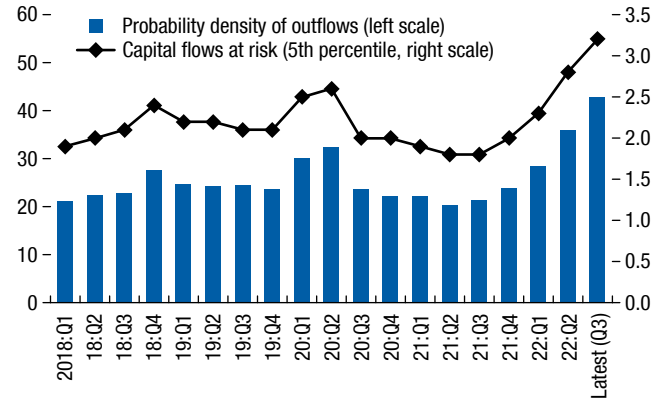
Bond funds dedicated to emerging markets have seen large outflows reach nearly 10 percent of assets under management, which still compares somewhat favorably to the draw-downs in 2013 and 2015.

3. Emerging Market Bond Fund Flow Episodes
(Percent of AUM, by cycle)



Capital flows at risk have deteriorated since April 2022 amid persistent dollar strength, with over a 40 percent implied probability of outflows.

4. Capital Flows at Risk
(Probability density, percent, left scale; 5th percentile, percent of GDP, right scale)



Sources: Bloomberg Finance L.P.; EPFR; national sources; and IMF staff calculations.
Note: Panel 1 includes primarily local currency government bonds. Chinese data includes primarily government and policy bank bonds, as well as some corporate, bank, and asset backed securities. Panel 3 refers only to weekly reported fund data from EPFR. Chinese figures are Chinese government and policy bank bonds. AUM = assets under management; EM = emerging market; EMEA = Europe, Middle East, and Africa; LATAM = Latin America and the Caribbean.

previous years and have had relatively greater outflows so far this year.

Fixed-income liquidity has been particularly challenging in emerging and frontier markets. Market participants have reported that these conditions are driven primarily by high economic and policy uncertainty, as well as by the large number of deeply discounted sovereign debt issuances where liquidity is typically poor. Liquidity in the emerging market credit default swap index of major sovereigns has apparently been an exception: investors have reportedly been using these instruments to adjust their aggregate exposure when individual bonds are difficult to source at scale.

Issuance of sovereign hard currency bonds has deteriorated to its slowest pace since 2015 so far this year. From January through September 2022, the volume of sovereign new issues declined 54 percent year over year, to $68 billion, with substantial issuance concessions (that is, premiums higher than those on existing benchmark bonds), even for higher-rated issuers.

The weighted-average maturity of new issuance has declined, with only 18 percent of bonds issued at maturities of more than 15 years—the lowest since 2013. Corporate nonfinancial bond issuance declined to just under $60 billion over the same period, down 75 percent year over year. Issuance conditions continued to be very challenging in September in what is normally a busy month.

Downside risks to portfolio flows remain elevated compared to historical norms amid persistent dollar strength, market volatility, and heightened uncertainty about the economic and political outlook. IMF staff analysis, based on the capital-flows-at-risk methodology (see the April 2020 GFSR), suggests that the probability of outflows over the next three quarters (including the current quarter) has risen to over 40 percent, up from 30 percent in the April 2022 GFSR (see Figure 1.13, panel 4). Capital flows at risk, defined as the lowest fifth percentile of the forward-looking distribution for capital flows, have increased to 3.2 percent of GDP for emerging markets.

Emerging and frontier markets face heightened fiscal vulnerabilities and uncertain growth prospects, leaving many countries exposed to renewed market volatility. Inflation has risen to multiyear highs and is anticipated to remain elevated into 2023, contributing to ongoing policy and economic challenges. While fundamentals have improved since the depth of the COVID-19 shock, budget deficits remain at the upper end of historical ranges, growth is slowing heading into 2023, and a rapid return to pre-pandemic debt dynamics could be difficult. Current account deficits also have widened sharply in several emerging and frontier markets, though the effects of higher oil prices and divergent recoveries on external balances continue to be heterogenous (Figure 1.14, panel 1).

Public debt burdens have increased markedly across most emerging and frontier markets in recent years, eroding necessary fiscal buffers to mitigate new shocks and pushing up refinancing risks. On average, the ratio of public debt to GDP in emerging markets has increased from 36 percent in 2012 to over 60 percent in 2022. However, the features of this increased vulnerability vary considerably by country type. Frontier markets have relied more on foreign currency borrowing, making them more directly susceptible to tightening financial conditions in advanced economies. By contrast, many larger and more developed emerging markets have been able to shift toward increased local currency financing, particularly in recent years (Figure 1.14, panel 2). A developed local currency bond market can help mitigate currency risk, often a source of distress in emerging market crises; facilitate stronger fiscal capacity; and support effective monetary policy transmission (IMF 2021).

Foreign reserves buffers are generally healthy in most emerging markets, having increased substantially from the lows seen during previous periods of emerging market distress (Figure 1.14, panel 3).[18] However, a vulnerable tail persists, with the 25th percentile of countries remaining well below the recommended level of reserves adequacy. While weak reserves buffers are more prominent among frontier markets, a few larger and more developed emerging markets have seen reserves come under pressure recently.

Against this backdrop, external funding conditions are now extremely challenging for many lower-rated issuers and, under a severe downside scenario, debt distress could spread to more countries. IMF staff analysis based on historical sensitivities suggests that, should global financial conditions tighten sharply from current levels, the number of distressed sovereigns (with spreads of more than 1,000 basis points) could rise from 20 to 31.[19] Moreover, over 40 countries (including half the countries in the emerging market bond index) would have spreads exceeding 700 basis points, a level at which issuance has been very challenging historically. Given that most frontier markets started issuing foreign-exchange-denominated bonds only after 2010, they have limited experience with rolling over maturities in adverse market conditions. However systemic risks are limited, as even in the stress scenario distressed issuers would account for only 20 percent of the benchmark emerging market bond index (based on market capitalization) and barely 5 percent of global GDP. Spreads would remain below 600 basis points for more than 60 percent of the index, illustrating the bifurcated nature of the asset class (Figure 1.14, panel 4).

Importantly, the rise in local currency issuance in more developed emerging markets has been largely

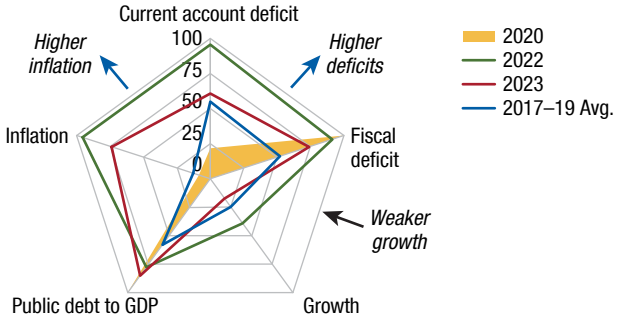
[18]Reserves are measured by the IMF's Assessing Reserve Adequacy metric.

[19]The downside shock includes a 200 basis point shock to US BBB spreads and reflects historical sensitivities of emerging market credit spreads estimated in the asset valuation model presented in the October 2019 GFSR. Index weights are based on the JPMorgan EMBI Global Diversified Index.

Figure 1.14. Emerging Market Vulnerabilities

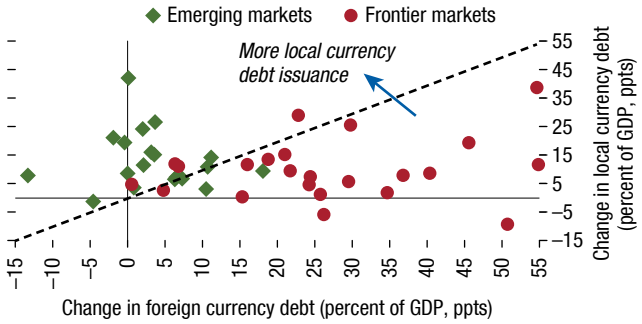
Weak growth and high fiscal deficits could pose headwinds for emerging market financial assets.

1. Macroeconomic Indicators
(Percentile rank since 2000 of EM median, by year)



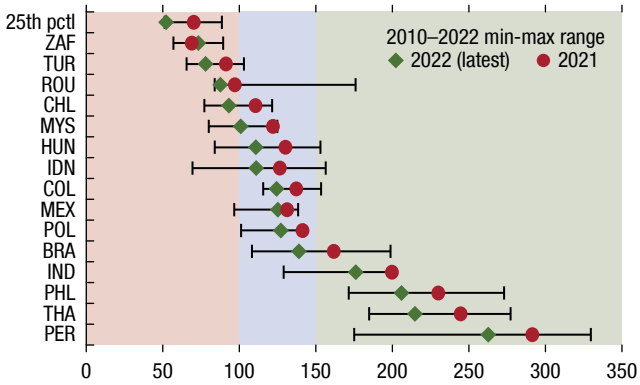
Larger emerging markets have been able to issue more local currency debt, while frontier markets have relied more on foreign currency debt.

2. Change in Public Debt by Currency, 2012–22
(Percentage points of GDP)



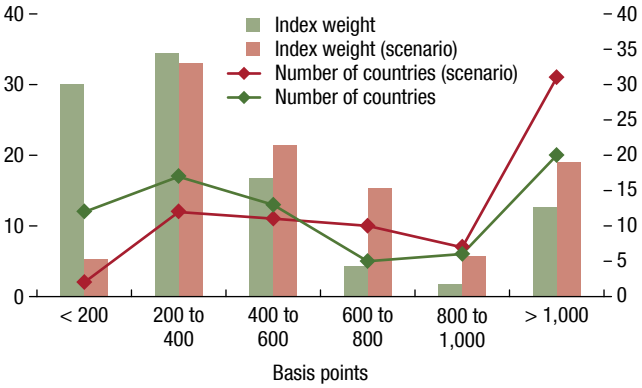
While reserves appear generally healthy, buffers have eroded and a weak tail of countries persists.

3. Reserve Adequacy: Reserves as a Share of the IMF's Assessing Reserve Adequacy Metric
(Percent, 2010–22 range)



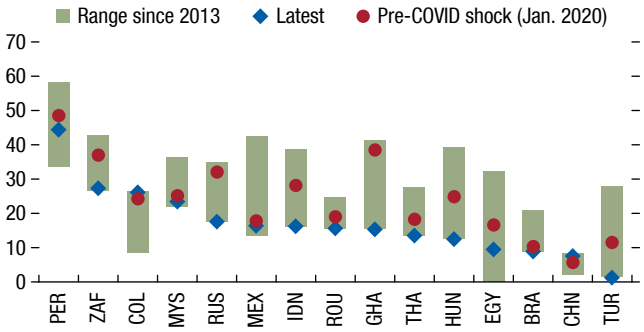
In these circumstances, many frontier markets face poor prospects for market access, with the potential for debt distress to spread if conditions worsen.

4. Emerging Market Sovereign Bond Spreads, Distribution and Downside Scenario
(Index weight, left scale; number of countries, right scale)



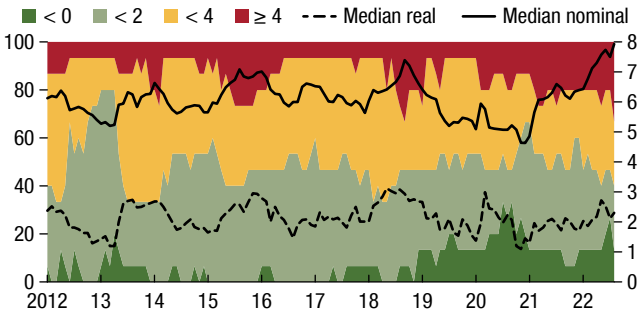
Foreign participation in local currency debt markets has declined, providing some insulation from shifts in external risk sentiment.

5. Foreign Share of Local Currency Debt
(Percent share)



Domestic local currency yields have surged to the highest in a decade, but adjusted for inflation, the rise appears more manageable.

6. Local Currency Yields, Adjusted by One-Year-Ahead Inflation Expectations, Distribution
(Share of countries by yield, median)



Sources: Bloomberg Finance, L.P.; Bondradar; EPFR; JPMorgan Chase & Co.; national sources; IMF, World Economic Outlook database; and IMF staff calculations.
Note: Panel 1 comprises 80 emerging market and developing economies. In panel 3, reserves in the range of 100–150 percent of the ARA metric are considered broadly adequate for precautionary purposes, though country specific considerations may apply. Panel 3 is based on 10-year zero coupon yields. In panels 3 and 5, data labels use International Organization for Standardization (ISO) country codes. EMs = emerging markets; pctl = percentile; ppts = percentage points.

absorbed by domestic investors as banks and nonbank financial institutions have taken on an increased financing burden. This has been particularly true since the COVID-19 shock, as most local currency debt markets did not experience the surge of inflows seen ahead of past episodes of emerging market stress (for example, 2013, 2015), providing some resilience against the confluence of shocks in 2022.[20] Continuing a trend evident since the mid-2010s, the nonresident share of local debt has declined in several large emerging markets by at least 10 percentage points since January 2020 (Figure 1.14, panel 5).

While exposure to external investors has declined somewhat and has been a source of resilience, the financing burden has shifted to the domestic market, with the sovereign bank nexus emerging as a key vulnerability (see Chapter 2 of the April 2022 GFSR). However, while nominal rates have risen sharply to the highest in a decade, on a real basis financing costs appear more manageable for core emerging markets despite a material rise over the past year (Figure 1.14, panel 6).

Many Frontier Markets Could Face Defaults and Difficult Restructuring

Challenges facing frontier markets are driven by a combination of tightening financial conditions, deteriorating fundamentals, and high exposure to commodity price volatility. The median debt-to-GDP ratio for frontier markets has nearly doubled since 2010, although it is expected to decline somewhat in 2022. Interest expenses on government debt have continued to rise, increasing immediate liquidity pressures and potentially negative policy consequences, such as crowding out of public investment. Credible medium-term fiscal consolidation plans are paramount to easing domestic refinancing costs and restoring international market access (Figure 1.15, panel 1). Despite the midyear drop on rising fears of recession, commodity prices (in particular for oil and metals) remain higher than pre-pandemic levels. While this has further weakened the macroeconomic outlook for importers, many frontier markets are commodity exporters and have benefited from higher prices. Conversely, the rise in global food prices is adding to vulnerabilities in frontier markets by increasing the policy trade-offs: higher inflation calls for tighter monetary policy, but supporting the most vulnerable would require additional fiscal space or expenditure reprioritization.

In an environment of poor fundamentals and lack of investor risk appetite, defaults may follow. Frontier issuance has dropped sharply in 2022, with total volume down 75 percent through September and only three issuances since early April (Figure 1.15, panel 2). Market access for frontier markets has deteriorated sharply just as rollover needs are set to increase substantially in the next two to three years. Over 40 percent of frontier bonds maturing through 2025 are trading at distressed spreads (above 1,000 basis points), and close to 80 percent are trading at spreads of more than 700 basis points (Figure 1.15, panel 3). Without a substantial improvement in market conditions, many of these issuers may have to seek alternatives such as new bilateral or multilateral financing, including IMF-supported programs, or debt reprofiling and restructuring, in addition to structural reforms to improve fiscal balances.

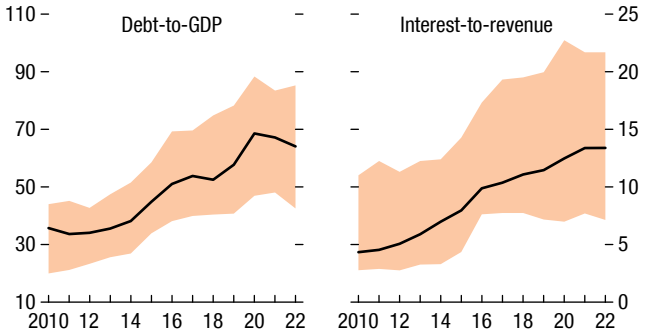
If frontier markets end up in default, an increasingly complex creditor base, combined with gaps in the international architecture for resolving sovereign debt, could lead to long and difficult debt negotiations among a wide variety of creditors, further delaying market access and raising the costs of financial distress (IMF 2020). Even in the absence of outright default, a prolonged period of high borrowing rates could lead to heightened policy uncertainty and debt overhang for years to come. Frontier markets have increasingly come to rely on private sector creditors (Eurobonds and syndicated loans), and the number of their bilateral and multilateral creditors has also increased. Several countries that have traded at distressed levels in recent months, or that are already in default, owe more than one-third of their external debt to the private sector (Figure 1.15, panel 4). Of the four frontier markets currently in default (Belarus, Sri Lanka, Suriname, Zambia), both Suriname and Zambia have been in protracted negotiations, with discussions complicated by the wide variety of creditors, commodity price volatility, and large uncertainties regarding future government revenues. The recent default in Sri Lanka, which has triggered popular unrest, could face similar challenges. In theory, some of these reprofilings and restructurings could be

[20]Cumulative inflows into local currency bond markets from January 2020 to March 2022 were less than 0.5 percent of GDP, in contrast to the 2.8 percent of GDP and 1.9 percent of GDP seen in the runup to the 2013 taper tantrum and the 2015–16 Federal Reserve hiking cycle, respectively.

Figure 1.15. Frontier Market Access and Debt Vulnerabilities

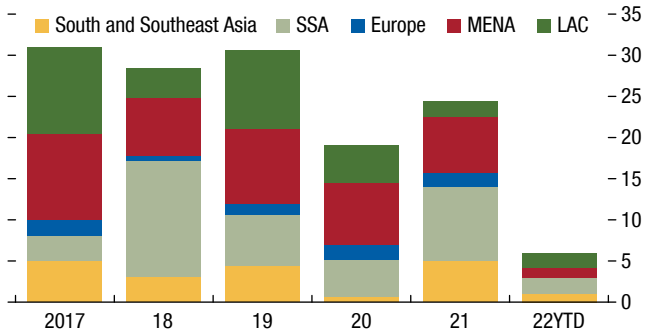
Frontier market debt and debt servicing burdens have approximately doubled since 2010.

1. Frontier Debt-to-GDP and Interest-to-Revenue Ratios (Percent, interquartile range)



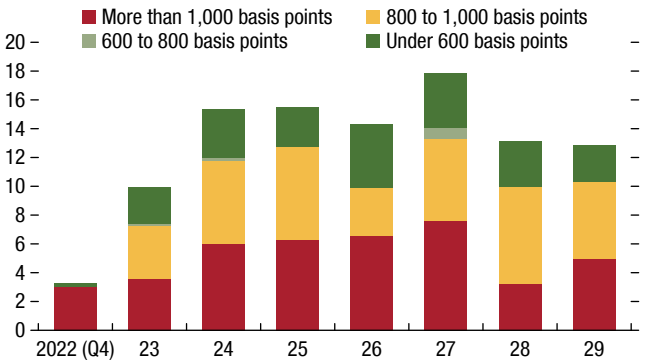
Market access has dropped sharply this year as financial conditions have tightened.

2. Frontier Market International Sovereign Hard Currency Issuance by Region (Billions of US dollars)



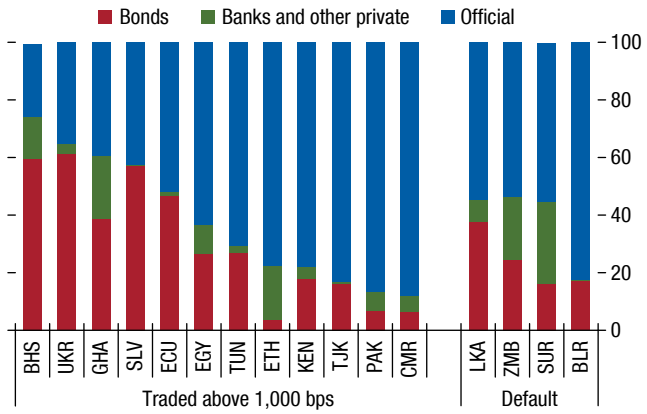
Frontier markets face significant bond maturities in 2023–25, which will be hard to roll over at current spreads.

3. Hard Currency Bond Maturities and Spreads (Billions of US dollars)



External debt to private creditors accounts for more than one-third of external debt for many issuers that have traded at distressed levels this year.

4. Public External Debt Composition by Spreads, 2020 (Percent)



Sources: IMF, World Economic Outlook database; JPMorgan; World Bank, International Debt Statistics; and IMF staff calculations.
Note: In panel 4, data primarily refer to public and publicly guaranteed external debt from the World Bank international Debt Statistics where available, as of 2020, or World Bank Quarterly External Debt Statistics in instances where not available. Official debt is debt owed to bilateral and multilateral creditors. Zambia's external debt numbers comprise only foreign-currency-denominated debt. In August 2022, Ukraine's foreign creditors (for example, bondholders) backed its request for a two-year freeze (deferral) on debt service payments. Ukraine is not classified as a frontier market elsewhere. The grouping of >1,000 bps comprises those that have traded above 1,000 bps for an extended period at some point in 2022. In panel 4, data labels use International Organization for Standardization (ISO) country codes. bps = basis points; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SSA = sub-Saharan Africa; YTD = year to date.

facilitated by the Group of Twenty (G20) Common Framework for eligible countries, but only three countries have requested to do so (Chad, Ethiopia, Zambia), and despite some progress no restructuring has yet been completed.[21]

[21]Sixty-nine low-income countries are eligible for the G20 Common Framework, for which an IMF-supported program is a precondition. Sri Lanka and Suriname are not.

In addition to the risks facing emerging and frontier economies with market access, a record number of low-income countries—most of which are largely dependent on official sector financing—are facing extremely precarious debt situations. These fragile countries, which already had limited fiscal and monetary policy room before the pandemic, have been weakened further by recent events. Current account deficits and reserves positions have generally worsened,

though some have benefited from the commodity rally, and inflation has increased (in many cases due to exchange rate depreciation). According to the IMF's debt sustainability analyses, eight low-income countries are in debt distress and 30 are at high risk of distress (out of 69 countries considered low-income countries—among which, there are some frontier markets).[22] While the G20 Debt Service Suspension Initiative and other multilateral initiatives, such as the allocation of additional IMF special drawing rights to supplement member countries' official reserves, gave low-income countries temporary breathing room during the pandemic, debt service obligations have now resumed, and prospects for significant additional grants or concessional financing may fade.

China: Housing Risks Could Spread to the Banking Sector

The property sector downturn in China has deepened since the April 2022 GFSR because of a sharp decline in home sales during lockdowns that increased liquidity stress for property developers. In China, presale transactions—purchases of properties not yet built—have accounted for about 90 percent of total home sales in recent years, making presale receipts a major source of funding for developers (Figure 1.16, panel 1, black line). As access to market financing becomes increasingly difficult and presale receipts plummet, property developers face self-reinforcing liquidity pressure, which in turn diminishes their ability to complete ongoing construction. The recent call from home buyers to suspend mortgage payments for stalled presold properties has raised concern about the impact on financial institutions, putting downward pressure on equity prices of Chinese banks (Figure 1.16, panel 2). If unfinished housing is never completed and ends up in default, recovery values on these properties could be near zero, with significant negative implications for bank capital levels.

The acute liquidity stress raises concerns about broader solvency risks for developers. After building up leverage in recent years to raise turnover and expand inventories, a growing number of property developers have defaulted on their debt. These liquidity strains have been amplified by local governments' tighter control over presale receipts in escrow accounts, in efforts to ensure the completion of presold properties. The continued decline in property prices has weighed on the value of inventories, amplifying developers' solvency pressure (Figure 1.16, panel 3). At prevailing market conditions, IMF staff analysis shows that 45 percent of property developers by assets might not be able to cover their debt obligations with earnings, and 20 percent of developers by assets could become insolvent if their inventory value is adjusted to current property prices. Delays in addressing the liquidity stress in the sector could further erode market confidence and suppress future earnings as well as access to credit. Offshore real estate bond prices have dropped sharply, suggesting that debt restructuring may be inevitable for a large share of the sector (Figure 1.16, panel 4). About 70 percent of offshore bonds trade at 40 cents on the dollar or less.

Property developer failures could spill over into the banking sector, affecting some vulnerable small banks and domestic systemically important banks in light of their lower capital buffers and higher property-related concentration risk. Local banks in certain areas—for example, where the stock of unfinished housing is large and local public finances are weak—could face sizable property-related credit losses. Overall, the banking sector's exposure to the property sector is large, with 8 percent of total lending to property developers and another 20 percent to mortgage borrowers.

IMF staff analysis shows that a shock resulting both from property developer defaults and homebuyer boycotts of mortgage payments would have a significant impact on bank balance sheets. Under a scenario in which 10 percent of the exposures to distressed property developers and 10 percent of the mortgage exposures related to unfinished properties become nonperforming loans with very low recovery values, 15 percent of banks in the sample, representing 10 percent of total banking system assets, would fail to meet minimum capital requirements.[23] The weak tail consists mostly of small banks and some domestic systemically important banks. Large banks, including all

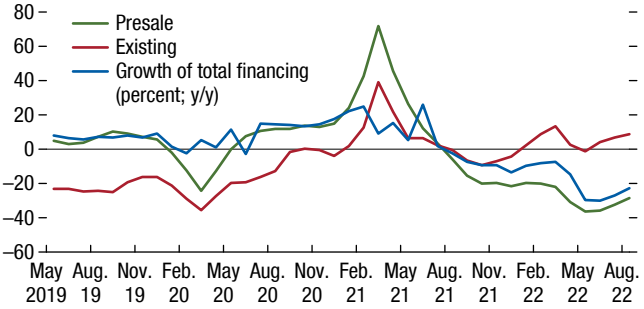
[22]See https://www.imf.org/external/Pubs/ft/dsa/DSAlist.pdf.

[23]The assumption for distressed property developers is based on available disclosures by banks assessing their own credit risk. The extent of mortgages affected by the boycott or related to the troubled unfinished housing is unknown. The analysis is meant to gauge the downside risks to financial stability if mortgage suspension becomes more pervasive.

Figure 1.16. China: Property Sector

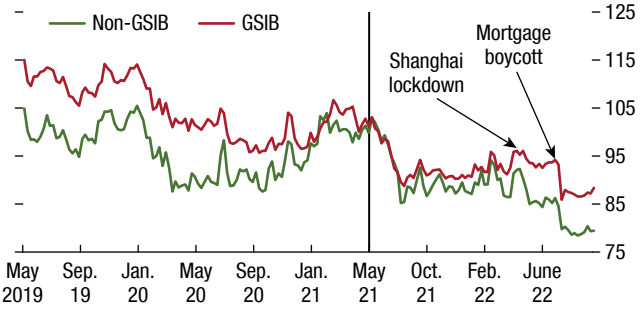
A key source of funding for property developers has dried up with the collapse in sales of presold homes during COVID-19 lockdowns.

1. Residential Real Estate Sales and Financing of Real Estate Investment
(Percent, year-over-year growth)



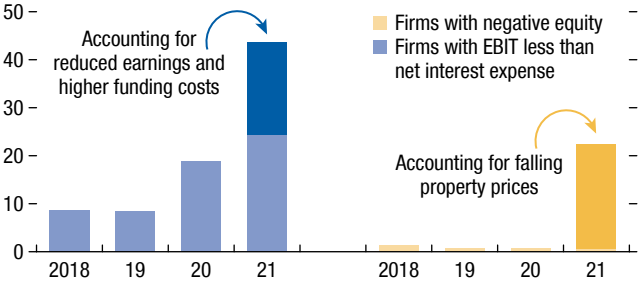
The recent homebuyers' mortgage payment boycott for presold properties has raised concerns about banks' profitability and resilience.

2. Bank Equity Performance
(Index, May 2021 = 100)



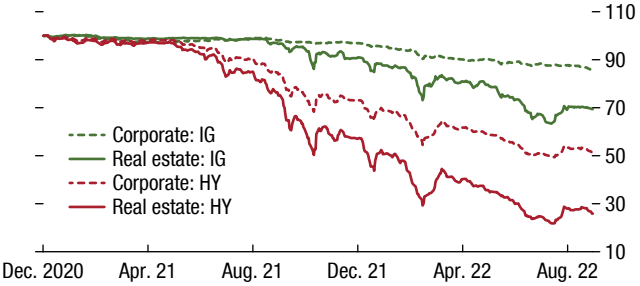
Some property developers lack sustainable debt-servicing capacity and/or face solvency risk.

3. Real Estate Firms: Share of Firms at Risk
(Percent of total risk-weighted assets)



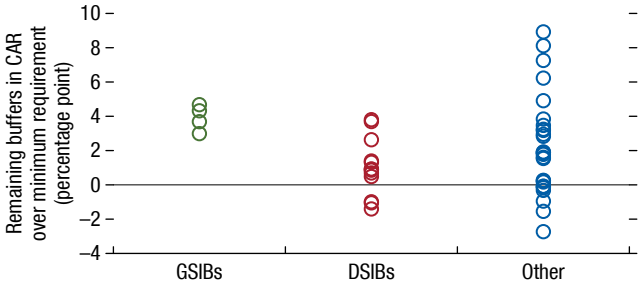
Many offshore bonds are being traded at distressed levels, suggesting that debt restructuring may be inevitable.

4. US Dollar Offshore Bond Prices
(Price index to end-2020)



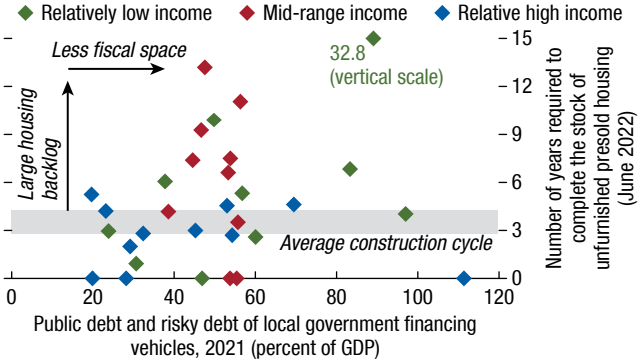
High defaults and low recoveries on presold property mortgages could significantly impair bank capital ...

5. Banks: Potential Credit Losses Related to Real Estate Exposure
(Percent of total risk-weighted assets)



... and large stocks of unfinished houses may generate macro-financial spillovers in regions without fiscal space to contain risks.

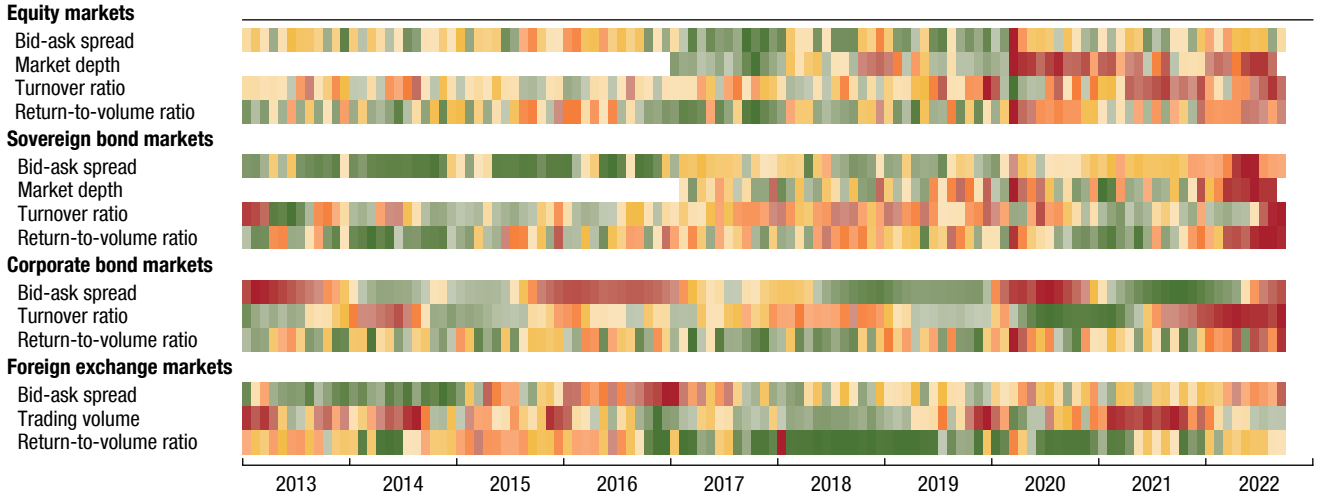
6. Regional Public Debt and Housing Market Development
(Years; percent of GDP)



Sources: Bloomberg Finance L.P.; CEIC; S&P Capital IQ; and IMF staff calculations.
Note: In panel 3, the dark blue bar is based on a 20 percent drop in EBITDA and a 200 basis point increase in average funding costs; the dark yellow bar includes a 15 percent drop in inventory values. The analysis includes the following key assumptions: (1) 70 percent of net new mortgages each year are associated with presold houses; (2) 10 percent of unfinished presold houses fail to be delivered; and (3) loans to risky developers as a share of total real estate exposures are at 5 percent for GSIBs, 10 percent for DSIBs, and 15 percent for other banks. The minimum capital requirement is a 10.5 percent CAR for other banks, plus additional required buffers for DSIBs and GSIBs. In panel 6, presold unfinished houses are estimated based on cumulative home presales and housing construction since 2010. Risky debt of LGFVs is debt issued by LGFVs with EBIT lower than net interest expense for the past three years. CAR = capital adequacy ratio; DSIB = domestic systemically important bank; EBITDA = earnings before interest, taxes, depreciation, and amortization; GSIB = global systemically important bank; HY = high yield; IG = investment grade; LGFV = local government financing vehicle; y/y = year over year.

Figure 1.17. Market Liquidity Conditions

The standard market liquidity metrics show some signs of deterioration.



Sources: Bloomberg Finance L.P.; Haver Analytics; Japan Bond Trading; JPMorgan Big Data and AI Strategies; MarketAxess; Reuters; Securities Industry and Financial Markets Association; and IMF staff calculations.
Note: Indicators are based on the maximum *z*-score among regions. Red (green) cells represent lowest (highest) liquidity levels. Regions are the euro area, Japan, and the United States for equity markets and Germany, Italy, Japan, the United Kingdom, and the United States for sovereign bond markets—except for market depth, which is for the United States. For equities and Japanese sovereign bonds, bid-ask spreads are estimated based on Corwin and Schultz (2012). For corporate bond markets, the bid-ask spread applies to the United States and the euro area, and other indicators apply to the United States. For sovereign bond markets, cash bond data are used for bid-ask spreads, and futures market data are used for the turnover ratio and return-to-volume ratio, except for the United States, which uses cash bond data. Market depth is the average amount of trading in futures expected to move the underlying market by 1 percent in a five-minute period. The turnover ratio captures trading frequency, calculated as trading volume divided by outstanding amounts of securities. The return-to-volume ratio reflects the sensitivity of price to the trading volume, which is calculated as the price change divided by trading volume.

global systemically important banks (GSIBs), appear to be resilient (Figure 1.16, panel 5).

With the economic slowdown and pandemic response constraining fiscal capacity, local governments are now saddled with ensuring the delivery of unfinished houses and handling distressed property developers amid falling revenues from land sales. With elevated debt levels and increased fiscal burdens, along with contingent liabilities arising from financially weak local government financing vehicles, this task may prove challenging. The stock of unfinished presold houses is sizable in a number of provinces with relatively low income and high public debt (Figure 1.16, panel 6). Should local government prove unable to support the real estate sector, there could be adverse spillovers to the broader corporate sector—where vulnerabilities are already high (see Box 1.1).[24]

[24]The authorities have announced several policies to support the real estate sector, including a property sector rescue fund authorized to raise up to RMB 300 billion, RMB 200 billion in special loans through policy banks, credit guarantees offered by China Bond Insurance Co. to support bond issuance by property developers, and a reduction in the five-year loan prime rate, with the minimum first-home mortgage rate set at 20 basis points below the five-year loan prime rate.

Poor Market Liquidity: A Shock Amplifier

After more than a decade of abundant liquidity and compressed volatility, the global move toward an aggressive tightening monetary cycle to fight high inflation—spanning several years—has substantially increased market volatility, especially in the rates space, contributing to a deterioration in market liquidity conditions.[25] Against a backdrop of heightened uncertainty about the economic and policy outlook, market liquidity metrics have worsened across asset classes, especially in the past few weeks amid deteriorating risk appetite. Bid-ask spreads have widened significantly, market depth has declined sharply, and liquidity premiums have increased (see Figure 1.17 and Figure 1.18, panel 1).

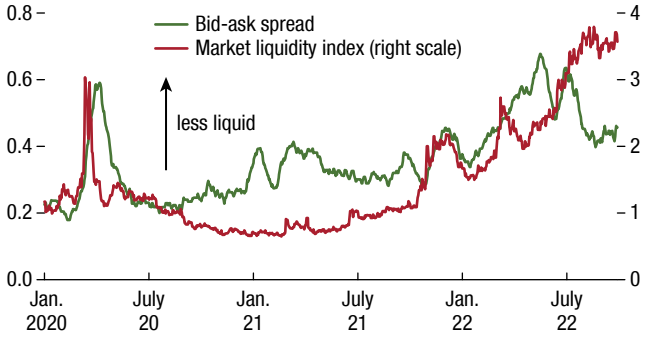
Deteriorating market liquidity conditions may pose risks to financial stability. The recent dramatic stress in the gilts market shows how sudden price moves

[25]Market liquidity refers to market participants' ability to buy and sell securities efficiently, without triggering large price changes. Note that *market liquidity* is not the same as the ample *monetary liquidity* injected into the financial system by central banks through large purchases of securities under quantitative easing programs.

Figure 1.18. Market Structure and Liquidity

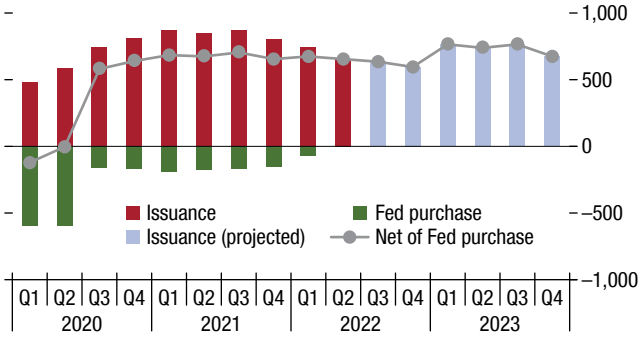
The US Treasury bid-ask spread is elevated and market liquidity conditions have worsened.

1. US Treasury Bid-Ask Spread and Market Liquidity Index (Basis points)



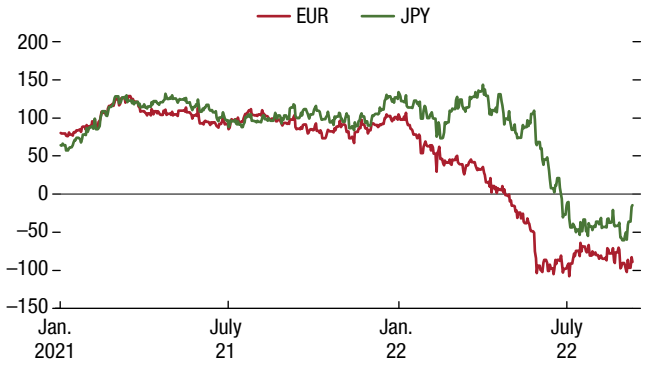
Markets need to keep absorbing sizable Treasury issuances as central banks reduce their purchases.

2. US Treasury Supply: Ten-Year-Equivalent Amount (Billions of US dollars)



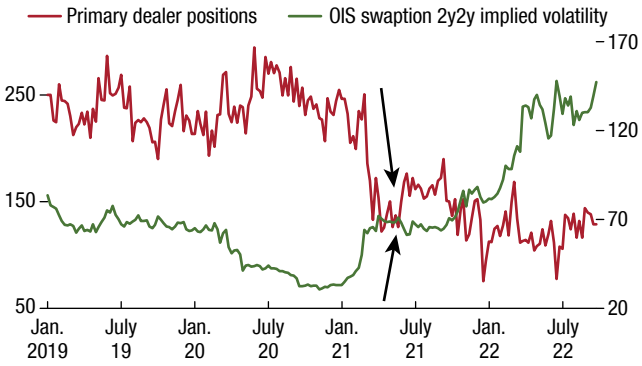
Foreign demand for US Treasuries could decrease as foreign exchange-hedged returns may become increasingly less attractive.

3. Excess Yield Spreads of Hedged US Treasury Yields over Local Government Bonds (Basis points)



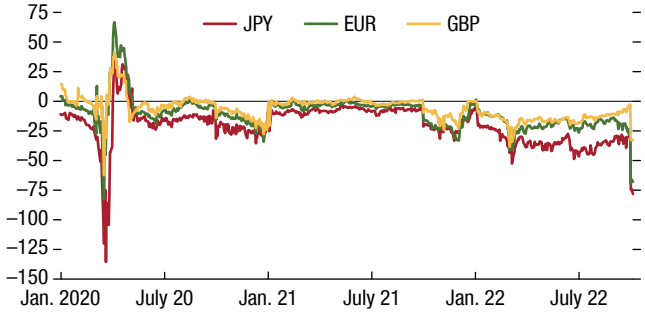
Banks appear less willing to deploy their balance sheets in a highly uncertain and volatile environment.

4. US Primary Dealer Positions and Overnight Indexed Swap (OIS) Implied Volatility (Millions of US dollars, left scale; basis points, annualized, right scale)



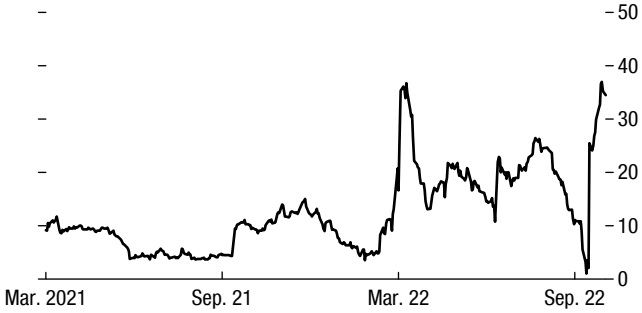
The costs of international dollar short term funding have increased, reflecting precautionary demands amid a high level of uncertainty.

5. Cross Currency Basis Swap Against the US Dollar, 3 Month (Basis points)



In the domestic dollar short-term funding market, the FRA-OIS spreads, a proxy of interbank credit risk, have been wider recently.

6. US Dollar FRA-OIS Spread (Basis points, rolling 1st IMM date forwards)



Sources: Bloomberg L.P.; Federal Reserve Bank of New York; JPMorgan Chase & Co.; TreasuryDirect; US Treasury; and IMF staff calculations.
Note: In panel 1, the market liquidity index is the average of Bloomberg US Government Securities Liquidity index and the JP Morgan US Treasury total root mean square error (RMSE) index. In panel 2, issuance excludes the Federal Reserve System Open Market Account (SOMA) absorption, and the Federal Reserve purchase excludes reinvestment. In panel 2, for the Treasury issuance projection, primary dealers' marketable borrowing estimates in the Treasury Borrowing Advisory Committee and securities outstanding data are used to estimate issuance amounts, and past auction data are used to project security and maturity composition. In panel 5, given the Libor transition and the discontinuity of benchmark indices since December 31, 2021, cross currency basis spreads are Libor-index-based before January 1, 2022, and OIS-based on and after the date. The data cutoff date for panels 5 and 6 is October 4, 2022. 2y2y = two-year, two-year; EUR = euro; Fed = Federal Reserve; JPY = Japanese yen; FRA-OIS = forward rate agreement-overnight index swap; IMM = international money market.

combined with forced selling and deleveraging dynamics can lead to disorderly conditions that could threaten broader market functioning and stability.

As central banks continue to tighten aggressively and remove liquidity (including by shrinking their balance sheets) and with market volatility rising across asset classes amid heightened uncertainty about the economic and policy outlook, investors have pulled back from risk taking in recent weeks. A more cautious investor posture implies larger cash and cash-equivalent holdings, driving more liquidity into US short-term funding markets.

In recent weeks, international short-term dollar funding markets have begun to show signs of concern amid an uncertain outlook. There has been a widening of the cross-currency basis swap spreads, a proxy for the marginal cost of offshore US dollar funding. The three-month cross-currency basis swaps (for the euro, and yen vs the US dollar) surged to their widest level since March 2020 (Figure 1.18, panel 5). Some seasonal technical factors—the three-month contract capturing the year-end when usually there is a higher demand for US dollars—combined with the global liquidity concerns have been at play. On the supply side, the increase in FRA-OIS spread (a measure of interbank credit risk, Figure 1.18, panel 6) and heightened currency volatility pose a risk of a potential drop in the supply of US dollar funding. On the demand side, the strengthening of the US dollar reduces the repayment capacity of (unhedged) borrowers outside the US, increasing their demand for synthetic US dollar funding. Markets seem concerned about further strains in the international short-term dollar funding market, which if persistent could trigger the activation of central bank international liquidity facilities, such as the Federal Reserve's swap lines, the Foreign and International Monetary Authorities Repo Facility, as well as existing IMF precautionary credit lines.

However, as central banks proceed with balance sheet normalization and investors continue to reprice risk, market liquidity conditions may deteriorate further. Monetary authorities in advanced economies have increased their footprint in sovereign bond markets as they have grown their balance sheets, contributing to the decline in liquidity premiums and funding costs.[26] All else equal, quantitative tightening implies a reduction in central banks' demand for sovereign bonds, leaving more of these bonds in private hands, which could translate into a shallower pocket to absorb shocks and therefore higher liquidity premiums and lower market liquidity. Of course, liquidity conditions will also be a function of the future supply of government bonds, in terms of both volumes and maturity profiles, along with other factors, including risk management practices and the risk appetite of investors and financial institutions.

There is substantial uncertainty about how liquidity conditions will evolve as quantitative tightening continues. The supply of long-dated Treasuries is anticipated to remain large next year (Figure 1.18, panel 2), while foreign-exchange-hedged yields may become increasingly less attractive to foreign investors at a time of reduced demand by central banks (Figure 1.18, panel 3). In addition to these cyclical adjustments, a confluence of structural factors may contribute to further tightening of liquidity, especially during periods of stress. Such factors include more constrained dealer balance sheets, technological innovations, and a greater share of passive investors.

Significant shifts in market structure that have occurred since the global financial crisis may play a role in the provision of market liquidity. Regulatory reforms have led banks to reduce the capital allocated to the balance-sheet-intensive business of market making. As a result, liquidity seems to disappear at times, particularly during volatile market conditions (Figure 1.18, panel 4). Technological innovation facilitates a shift of market-making activities from bank dealers to nontraditional players, such as principal trading firms, potentially leading to more fragile market liquidity conditions. The largely algorithmic principal trading firms that are large players in the fixed-income interdealer market (where trading is typically accessible only by banks and large financial institutions) automatically pull back from markets when volatility increases sharply, potentially exacerbating illiquidity issues.

In addition, the rise of passive investing in recent years may also constrain market liquidity during stress episodes. For instance, the US S&P 500 index trackers and exchange-traded funds have more than doubled their assets, to an almost 20 percent share of the market in less than a decade. The growing role of passive investing that offers daily redemptions to retail investors, coupled with signs of increased herding and concentration, has made market liquidity more

[26]The research suggests that the presence of the central bank as a buyer in the market reduces liquidity premiums and lowers funding costs, contributing to improved market liquidity conditions (Christensen and Gillan 2022; Fernandez-Amador and others 2013).

vulnerable to rapid changes in sentiment.[27] Moreover, the ability of arbitrageurs such as hedge funds to take advantage of temporary price dislocations in asset markets, and therefore act as liquidity providers, may be limited. Restrictions in the leverage available from prime brokers—needed to conduct arbitrage trades such as cash-futures bond trades—and investor demands for tighter risk management and greater transparency may limit their ability to effectively conduct arbitrage.[28]

Corporate Sector: Is the Credit Cycle Turning?

The challenging macroeconomic and policy environment is putting pressure on the global corporate sector, with high-yield issuers the most vulnerable to a downturn. Although earnings in large publicly traded firms remain strong, higher labor and input costs are weighing on profitability. Corporate profit margins have started to contract from the highs supported by the economic reopening, with all major sectors (excluding energy) revising earnings forecasts downward (Figure 1.19, panel 1). Credit spreads have widened substantially across sectors, especially recently as investor appetite for risk has declined amid poor liquidity and elevated volatility (Figure 1.19, panel 2).[29] Spreads on sub-investment-grade credit such as high-yield bonds and leveraged loans have widened to a degree not seen since the spring of 2020. This has led to pullback in new issuance of risky debt, particularly high-yield bonds (Figure 1.19, panel 3). Almost half of lower-rated CCC credit is trading at distressed levels, and major credit rating agencies have revised their high-yield default outlooks and expect US defaults to rise in the next few months.

At small firms, bankruptcies have already started to increase this year in major advanced economies because such firms are more affected by rising borrowing costs and declining fiscal support, alongside higher labor and input costs that are difficult to pass on to end consumers.[30] Going forward, a further rise in inflation and additional tightening by central banks could derail the recovery in the corporate sector coming out of the pandemic and put more debt at risk.

To explore these challenges, IMF staff members carried out a partial sensitivity analysis to estimate the increase in at-risk debt in response to a combined shock to revenues, cost of goods sold, and interest expense.[31] It centers on the interest coverage ratio, which captures how easily a firm can pay interest on its outstanding debt. The share of debt with an interest coverage ratio below 0 (indicating firms with negative profitability) rises quickly at all the types of firms, exceeding 50 percent at small firms, based on averages across advanced and emerging markets (Figure 1.19, panel 4).[32] The share of debt at firms with a low-to-moderate interest coverage ratio (between 0 and 3) increases to more than one-third at both large and midsize firms, especially among the group of emerging market economies.[33] This increase in debt-at-risk could result in losses at bank and nonbank financial institutions with significant exposures to highly indebted nonfinancial firms—a development that could amplify the shock.[34] Temporary and targeted government support may be needed to prevent the risk of a wave of bankruptcies at small firms and avoid spillovers to the financial system.

Leveraged Finance under Pressure

With investors aggressively pulling back from risk taking in recent weeks, conditions in leveraged finance have deteriorated materially, with spreads

[27]This rise of passive investing has also been associated with the overall increase in cross-asset correlations, which may indicate greater spillover risks across markets and, increasingly, systemic liquidity risk. See Chapter 1 of the April 2015 GFSR for further details.

[28]See Chapter 1 of the October 2014 GFSR.

[29]US investment-grade corporate bond spreads reportedly came under pressure at the end of September as a result of investors in the UK having to liquidate their positions to meet margin calls on leveraged positions in the gilt market.

[30]Small firms—as defined by the European Union and the United States—have assets of less than approximately $50 million. See Online Annex 1.1, Section B, in the April 2021 GFSR.

[31]The calibration of the sensitivity analysis is based on the two inflationary episodes in 1973–75 and 1978–82. Real retail sales, consumer prices, and producer prices are used as proxies for the volume, unit price, and unit cost of goods sold to generate shocks to firms' revenues and the cost of goods sold. The effective interest rate on debt is based on the increase in corporate bond yields during these episodes. For the calculation of the interest rate, large firms are assumed to have characteristics of investment-grade firms, small firms are assumed to have high-yield characteristics, and midsize firms are an average of investment grade and high yield.

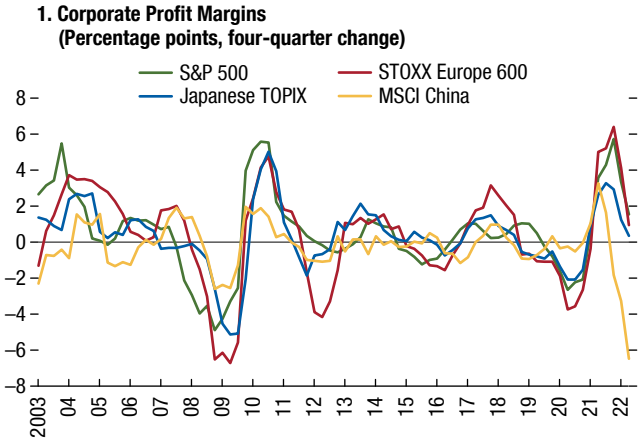
[32]The interest coverage ratio is calculated as a firm's earnings before interest expense and taxes divided by interest expense for a given period.

[33]The countries included in the analysis are based on the corporate sector framework presented in the April 2021 GFSR: China, France, Germany, India, Italy, Japan, Mexico, Poland, Russia, Spain, Türkiye, the United Kingdom, and the United States.

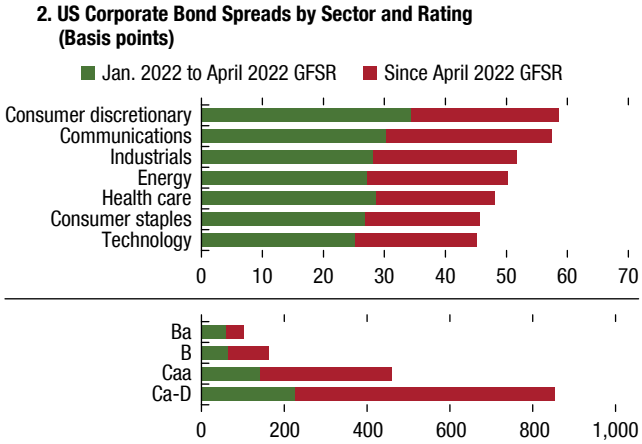
[34]For more on private sector debt and the global recovery, see Chapter 2 in the April 2022 WEO.

Figure 1.19. Corporate Performance and Default Outlook

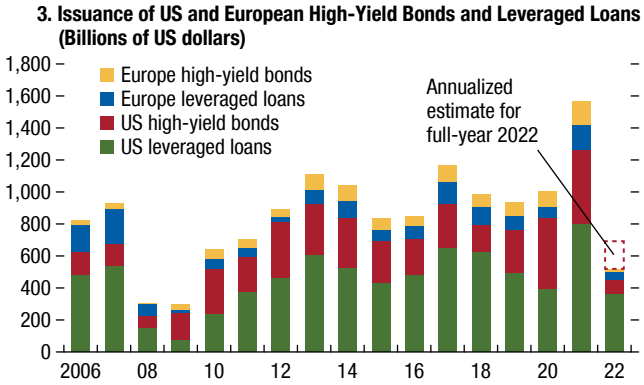
Profit margins have started to contract.



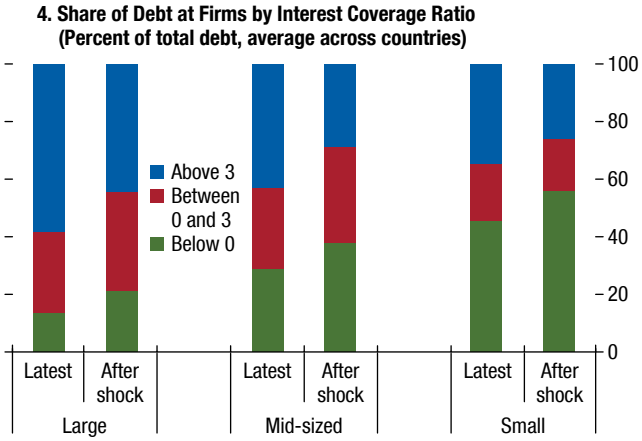
Corporate credit spreads have continued to widen since the April 2022 GFSR to reach about half the pandemic peaks ...



... and new issuance has slowed as risky firms face tighter financial conditions.



Higher inflation and revenue decline would further worsen leverage metrics, especially at small firms.



Sources: Bloomberg L.P.; Haver Analytics; MSCI; PitchBook Leveraged Commentary and Data; Refinitiv Datastream IBES; S&P Capital IQ; and IMF staff calculations.
Note: In panel 2, "since April 2022 GFSR" refers to the period since April 18, 2022. In panel 4, interest coverage ratio is calculated by dividing a firm's earnings before interest and taxes by its interest expense during a given period. The analysis assumes the volume of goods sold declines by 7.5 percent, the price of the unit of goods sold increases by 13.4 percent, the cost of the unit of goods sold increases by 20.5 percent, and the effective interest rate on firms' total debt rises by 100 basis points for large firms, 312 basis points for medium firms, and 524 basis points for small firms. The country coverage is similar to that reported in the April 2021 *Global Financial Stability Report* (GFSR). In panel 4, large firms, medium firms, and small firms are defined as those having assets greater than $500 million, between $500 and $50 million, and less than $50 million, respectively.

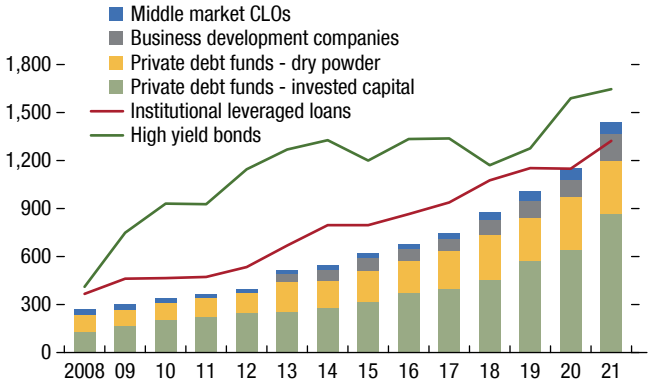
widening sharply and issuance in the US leveraged loan market plunging in the third quarter to post-global-financial-crisis lows. Leveraged finance has historically been seen as a barometer of risk-taking in financial markets, and a worsening of conditions in this segment has historically been a harbinger of broader trends in investor risk appetite. Depending on (1) the funding structure of private lenders, (2) the horizon of investors, (3) the extent to which they may be holding concentrated positions, and (4) possible linkages to the banking sector (for example, through lines of credit), a tightening of financial conditions could be amplified by the crystallization of balance sheet liquidity and credit risks embedded in this segment.

Against a challenging growth backdrop and elevated market volatility, some of the firms that have struggled to find financing in the high-yield bond and leveraged loan markets because of their small size, weaker liquidity position, or high debt levels are said to have

Figure 1.20. Developments in Leveraged Finance

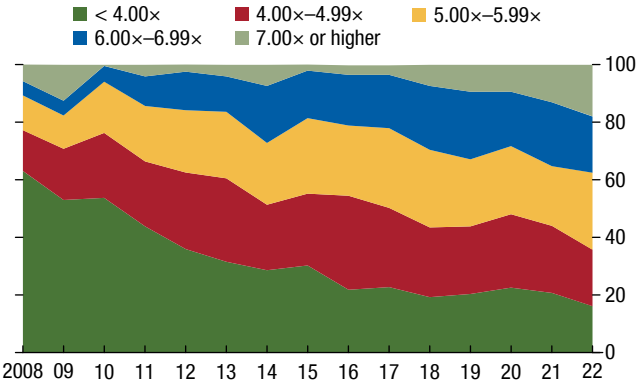
Private credit has become a significant source of funding for risky firms.

1. Private Debt Assets under Management and US Leveraged Loans and High-Yield Bonds Outstanding (Billions of US dollars)



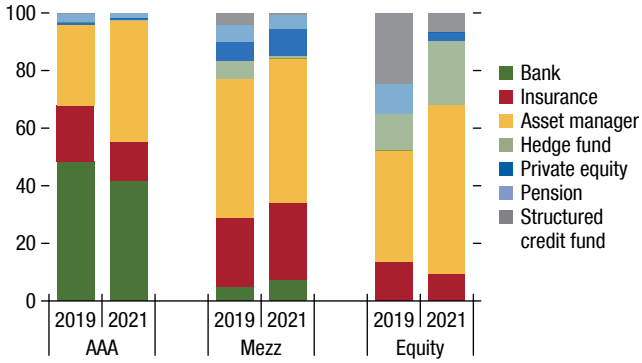
Credit quality is deteriorating, with the share of highly leveraged deals accelerating since the peak of the pandemic.

2. Leveraged Loan Issuance by Debt-to-EBITDA Ratio (Percent)



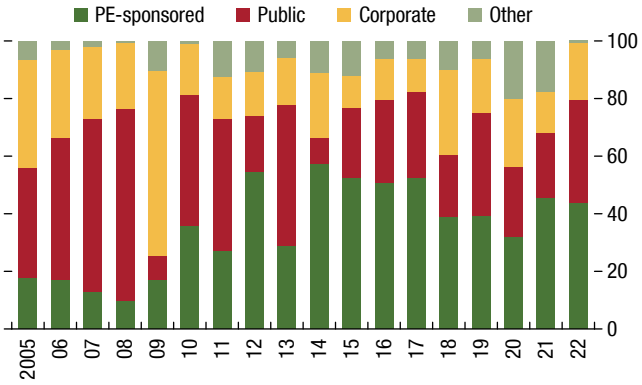
Asset managers and hedge funds remain the most exposed to riskier tranches of collateralized loan obligations (CLOs).

3. US CLO Investor Base (Percent)



Private equity sponsors have played an increasing role in highly leveraged deals.

4. US Leveraged Buyout Transaction Volume by Type (Percent of volume)



Sources: Citi; PitchBook Leveraged Commentary and Data; Preqin; S&P Global Ratings; UBS; and IMF staff calculations.
Note: CLO = collateralized loan obligation; Mezz = mezzanine; EBITDA = earnings before interest, taxes, depreciation and amortization; PE = private equity.

shifted to the more opaque and quickly expanding private credit market.[35] With lending standards tightening, the demand for private credit may continue to grow going forward. Taking a longer perspective, private credit has grown rapidly over the past decade or so, reaching $1.4 trillion at the end of 2021 and surpassing the size of the US institutional leveraged loan market (Figure 1.20, panel 1). Owing in part to increased competition from private credit markets, leverage metrics on new loans in the leveraged loan market have hit new highs, with almost one-third of new loans having ratios of debt to earnings before interest, taxes, depreciation, and amortization greater than six times earnings (Figure 1.20, panel 2).

In the United States, lower-rated companies at higher risk of default make up an increasing share of leveraged finance, with more than 50 percent of the market now composed of firms with a B credit rating. The largest buyers of leveraged loans—collateralized loan obligations (CLOs)—have seen their average

[35]Private credit is provided by dedicated funds. It is often referred to as "direct lending" because it is not issued or traded in the public markets and the debt is not provided by the regulated bank market. Most private credit is provided as direct lending for private companies that cannot access or want to circumvent public markets, or that want certainty of execution and confidentiality.

holdings of B-rated loans more than double over the past five years. Concentration risks have also increased, with nearly 50 percent of the loan market composed of exposures to sectors such as technology, health care, and businesses services—all of which could face material margin pressures from higher input costs, including from inflation. Tighter financial conditions, mounting liquidity strains, and decelerating earnings growth could presage ratings downgrades and eventual defaults. An increase in the share of assets rated CCC or below could result in lower returns for equity and lower-rated CLO investors.[36] The underperformance of these investors could lead to a decline in new CLO issuance and a credit crunch in the leveraged loan market, reducing funding available to existing sub-investment-grade firms. By contrast, banking sector exposures in the CLO market are mostly concentrated in senior AAA tranches and thus are less likely to face credit losses (Figure 1.20, panel 3).

Private equity sponsors have also looked to private credit lenders to provide debt financing to the companies they buy, particularly in more risky leveraged buyout transactions (Figure 1.20, panel 4). Boosted by unprecedented policy support measures during the pandemic aimed at reopening capital markets and supporting the flow of credit to households and firms, leveraged buyout activity has boomed, with deal size increasing and valuations reaching record highs.[37] Highly leveraged and richly priced transactions have supported both private equity portfolio growth and private credit lending opportunities. In 2022 to date, leveraged buyout volumes have slowed considerably and are down 30 percent from 2021 as weaker risk sentiment has put a lid on new issuance. The credit quality of some of these assets may be tested during a recession. However, because most of this private lending remains very opaque, it may be hard for investors and regulators to assess credit risk until the credit cycle has already turned.

Housing Markets: At a Tipping Point?

Since the onset of the pandemic, house prices have surged by more than 20 percent in some economies (Figure 1.21, panel 1). A range of factors, some specific to the pandemic, have contributed to these large price gains. Economic activity has recovered much faster than originally expected, with unprecedented fiscal and monetary policy measures helping maintain low debt service ratios. Supply bottlenecks have led to shrinking inventories, boosting house prices. As a result, the price-to-income ratio has reached its highest level in the past two decades in many countries, pointing to a deterioration in housing affordability (Figure 1.21, panel 2).[38]

As central banks around the globe aggressively tighten monetary policy to tackle price pressures, soaring borrowing costs and tighter lending standards, coupled with stretched house valuations, could lead to a sharp decline in house prices, especially in countries with a higher share of variable-rate mortgage debt. The pass-through of monetary policy tightening and higher interest rates to residential mortgage markets has already been swift in the United States, with the average fixed-rate 30-year mortgage hitting highs last seen in 2008, before declining somewhat in midyear 2022.[39] In some countries, global growth in real house prices had already moderated at the end of 2021, with substantial differences across and within regions (Figure 1.21, panel 1). For example, real house price growth was about 11 percent (year over year) in central and eastern Europe in the fourth quarter of 2021, while it was considerably lower in emerging Asia, Latin America, and the Middle East and North Africa regions.

In a severely adverse scenario, real house price declines over the next three years could be nearly 25 percent in emerging markets (Figure 1.21, panel 3). In advanced economies, real house prices could fall more than 10 percent in such a scenario. In this context, as shown in Figure 1.21, panel 4, affordability pressures (yellow bars) and deteriorating economic prospects (green bars) are key drivers of downside risk to house prices across most regions. Compared to the estimates in the October 2021 GFSR, in a downside

[36]For more on risky credit markets, see Chapter 2 in the April 2020 GFSR.

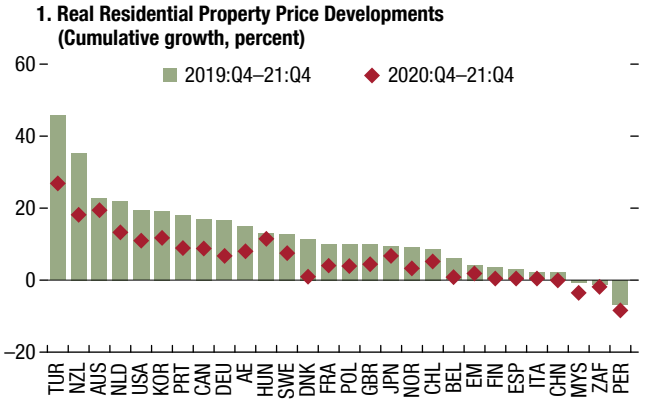
[37]Valuations of some firms have been reportedly inflated by circular deals involving private equity sponsors. See Wiggins (2022).

[38]The price-to-income ratio is calculated as the nominal house price index divided by nominal disposable income.

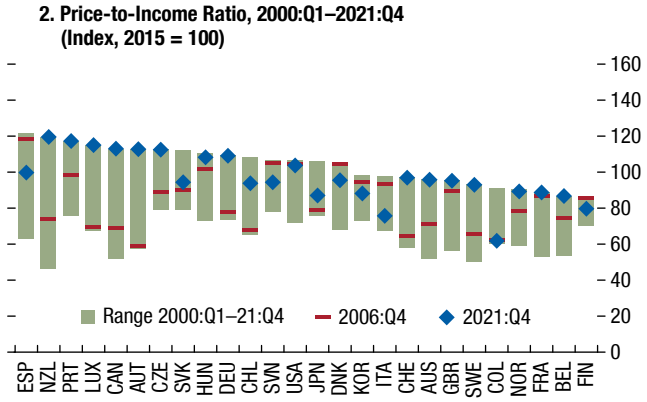
[39]Rapidly rising policy and mortgage rates, together with the cessation of purchases of mortgage-backed securities (MBSs) by the Federal Reserve since March 2022 (excluding reinvestments), have been accompanied by a sharp drop in refinancing rates since the spring, which has led to a significant decline in MBS repayment rates and a notable widening in MBS spreads. This suggests that, barring sales, MBS holdings will likely continue to be a substantial part of the Federal Reserve System Open Market Account portfolio in the medium term.

Figure 1.21. Housing Sector Trends

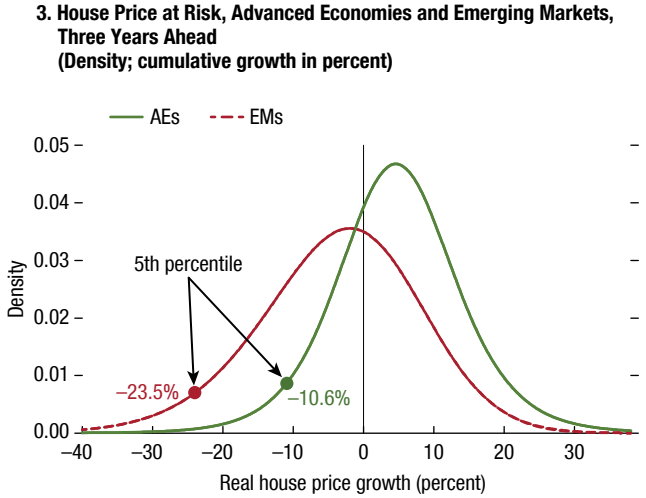
House prices have surged in several countries, but slowed in some economies in the past few quarters ...

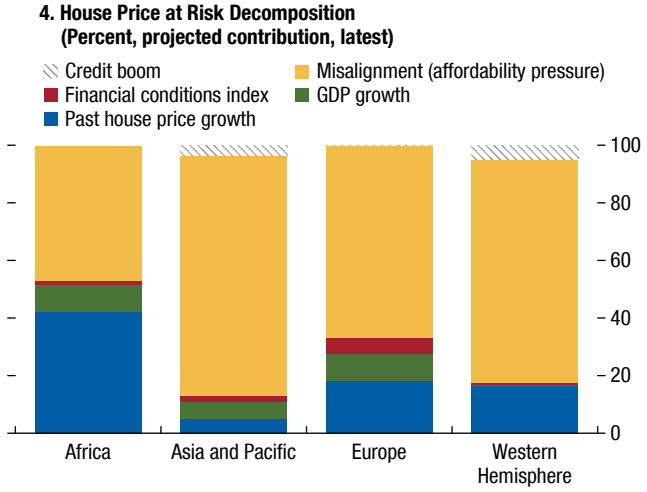


.... housing affordability has come under intense pressure …



... and downside risks remain significant, especially in emerging markets.





Sources: Bank for International Settlements; Bloomberg L.P.; Haver Analytics; IMF, World Economic Outlook database; Organisation for Economic Co-operation and Development; and IMF staff calculations.
Note: In panel 1, nominal house prices are adjusted for inflation using the consumer price index. Panels 3 and 4 show the estimation results from a house-prices-at-risk model. The model allows prediction of house price growth in a severely adverse scenario; that is, the range of outcomes in the lower tail of the future house price distribution. Probability densities are estimated for the three-year-ahead (cumulative) house price growth distribution across advanced economies and emerging markets. Filled circles indicate the price decline in the severely adverse scenario with a 5 percent probability (5th percentile). Panel 4 shows the projected contribution of the key drivers of house-price-at-risk projections in percent and by country area. Misalignment refers to the deviation of house-price-to-GDP per capita from an estimated trend and is used as a simple measure of the deviation of house prices from fundamentals (that is, overvaluation). In panels 1 and 2, data labels use International Organization for Standardization (ISO) country codes. AEs = advanced economies; EMs = emerging markets.

scenario the current projections imply a 2 percentage point larger price decline for emerging markets and a 3 percentage point smaller decline for advanced economies.[40]

[40]In comparison, median real house price growth is estimated to be about 5 percent over the next three years in some regions. The findings imply that the global house price boom will slow in a scenario with a 50 percent probability. For the housing-at-risk methodology, see Chapter 2 of the April 2019 GFSR.

Such risks could be greater in a scenario in which there is a sharp tightening of global financial conditions, which could increase the probability of a recession in the next few years. Although the severity and the macroeconomic implications of a shock originating in the housing market will depend crucially on the extent of house price correction and the distribution of household debt, some key mitigating factors are the stronger capital position of banks and

more conservative loan underwriting standards since the global financial crisis. As a result, the potential contagion effect through the banking sector in the event of a large house price correction is likely to be more limited than in previous recessions. That said, risks may be emerging elsewhere in the housing sector, especially in the United States, where the nonbank financial institution sector has started to play a larger role in the securitized mortgage market.[41]

Global Banks: Stagflation Would Challenge the Resilience of the Banking Sector

The banking system has been resilient throughout the pandemic and the war in Ukraine, with high levels of capital and ample liquidity buffers. The global common equity Tier 1 (CET1) ratio increased from 12.5 percent in 2019 to 14.1 percent in 2021.[42] Banks' interest income has improved, benefiting from monetary policy normalization and rising rates. At large dealer banks, profits have also been boosted by trading income amid high market volatility. Balance sheet growth has continued. The asset mix shifted toward liquid assets and securities during the pandemic as deposits rose due to government support programs. Starting in 2021, loan growth has rebounded, and it is at pre-pandemic levels.[43] Liquidity and funding conditions remain healthy, with cash and reserves still above pre-pandemic levels.

With risks to the economic outlook squarely tilted to the downside, banks are rebuilding their loan-loss reserves for the first time since the pandemic. Lending conditions have tightened notably in recent quarters, with lending standards for corporate credit becoming more restrictive (Figure 1.22, panel 1). At the same time, demand for credit remains robust in advanced economies, reflecting firms' need for working capital because of higher input prices and ongoing supply chain disruptions. Meanwhile, credit demand has started to slow in emerging markets. A growing number of lending officers have expressed diminishing risk tolerance on concerns about the economic outlook and borrower credit risk, particularly in the euro area (Figure 1.22, panel 2). To evaluate the challenges facing the banking sector in the event of a crystallization of risks to the growth and inflation outlook, IMF staff members carried out a Global Bank Stress Test to assess the resilience of the banking sector in the event of a severe stagflation scenario.

The Global Bank Stress Test assumes a pandemic resurgence and continuation of geopolitical tensions that result in persistent disruptions in the global supply chain, including disruption in Russian gas exports to Europe. The scenario calibrates a de-anchoring of inflation expectations and a disorderly tightening of financial conditions, with spillovers through real and financial shocks across economies, which send the global economy into recession in 2023.[44] (The baseline scenario corresponds to the October 2022 WEO [Figure 1.23].)

In aggregate, the global banking system has sufficient capital to absorb losses under the stress scenario, benefiting from the reforms since the global financial crisis and the buildup of capital over the past years. In the stress scenario, the global CET1 ratio declines from 14.1 percent in 2021 to a minimum of 11.4 percent in 2023, barely recovering to 11.5 percent in 2024 (Figure 1.24, panel 1). The positive contributions to the CET1 ratio from higher interest income on performing loans are offset by the negative contributions from higher loan impairments and larger other expenses.

In the stress scenario, emerging market banks face greater losses than advanced economy banks. The maximum drop in the CET1 ratio, from 2021, reaches 4.3 percentage points for emerging market banks, 1.7 percentage points larger than for advanced economy banks (Figure 1.24, panel 1). By the end of 2024, the CET1 ratio for emerging market banks

[41]House price corrections can also have broader economic implications by affecting the residential component of fixed capital formation as well as the expected effective returns for property developers. For a discussion of risks that could also emerge from the exposure of nonbanks to the housing sector, see the October 2021 GFSR.

[42]Tier 1 capital is the core measure of a bank's financial strength from a regulator's point of view. CET1 is a component of Tier 1 capital. It encompasses ordinary shares and retained earnings.

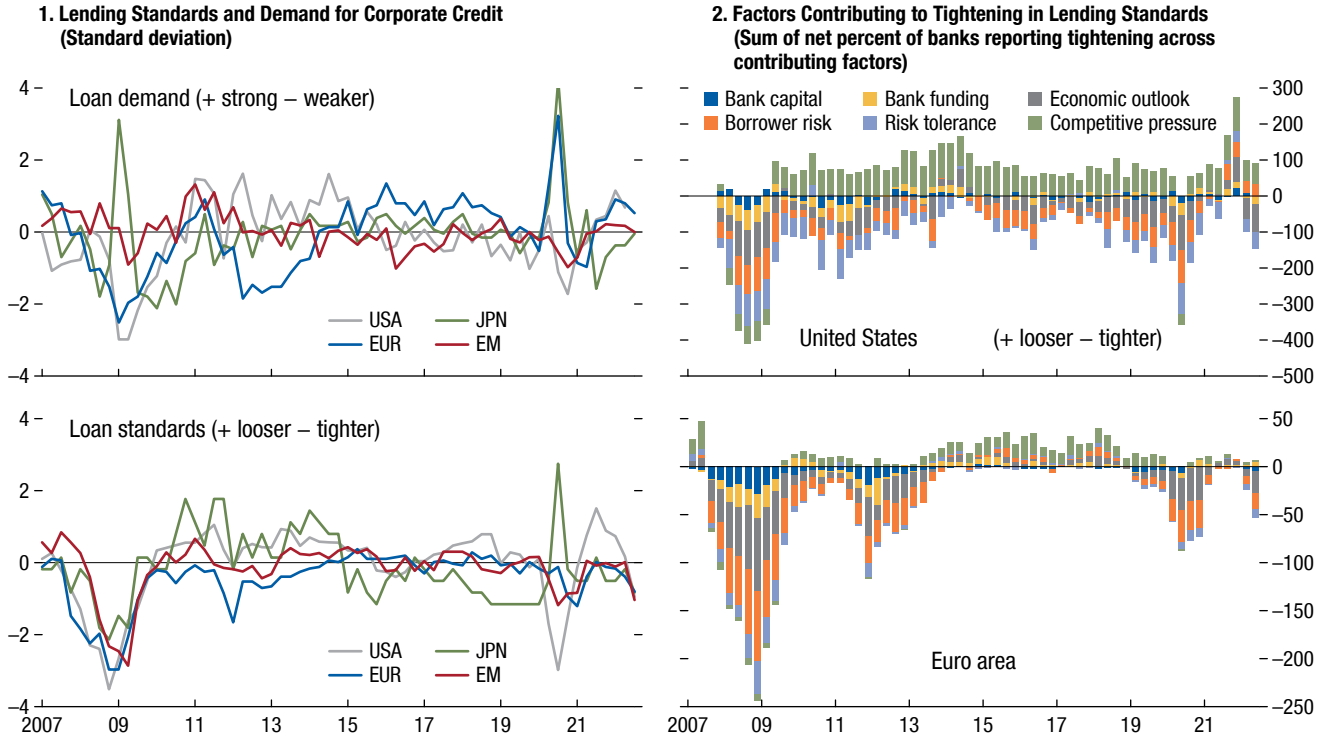
[43]During the 2015–18 tightening cycle, banks ran down their cash balances and other securities while increasing lending and holdings of Treasury securities. This year, the growth in loans has been accompanied by a reduction in cash balances from high levels. So far, there is little evidence of banks shedding Treasuries or reducing their securities portfolios more generally.

[44]The IMF Global Bank Stress Test examined 262 banks from 28 countries accounting for 70 percent of global sector assets. The 28 countries in the sample are Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Greece, India, Indonesia, Ireland, Italy, Japan, the Republic of Korea, Mexico, The Netherlands, Norway, Portugal, Saudi Arabia, South Africa, Spain, Sweden, Switzerland, Türkiye, the United Kingdom, and the United States.

Figure 1.22. Tightening Bank Lending Standards

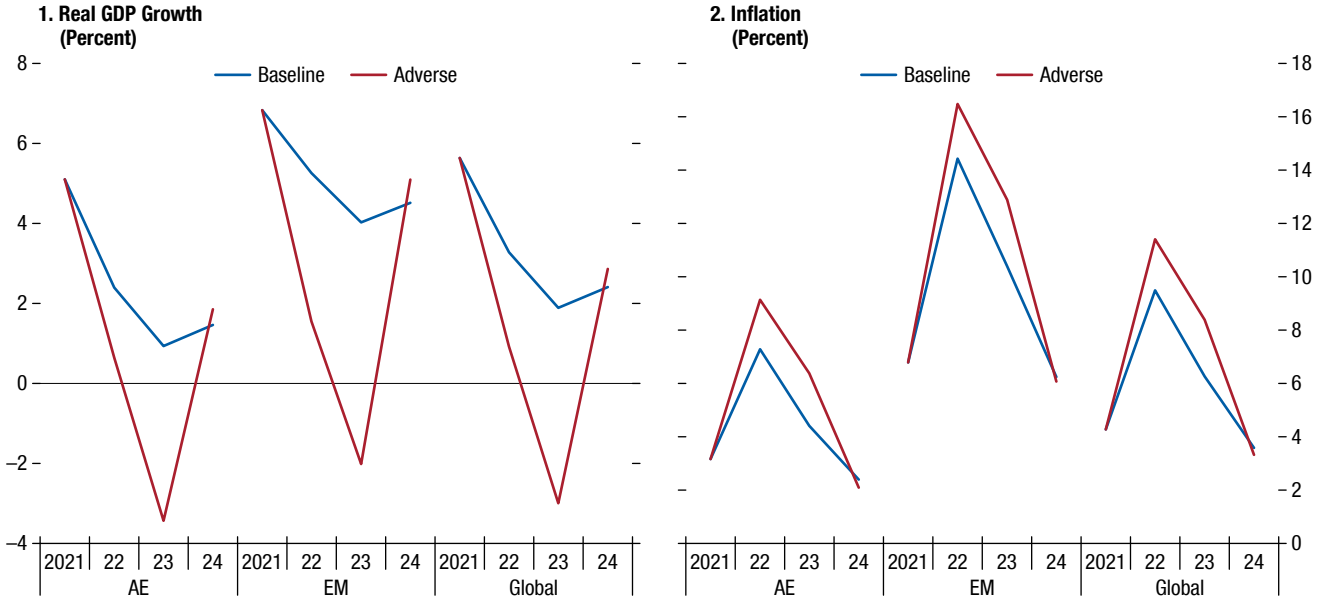
Lending standards have tightened notably as credit demand continues to rise ...

... due to uncertainties around the economic outlook and borrower credit risk.



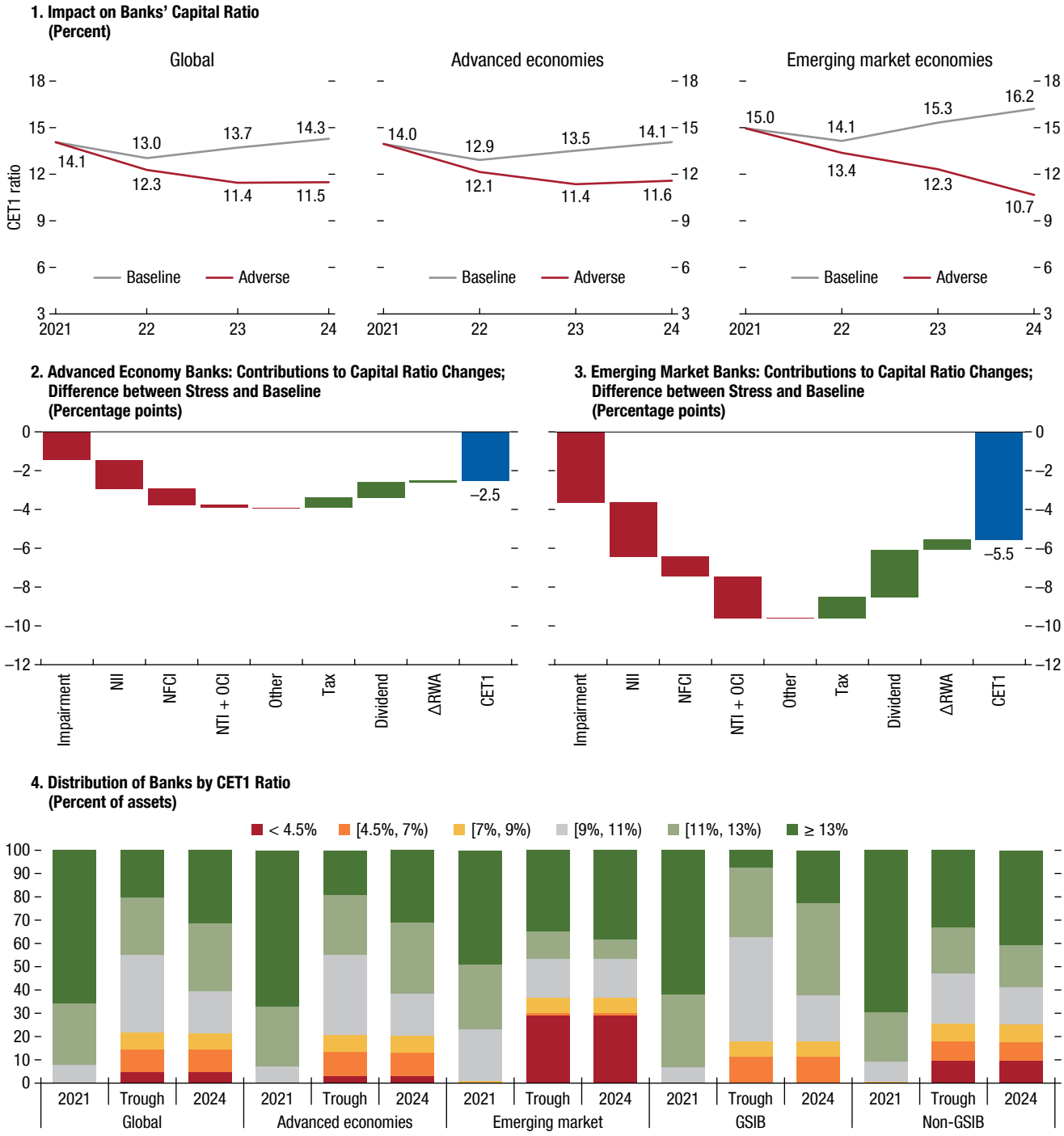
Sources: National central banks; and IMF staff calculations.
Note: EM = emerging market; EUR = euro area; JPN = Japan; USA = United States.

Figure 1.23. Macro-Financial Scenario: Baseline and Stress Scenarios



Sources: IMF, World Economic Outlook (WEO) database; and IMF staff calculations.
Note: Calibration of the scenario is based on the Global Macrofinancial Model (Vitek 2018). The adverse stress scenario is considerably more severe than the October 2022 WEO downside scenario. AE = advanced economy; EM = emerging market.

Figure 1.24. Impact on Global Banks of a Stress Scenario



Sources: Fitch Connect; and IMF staff estimates.
Note: In panels 2 and 3, all contributions pertain to the weighted average global sample of 262 underlying banks from 28 countries. The panel presents the differences of the contributions under the stress and baseline scenarios. "Impairment" refers to loan losses. "Other" denotes the residual of the pretax income and expense flows that are not otherwise listed separately; that is, covering other operating income and expenses, where administrative expense is a sizable component. CET1 = common equity Tier 1; GSIB = global systemically important bank; NFCI = net fee and commission income; NII = net interest income; NTI = net trading income; OCI = other comprehensive income; RWA = risk-weighted assets.

under the stress scenario stands 5.5 percentage points below the baseline, compared to 2.5 percentage points for advanced economy banks.

The larger stress losses for emerging markets relative to advanced economy banks stem from their greater sensitivity to macrofinancial shocks. This translates into higher loan impairment, larger declines in net interest income, higher mark-to-market losses on their trading books ("NTI + OCI" components), and higher other expenses (Figure 1.24, panels 2 and 3). The larger trading losses are due to sharper increases in short-term interest rates and a higher share of government securities in their portfolios. The impact on emerging market banks is also more severe because some of them face additional financial vulnerabilities arising from a high share of debt denominated in foreign currency in their corporate or sovereign sectors.

While no country banking system would fail to meet the minimum 4.5 percent CET1 ratio under the stress scenario, several individual institutions would fall below that threshold. These more distressed cases account for 5 percent of total global assets in the sample and would require $77 billion to bring the CET1 ratio back to 4.5 percent (Figure 1.24, panel 4). The majority of these cases are emerging market banks, representing 29 percent of emerging market bank assets in the sample. Among GSIBs, no bank would fall below the minimum 4.5 percent threshold, although 11 percent of GSIBs (by bank assets) would need to dip into their capital conservation buffers (CCBs).[45] With respect to non-GSIBs, banks accounting for 10 percent of total assets would fail to meet the 4.5 percent minimum threshold. To rebuild the CCB and GSIB buffers, as well as the capital shortfall below the 4.5 percent minimum CET1 ratio, the overall capital need would amount to about $214 billion.[46]

Policy Recommendations

With inflation climbing to highs not seen in decades and price pressures broadening beyond food and energy prices, policymakers around the world have continued to normalize monetary policy. The pace of tightening is accelerating in many countries, particularly in advanced economies, in terms of both the frequency and the magnitude of rate hikes. Some central banks have begun to reduce the size of their balance sheets, moving further toward normalization. A tightening in financial conditions is necessary to restore price stability. While it cannot resolve remaining pandemic-related bottlenecks in global supply chains and disruptions in commodity markets due to the war in Ukraine, monetary policy can slow domestic demand to address widespread demand-related inflationary pressures.[47]

Price stability is a crucial prerequisite for sustained and inclusive economic growth. With risks to the inflation outlook tilted to the upside, central banks should continue to normalize policy to prevent inflationary pressures from becoming entrenched. They need to act resolutely to bring inflation back to target, avoiding any de-anchoring of inflation expectations that would damage credibility built over the past several decades. Policymakers should heed the lessons of the past: moving too slowly to restrain inflation and restore price stability requires a more costly subsequent tightening and entails more painful and disruptive economic adjustments later. The historical experience of the US monetary policy in the 1970s and early 1980s offers clear lessons. It is important for central banks to keep this experience in their sights as they navigate the difficult road ahead.

With policy rates moving away from the effective lower bound that has prevailed in many countries since the global financial crisis, policymakers should rethink the modalities and objectives of the forward guidance they provide.[48] The high uncertainty clouding the economic and inflation outlook hampers the ability of central banks to provide explicit and precise guidance about the future path of monetary policy. But clear communication about their policy function—objectives, intertemporal trade-offs, and steps required to bring inflation down to target—and their unwavering commitment to achieve their

[45]The CCB is used to absorb losses in times of stress. In such instances, regulators would need to remain ready to communicate to banks that capital buffers may be used (see Abad and Garcia Pascual 2022).

[46]Compared to the previous Global Bank Stress Test in October 2020 GFSR, the share of banks with capital shortfall is similar, either against the barebone minimum 4.5 percent CET1 ratio or the broader threshold that includes CCB and GSIB buffers. However, the dollar amount of capital shortfall is smaller thanks to higher capital base at the beginning of the stress test horizon.

[47]For a discussion of main supply and demand drivers of inflation, as well as forecast errors, see Chapter 1 of the October 2022 WEO and Box 1.1.

[48]Forward guidance about the future path of policy rates is particularly useful at the effective lower bound of nominal interest rates as it helps reduce longer-term interest rates by guiding lower expected short-term interest rates.

mandated objectives is crucial to preserve credibility. Clear communication about the need to further normalize policy in line with the evolving inflation outlook is also essential to ensure orderly market reaction and avoid unwarranted volatility. There is a risk that financial conditions may tighten sharply and economic growth slow more than anticipated in coming months, prompting calls for a pause in policy normalization. Authorities should be wary of such calls and consider deploying appropriate tools in case of market dysfunction. It is critical to avoid a stop-go policy normalization path that could undermine price stability and result in a disorderly tightening of financial conditions—a tightening that, by interacting with existing financial vulnerabilities, could put economic growth and financial stability at risk down the road.

Monetary policy can get support from tighter fiscal policy in achieving the mandated inflation objective (see the October 2022 *Fiscal Monitor*). In addition, to help limit governments' debt burden, fiscal consolidation would ease aggregate demand pressure on prices, moderating the extent of policy normalization required to rein in inflation. Within budget constraints, governments can reprioritize spending to protect the most vulnerable from the sharp rise in food and energy prices.

The euro area faces a particularly challenging environment, with differences across member states in terms of inflation, economic prospects, and funding needs. Against this backdrop, it is essential to be able to deploy appropriate tools to ensure that the monetary policy stance is transmitted smoothly across all euro area countries while countering unwarranted, disorderly market dynamics. The recent announcement of the Transmission Protection Instrument is a welcome step to address fragmentation risks.

Emerging and frontier markets remain vulnerable to a sharp tightening in global financial conditions and capital outflows. While there is still significant variation across countries in terms of the economic and inflation outlook, as well as in policy responses, central banks have generally continued to tighten monetary policy to address inflationary pressures. Rate increases should proceed as warranted based on country-specific circumstances to preserve policy credibility and anchor inflation expectations. Countries with highly vulnerable financial sectors, limited or no fiscal space, and significant external financing needs are already under strong pressure and could face further severe challenges in the event of a disorderly tightening of conditions. Countries with credible medium-term fiscal plans, clearer policy frameworks, and stronger financing arrangements will be better positioned to manage such tightening. There is a need to rebuild fiscal space and buffers.

The IMF's Integrated Policy Framework provides a useful architecture for emerging market economies to actively manage the risks stemming from the global tightening cycle and the stronger US dollar. Depending on exchange rate flexibility, foreign exchange market depth, the level of foreign exchange mismatches, and the degree of anchoring of inflation expectations, different actions may be called for. In light of continued volatility in financial markets, the use of foreign exchange interventions may be appropriate in the presence of frictions, so long as reserves are sufficient and intervention does not impair the credibility of macroeconomic policies or substitute for their necessary adjustment. In case of crises or imminent crises, capital flow management measures may be an option for some countries to lessen outflow pressures. Any outflow capital flow management measures introduced during such cases should be part of a comprehensive policy package that tackles underlying macroeconomic imbalances, and lifted once crisis conditions abate.

Sovereign borrowers in developing economies and frontier markets should enhance efforts to contain risks associated with their high debt vulnerabilities, including through early contact with their creditors, multilateral cooperation, and support from the international community. Continued use of enhanced collective action clauses in international sovereign bonds and the development of majority voting provisions in syndicated loans would help facilitate future debt restructurings. For countries near debt distress, bilateral and private sector creditors should find ways to coordinate on preemptive restructuring to avoid costly hard defaults and prolonged loss of market access. Where applicable, the G20 Common Framework should be utilized. Value recovery instruments, such as GDP—or commodity—linked warrants, could play an important role in improving the outcomes of restructurings during this period of high economic uncertainty. Countries with moderate risk of debt distress but with elevated liquidity risks should consider liability management operations through debt exchanges or refinancing operations.

Policymakers should promote the depth of local currency markets in emerging markets and foster a stable and diversified investor base. Local currency markets continue to be a key funding channel for emerging markets. Measures should strive to (1) establish a sound legal and regulatory framework for securities, (2) develop efficient money markets, (3) enhance transparency of both primary and secondary markets as well as the predictability of issuance, (4) bolster market liquidity, and (5) develop a robust market infrastructure.

Policymakers should continue to contain a further buildup of financial vulnerabilities. While considering country-specific circumstances and the near-term economic challenges, they should adjust selected macroprudential tools as needed to tackle pockets of elevated vulnerabilities while avoiding a disorderly tightening of financial conditions. If such tools are not available—for example, in the nonbank financial institution sector—policymakers should urgently develop them. Striking a balance between containing the buildup of vulnerabilities and avoiding procyclicality and a disorderly tightening of financial conditions is important in light of heightened uncertainty about the economic outlook, the ongoing policy normalization process, and the limited fiscal space remaining after the pandemic.

Developments and risks in global housing markets during the ongoing cycle of monetary tightening should be carefully monitored. National authorities should deploy stringent stress tests to estimate the potential impact of a sharp fall in house prices on household balance sheets and ultimately on financial institutions. On the macroprudential policy front, policymakers who had previously tightened macroprudential tools (such as stressed debt-service and loan-to-value ratios) to address overheating conditions in the housing sector should consider whether there is a need to revisit that decision to prevent severe macroeconomic implications in the event of sharp repricing in housing markets.

In China, further action led by the central government is urgently needed to restore stability in the housing market. A more robust and effective response should entail credible policy mechanisms at minimum taxpayer cost to ensure the completion of presold housing, restructure distressed developers, and restore home buyer confidence. Contingency planning to safeguard financial stability should be prepared, along with macroeconomic policy support and medium-term structural reforms needed to secure an orderly transition to a sustainable financial model for property developers.

The results of the Global Bank Stress Test suggest that the global banking system would remain resilient in a severe stagflation scenario. However, some advanced economy banks and 29 percent of the largest emerging market banks (by assets) would need additional capital. Against a worsening economic outlook, authorities should ensure that bank asset classifications and loan-loss provisions accurately reflect credit risk and losses. Supervisors should ensure that banks have risk management systems commensurate with their risk profile, including strengthening the capacity and adequacy of stress tests. Adequate capital buffers are essential to containing financial stability risks. Financial institutions should have adequate capital conservation plans, and any significant decline in capital ratios should be accompanied by a credible plan to restore capital.

To ensure comprehensive and timely assessment of risks in credit markets, authorities should ensure that they have sufficient and reliable data to analyze vulnerabilities stemming from origination practices and chains of intermediation in the corporate debt market. Transparency in the growing private debt market should be enhanced, including through collection of data on cross-border exposures. Given the increasingly prominent role of nonbank financial institutions in intermediating global credit, ensuring adequate risk management practices in nonbank financial institutions and their horizon scanning and supervision by prudential authorities are vital. To deal with private debt overhang, restructuring and insolvency tools should help ensure efficient and orderly exit of nonviable firms facing structural challenges (see the October 2020 GFSR and Chapter 2 of the April 2022 WEO). However, some firms and sectors facing credit constraints may still need short-term fiscal support. Such support should continue to depend on firms' viability and available fiscal space and be limited to circumstances in which there was clear market access failure.

Swift implementation of policies to mitigate market liquidity risks is paramount to avoid possible amplification of shocks, especially during the ongoing normalization of monetary policy. Supervisory authorities should monitor the robustness of trading infrastructures and support transparency in markets. In addition, improving the availability of data at the trade level would help the private and public sectors with timely

assessment of liquidity risks in markets. Given the increasing importance of nonbank financial institutions such as principal trading firms and hedge funds in the provision of liquidity in key funding markets, counterparties should carefully monitor intraday activity and leverage exposures, strengthen their liquidity risk management practices, and enhance transparency and data availability.

The correction in crypto asset markets has added extra urgency to the call for comprehensive and consistent regulation and adequate supervision. Policymakers need to address risks to users and investors, to market and financial integrity, and to macro-financial stability. The regulatory framework should cover all critical activities and entities. Crypto asset service providers that deliver core functions and generate key risks should be licensed, registered, or authorized. These include entities related to the storage, transfer, exchange, and custody of reserves—among others—which should be subject to regulation similar to that of financial service providers (following the principle of "same activity, same risk, same regulation"). Strong international cooperation is essential to provide guidance, ensure consistent implementation, and contain spillover risks.

Box 1.1. Indicator-Based Framework Update

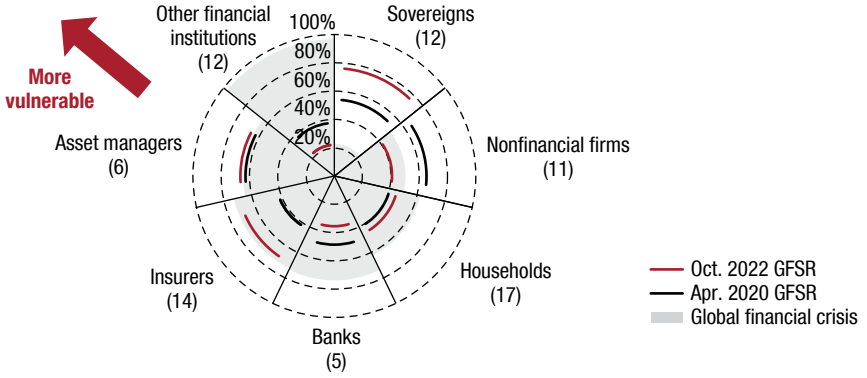
Amid the rise in inflation globally, and associated actions to tighten monetary policy, several sectors across advanced economies and emerging markets continue to look vulnerable in an environment of tightening financial conditions.[1] Financial vulnerabilities have increased across emerging market sectors and remain elevated in advanced economy sovereign and nonbank financial sectors.

The authors of this box are Yingyuan Chen, Fabio Cortes, Deepali Gautam, Frank Hespeler, Thomas Piontek, and Aki Yokoyama.

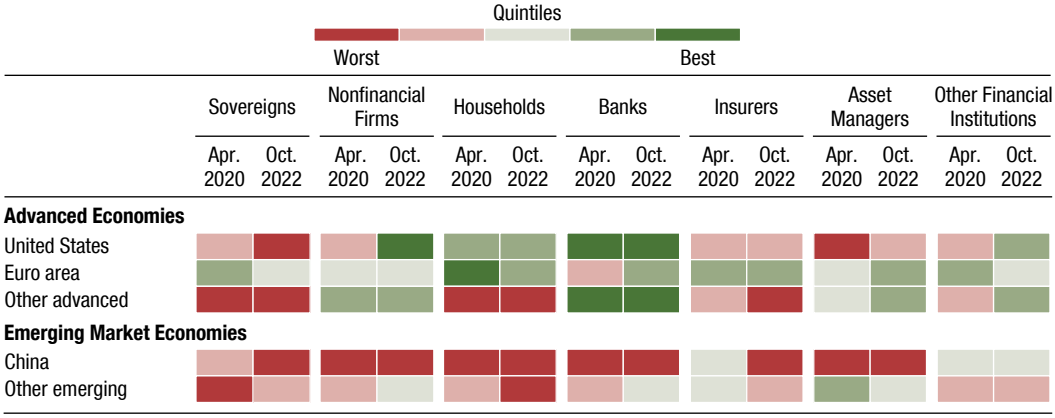
[1]The focus of the framework is restricted to on-balance-sheet vulnerabilities, given the absence of available data for off-balance-sheet vulnerabilities for a cross-section of countries. Due to the nature of the data and their reporting frequency, most of the current data points are through the fourth quarter of 2021.

Figure 1.1.1. Global Financial Vulnerabilities

1. Proportion of Economies with Elevated Vulnerabilities, by Sector
(Percent of countries with high and medium-high vulnerabilities, by GDP [assets of banks, asset managers, other financial institutions, and insurers]; number of vulnerable countries in parentheses)



2. Financial Vulnerabilities by Sector and Region



Sources: Banco de Mexico; Bank for International Settlements; Bank of Japan; Bloomberg Finance L.P.; China Insurance Regulatory Commission; European Central Bank; Haver Analytics; IMF, Financial Soundness Indicators database; IMF, World Economic Outlook (WEO) database; Reserve Bank of India; S&P Global Market Intelligence; S&P Leveraged Commentary and Data; Securities and Exchange Commission of Brazil; Securities and Exchange Board of India; WIND Information Co.; and IMF staff calculations.
Note: See technical annex of the April 2019 *Global Financial Stability Report* (GFSR) for details on the Indicator-Based Framework. In panel 1, "global financial crisis" shows the maximum vulnerability value during 2007–08. In panel 2, dark red shading indicates a value in the top 20 percent of pooled samples (advanced and emerging market economies pooled separately) for each sector during 2000–22 (or longest sample available), and dark green shading indicates values in the bottom 20 percent. For the sovereign sector, the April 2020 data were adjusted to use updated pre-COVID data where WEO forecasts were previously employed. Other advanced economies comprise Australia, Canada, Denmark, Hong Kong Special Administrative Region, Japan, Korea, Norway, Singapore, Sweden, Switzerland, and the United Kingdom. Other emerging market economies are Brazil, India, Mexico, Poland, Russia, and Türkiye.

Box 1.2. The European Central Bank's New Tool to Contain Fragmentation Risk: The Transmission Protection Instrument

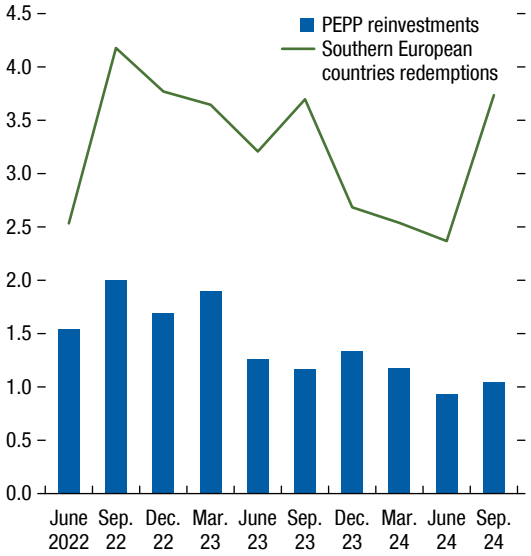
With the European Central Bank (ECB) proceeding to normalize monetary policy, fragmentation risk has come back into focus in markets—a development reminiscent of investor concerns during the euro area sovereign debt crisis in early 2010s. While the ECB has been engaged in a hiking cycle to bring inflation back to target, the Transmission Protection Instrument, announced in July 2022, is intended to address the fragmentation risk that could impair the effective transmission of monetary policy across the euro area countries (ECB 2022).

As stated by the ECB, the first line of defense against risks to the transmission mechanism related to the COVID-19 pandemic is the reinvestment flexibility of purchases of maturing assets under the Pandemic Emergency Purchase Programme (PEPP). While the ability to skew asset purchases toward the debt of certain euro area countries allows for the use of redemptions to address these risks, PEPP reinvestments are anticipated to continue only until 2024. This limits its use as a long-term tool to ensure the efficient transmission of monetary policy, also because any deviation from the capital key rule will eventually have to be reversed at some point. Moreover, while PEPP's projected monthly reinvestments are sizeable, they appear to be smaller than the expected gross sovereign debt issuance—to address fragmentation risk (Figure 1.2.1, panel 1). Thus, with net asset purchases having come to an end in the first half of 2022, the fiscal deficit in the euro area is, for the first time in several years, set to exceed ECB reinvestments going forward (Figure 1.2.1, panel 2). Since the tapering of asset purchases was first announced in September 2021,

Figure 1.2.1. Fragmentation Risk in the Euro Area

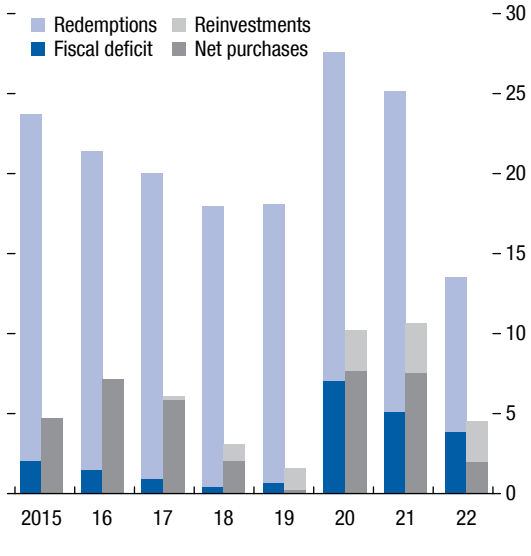
Flexible reinvestments by the Pandemic Emergency Purchase Programme (PEPP) are unlikely to fully offset gross sovereign debt issuance by southern European countries.

1. Projected Monthly PEPP Reinvestments and Sovereign Debt Redemptions until December 2024 (Percent of quarterly euro area GDP)



The European Central Bank is stepping down as a significant buyer of euro area sovereign debt in both its Asset Purchase Programme and Pandemic Emergency Purchase Programme.

2. Euro Area: Budget Deficit and Sovereign Debt Purchases (Percent of euro area GDP)



Sources: Bloomberg L.P.; European Central Bank; and IMF staff calculations.
Note: Southern European countries comprise Greece, Italy, Portugal, and Spain. PEPP = pandemic emergency purchase programme.

The authors of this box are Esti Kemp and Johannes Kramer.

Box 1.2 *(continued)*

spreads and funding costs have increased (see Figure 1.6, panel 2).

The Transmission Protection Instrument involves the purchases of public sector securities[1] issued in jurisdictions in which disorderly and unwarranted market dynamics threaten monetary policy transmission. The instrument will be activated by the ECB's Governing Council based on a comprehensive assessment of market and transmission indicators and an evaluation of eligibility criteria.

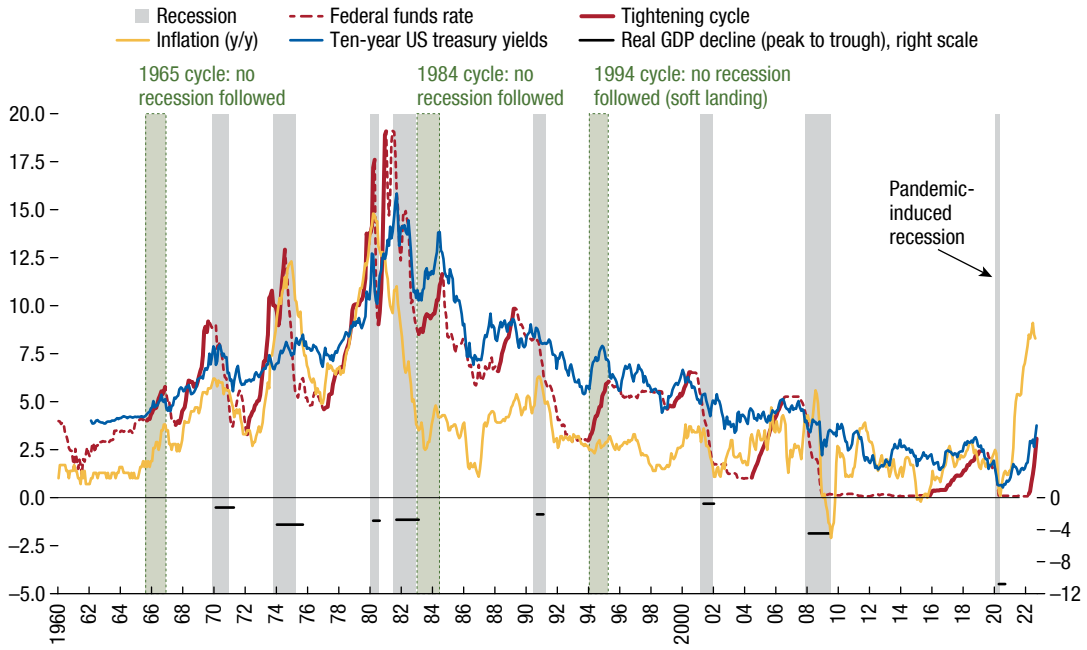
[1]The ECB stated that it may consider purchases of private sector securities, if appropriate (see ECB 2022).

Box 1.3. Financial Markets and US Monetary Policy Tightening Cycles: A Historical Perspective

Over the past six decades, monetary policy tightening cycles in the United States have often been followed chronologically soon after by a recession. A well-cited exception is the 1994 cycle, when the Federal Reserve managed a so-called soft landing.[1] The magnitude of decline in economic activity, however, has varied considerably across recessionary periods (Figure 1.3.1). Given this background, the aim of this box is to examine the behavior of selected financial indicators during previous tightening cycles and identify any systematic trends of such variables that may help explain how the ongoing policy normalization cycle might play out in financial markets.[2]

Starting with cumulative increases in the policy rate, it appears that their magnitude has become more limited over each tightening cycle beginning with the 1988 episode, with a progressively lower terminal rate, likely reflecting in part a more muted inflationary environment compared to the 1970s and early 1980s.[3]

Figure 1.3.1. US Monetary Policy Tightening Cycles and Recessions, 1960 to Date
(Percent)



Sources: Bloomberg L.P.; Federal Reserve Economic Data; and IMF staff calculations.
Note: The tightening cycle periods are as defined in Blinder (2022). A soft landing is defined as a scenario in which the central bank tightens the policy rate—specifically, close to or above the neutral rate—and the economy does not fall into recession. Soft landings are shaded in light green. Inflation corresponds to year-over-year headline consumer price inflation. Gray shaded areas reflect recessions, as defined by the National Bureau of Economic Research. The 2022 tightening cycle is ongoing. y/y = year over year.

The authors of this box are Deepali Gautam, Sheheryar Malik, and Thomas Piontek.

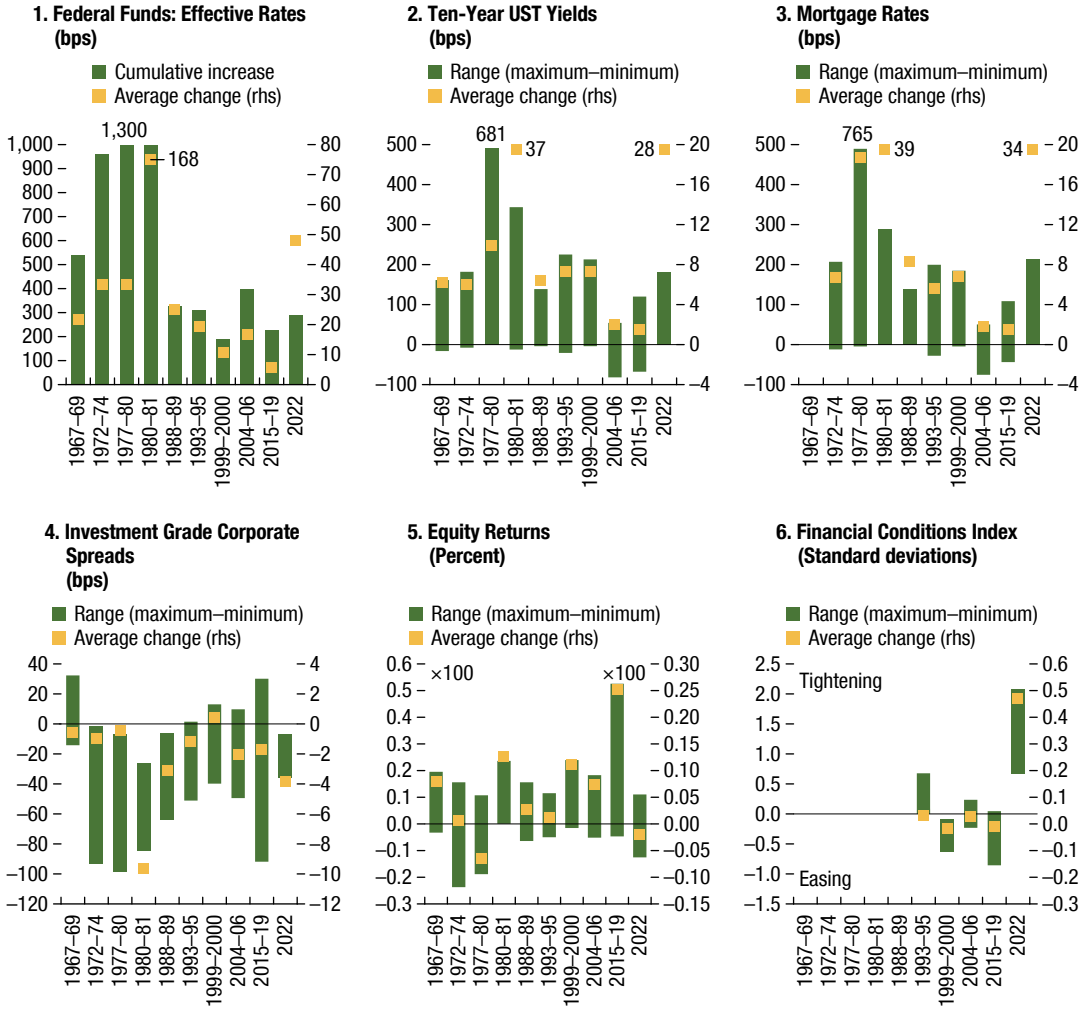
[1]As noted in Powell (2022) there were three tightening cycles—1965, 1984, and 1994—during which the Federal Reserve "raised the federal funds rate significantly in response to perceived overheating without precipitating a recession."

[2]The objective of the box is not to forecast recessions but simply to understand how this tightening cycle compares with previous episodes through the lens of financial markets.

[3]The terminal rate corresponds to the level of policy rate reached at the peak of the tightening cycle. See Linde, Platzer, and Tietz (2022); Cesa-Bianchi, Harrison, and Sajedi (2022); and Rachel and Summers (2019) for a discussion of factors, in addition to inflationary pressures, that may be driving evolution of the terminal rate.

Box 1.3 *(continued)*

Figure 1.3.2. Evolution of Selected Financial Indicators during Tightening Cycles, United States, 1967–2022



Sources: Bloomberg L.P.; Federal Reserve Economic Data; Freddie Mac; Moody's; and IMF staff calculations.
Note: Panel 1 shows the total increase in the federal funds rate over each tightening cycle, as well as its average monthly change (labeled "average change") denoted by the yellow markers. For variables considered in panels 2, 3, and 6, the green bars represent the range of maximum to minimum change in values from levels prevailing at the start of each respective tightening cycle. As in panel 1, the yellow markers denote the average monthly change over each cycle. Panel 3 shows percentage point changes in 30-year fixed-rate mortgages from Freddie Mac's Primary Mortgage Market Survey. Panel 4 shows spreads of Moody's Aaa corporate (investment-grade-rated) yields relative to 10-year US Treasury yields. Panel 5 shows the range of returns and average returns of the S&P 500 Index since the start of each cycle. The periods spanned by the tightening cycles are as defined in Blinder (2022). Data are not available for all tightening cycles considered for the financial conditions index and mortgage rates. bps = basis points; rhs = right scale; UST = US Treasury.

Importantly, the pace of current policy tightening to date is more comparable to episodes before 1988, as the Federal Reserve has moved aggressively to tackle inflation at decades-high levels (Figure 1.3.1 and Figure 1.3.2, panel 1). Longer-term interest rates have generally moved upward across tightening cycles, although less so since the early 2000s, with the 10-year yield on US Treasuries trending down to record-low levels (Figure 1.3.1 and Figure 1.3.2, panel 2). But, consistent with the policy rate, the pace of increase in

Box 1.3 *(continued)*

the 10-year yield this time is more comparable to the cycles before 1988. The evolution of 30-year mortgage rates appears similar to that of the 10-year yield (Figure 1.3.2, panel 3). Risk assets such as equities and investment-grade corporate bonds have generally performed well during tightening cycles, even as the economy in many cases ended up in a recession afterward.[4] Investment-grade corporate spreads have typically compressed relative to the beginning of the tightening cycle, even though corporate bond yields have increased in sync with risk-free yields (Figure 1.3.2, panel 4). The magnitude of compression has tended to vary across cycles. The equity market has performed generally well across cycles, with the exception of the 1977–80 episode (Figure 1.3.2, panel 5) and the current cycle.[5] Financial conditions (as summarized by the IMF US financial conditions index) this time have tightened significantly compared to recent cycles, likely reflecting, in part, historically easy levels ahead of the tightening cycle (Figure 1.3.2, panel 6).

An important difference between the 1994 episode, which resulted in a soft landing, and the current tightening cycle, however, is the inflationary environment, as inflation during the former was significantly lower (Figure 1.3.1). In terms of inflation levels, the current period resembles more closely the 1970s and early 1980s, when recessions following tightening cycles were characterized by high inflation and low growth (so-called stagflation). In those episodes, a substantial rise in the policy rate was necessary to tame inflation, followed by significant economic downturns. While the current inflationary environment may be reminiscent of the 1970s or early 1980s, the nature of the COVID-19 shock is unprecedented.[6] Moreover, the policy framework today is also very different. The Federal Reserve benefits from inflation-fighting credibility built over the past several decades, helping long-term inflation expectations remain much better anchored.[7] That said, financial vulnerabilities have emerged in some sectors in the wake of the COVID pandemic, and financial market volatility has notably risen after having remained relatively compressed over the preceding protracted period of low rates. The financial and regulatory architecture, however, has evolved considerably since the global financial crisis, and policymakers today have at their disposal a number of risk management tools that could be used to deal with the potential adverse systemic fallout from a disorderly tightening in financial conditions. With real rates still negative, and financial conditions still around neutral levels by historical standards (as shown in Figure 1.1), clear communication about the Federal Reserve's policy function—objectives, intertemporal trade-offs, and steps required to bring inflation credibly down to target—and the need to continue to normalize monetary policy remain crucial to avoid unwarranted market volatility and a disorderly tightening of financial conditions.

[4]During economic downturns, however, prices of risk assets have typically posted losses.

[5]It is more difficult to find a clear trend for the US dollar across tightening cycles given that other factors—including external factors that may not be directly affected by US tightening cycles—also influence its behavior.

[6]For a discussion relating to specific factors that may explain the recent uptrend in inflation—for example, the COVID-19 fiscal stimulus and stronger-than-anticipated demand related to the recovery—see the October 2022 *World Economic Outlook*, Box 1.1.

[7]Monetary policy transmission may also differ from the past given firms' higher concentration of market power and different labor market frictions, as discussed in the October 2022 *World Economic Outlook*, Box 1.2.

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